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# Studies in Crow Linguistics: Documentation, Grammar, and History

by

Edwin Ko

A dissertation submitted in partial satisfaction of the

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in

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and the Designated Emphasis

in

Indigenous Language Revitalization

in the

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of the

University of California, Berkeley

Committee in charge:

Professor Andrew Garrett, Chair
Professor Gašper Beguš
Professor John Boyle
Professor John Huelsenbeck
Professor Beth Piatote

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Abstract

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This dissertation focuses on the Crow language, an Indigenous language spoken in southern Montana of North America. This dissertation considers three topics in Crow linguistics: documentation, grammar, and history.

In Chapter 3, on documentation, I consider semantic field methodology and argue that fieldworkers who are describing the semantic grammar of a language may wish to consider co-speech gesture as an important resource for conveying abstract grammatical notions. The genesis of this work lies in the lack of previous work that rigorously analyzed the semantics of modal and aspect marking in Crow that participate in triggering multiple exponence. During the semantic elicitation sessions, I noticed that Jack Real Bird, a collaborator and fluent speaker of Crow, was employing gestures, in addition to his English utterances, to concretize the specific meanings of his Crow utterances. These gestures were not random and not devoid of semantic content; instead, they were meaningful within the situated, interactional setting. This chapter focuses on the aspect markers, *-dahku* and *daachi*, whose meanings are not entirely clear. Employing discourse and gesture analysis, I suggest that the former is most appropriately analyzed as an iterative and the latter as a continuative.

In Chapter 4, on grammar, I present an account of the patterns of multiple exponence in Crow within the framework of Distributed Morphology. Under the view that raising and control in Crow are derived via A-movement (Hornstein, 1999), the main generalization is that only unergatives may exhibit multiple-person marking in raising constructions. On the other hand, all verbs show multiple marking of person features in control and causative clauses. The analysis hinges on the crucial assumption that a necessary precondition for the (multiple) occurrences of A-set morphemes is agreement between a probe on Aux and the

highest accessible DP argument, such that multiple-person marking is simply the result of pronouncing all copies that bear nominative Case within a single A-movement chain.

In Chapter 5, on history, I investigate the diachrony of multiple exponence in Crow. Although most occurrences of multiple exponence in Crow can be explained by grammaticalization of a lexical verb to a grammatical suffix, cases of multiple exponence that involve modal auxiliaries developed through different pathways. In particular, first I argue that multiple exponence observed across the set of modal auxiliaries originated with the grammaticalization of the motion verb **híi* 'arrive there' as a future suffix *-ii*, retaining its agreement when it grammaticalized. Then, the inflectional future then served as the basis for the formation of modal auxiliaries *-iimmaachi* 'will, must', *-iih* 'may, might', and *-iishdaachi* 'should'. Finally, co-occurrence of person agreement on these modal auxiliaries was later extended to another modal *-isshi* 'feel like', for which cognates can be found across all Siouan languages—a distinct case of multiple exponence begetting additional multiple exponence.

Chapter 1 outlines my positionality with regard to this dissertation, Chapter 2 is an introductory chapter that gives an overview of Crow, and a concluding Chapter 6 summarizes.

*Ahó!*

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## Acknowledgments

My dissertation was originally going to be about linguistic phylogenetics but here I am with no hair and no care. At the end of the day, it's really about the intellectual journey. This dissertation is an artifact capturing a glimpse of that journey.

First and foremost, I wish to thank the people of the Crow community in Montana and beyond for their expertise, patience, and hospitality: Arthur Alden, Felice Big Day, Morton Big Medicine, Eugene Deputy, Roanne Hill, Arnold Jefferson, Cyle Old Elk, Janine Pease, Mardell Plainsfeather, Alma Real Bird, Birdie Real Bird, Emery Real Bird, Jack Real Bird, Theresa Sends Part Home, Riley Singer, Lewis Walks Over Ice, Charles Yarlott, and Roberta Yarlott. Without you, this dissertation would not have come to fruition. I also wish to thank my *maguu* (Hidatsa term for grandmother) at Fort Berthold Reservation in North Dakota for their continued loved and support: Martha Birdbear and Mary Gapuchin. Finally, my heartfelt thanks to members of the Pomo community in Northern California, Ramón Billy, Jasmine Billy, Tanya Estrada, Priest Martinez, Erica Pinola, Tanya Ruiz, and Francisco Ruiz, and the Unangan community members, Aqualina Lestenkof, Moses Dirks, and Gregory Fratis. It has been a distinct privilege to have met and worked with you all.

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My fellow Siouanists have provided me with useful feedback over the years. Randolph Graczyk has read all of my papers and provided me with valuable comments and I am eager to continue examining historical documents of the Crow language with him. I also thank the participants at the Siouan conferences who have also shared their support and listened to my talks even when they were sometimes difficult or impossible to follow: John Boyle, Vincent Collette, Samiron Dutta, Jill Greer, Johannes Helmbrecht, Ryan Kasak, Dave Kaufman, Sarah Lundquist, Julie Marsault, Armik Mirzayan, Willem de Reuse, Corey Roberts, Catherine Rudin, Saul Schwartz, Corey Telfer, and Jan Ullrich.

During my undergraduate at Boston University, I wish to thank my mentor Cathy O'Connor for letting me be part of her project on Northern Pomo, a dormant Pomoan language of California, and for instilling within me an even greater passion for linguistics, especially as a naïve student taking her field methods class. She has spent many hours looking over my application materials and I have her to thank for helping me get into UC Berkeley. I am also grateful to have met and worked with Bradie Dailey, Elodie Paquette, Ethan Rimdzius, and Jimmy Sbordone during the Northern Pomo project. While pursuing my master's degree at Georgetown University, Arnold Jefferson played a pivotal role in introducing me to the Crow language and culture. I have Mark Sicoli to thank for inviting Arnold to be the primary consultant in his field methods class and for introducing me to Birdie Real Bird, the then Head of Education of the Crow Tribe.

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I wish to thank my friends and family who have supported me in my decision to pursue linguistics despite not knowing what I do or how to try and explain to others what it is that I do. I'm grateful for my older sister, Christina, and older brother, Lawrence. I am particularly indebted to them for being there for me when I needed them the most. To my nephews, Darren and Noah, listen to your parents who gave you the best gift of all—life. My mother has always believed in me and convinced others, including my father, that I would find my own path in the world. My father, who reluctantly trusted the words of my mother, has always looked out for me and provided me with financial support for my education.

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Finally, I recognize and acknowledge that the ancestral and unceded land on which this dissertation was written belongs to the Ohlone people. May this acknowledgment be a small step towards building meaningful relationships and acknowledging the true history and ongoing presence of the Indigenous peoples on whose land we stand today.

# Chapter 1

# Prelude

I am not Crow, nor am I American Indian. I am a 32-year-old Chinese-American, born in New York, who grew up in Hong Kong for most of my childhood, went to boarding school in Edinburgh, Scotland at the age of ten for five years, and attended the final two years of high school in Allendale, New Jersey. My interest in Native American languages and language revitalization first began when I was an undergraduate student at Boston University. There, I aided Cathy O'Connor by developing the Northern Pomo Language Tools website and mobile app, *jano sho:jin*, for learning about the language. Cathy had done fieldwork as a graduate student at the University of California, Berkeley on Northern Pomo, an Indigenous language of Northern California. Today, Northern Pomo has no known fluent speakers as the last known speaker, Elenor Stevenson Gonzales, passed away in 2005.

My interest in the Crow language began in the spring of 2016 after participating in a field methods class at Georgetown University taught by Mark Sicoli. During this class, we collaborated with the consultant, a speaker of the Crow language, Arnold Jefferson. With the help of Mark, who met up with Crow community members visiting the Smithsonian Institution Archives in Washington, D.C., I was introduced to the then Head of Education of the Crow Tribe, Birdie Real Bird. At that time, Birdie was looking for help developing a Crow language curriculum during the summer of 2016. In August 2016, I traveled to Montana for a month to aid Birdie in her endeavors.

When I first arrived at the Crow Reservation, I stood at the Conoco gas station in Crow Agency waiting for Birdie, who was the same age as my mother—sixty-two at the time. After she arrived, I was given a tour of Crow Agency in her car. The first things Birdie showed me were the abandoned buildings and the myriad of issues (e.g. poverty, substance abuse, premature deaths) that the Crow people were experiencing. She placed a strong emphasis on instilling within me an understanding of the inequalities and hardships that the Crow people go through on a daily basis. It was later in my visit that I experienced culture shock; I was accustomed to the concrete jungle of Hong Kong and New York, not to the vast openness of the Great Plains. This feeling highlighted the difference between our worlds. I was an outsider, a researcher who was steeped in Western epistemology and intellectual traditions.

At some point during my visit, someone mentioned to me that they would rather let the

Crow language die than have it spoken improperly. I began thinking hypothetically. What if an entire speech community wished to let their language cease to be spoken? Would it be appropriate for me to intervene? *Well, no*, I thought. But what about their ancestors or their future descendants who wished/will wish otherwise? *Hmm, it's getting complicated.* Today, my view is that as long as I create an "accurate" documentation record, then at some point, people who wish to revitalize or reclaim their language can do so. If there is a desire expressed by members of a given speech community to reclaim their language, then I will do what I can to support those endeavors.

One of the most difficult questions asked by a Crow person I've had to answer was why I was not studying an endangered language in China—I am ethnically Chinese after all.[1] My response at the time was that by examining a language and culture different from my own, I could expand my worldview; there is a common adage that learning another person's language means learning another person's culture. I have since been reflecting on how to provide an appropriate response that was less of a cliché, but I have not been successful. The truth of the matter is that many Crow people are more concerned with surviving every single day and do not have the privilege that has been afforded to me to study Crow in any professional capacity. It is beyond doubt that I've made some mistakes. All I can say is that I'm trying to learn from those mistakes and become a better, more ethical person.

As I become more and more familiar with Indigenous methodologies, I notice several recurring themes, such as the importance of storytelling, building good relationships, contextualizing the lived experiences and memories of each person, and giving back to the community (Wilson, 2008; Chilisa, 2019; Kovach, 2021; Smith, 2021). In the Crow country, everyone has a story to share, whether they are about abandoned buildings or people who have since passed away. For those who were willing to share, I listened with care and respect. But because of the history of extractive practices by colonists, missionaries, ethnologists, anthropologists, and linguists, many people were suspicious of me. Building trust takes time, and I hope to continue advocating for Indigenous language rights in the time I have left.

[1] In fact, I've been asked if I'm related to the Yarlotts, some of whom are of Crow and Korean descent. People who identify as Asian constitute approximately 1% of the entire population in Montana.


Figure 1.1: A mural in Lodge Grass, Montana produced by the Lodge Grass community improvement organization Jump Start Healing in August, 2017 (photograph by Edwin Ko taken in July 2018). The mural features Joseph Medicine Crow (1913–2016), tribal historian and war chief of the Crow Nation.

# Chapter 2

# Introduction

This chapter serves to provide an introduction to the Crow language and the Siouan language family in which it belongs. First, I provide the sociolinguistic context that lay the foundation for this work before discussing the linguistic features of the language from a typological perspective. I also discuss the history of documentation of Crow. This is followed by debates surrounding the Siouan family tree, the geographical locations of the languages, contact effects, and the current state of comparative Siouan. I then outline the contents and structure of this dissertation.

## 2.1 The Crow language

### 2.1.1 Background

Crow (or Apsáalooke) is a language spoken traditionally across the Great Plains region. Today, it is primarily spoken on the Crow Indian Reservation in south-central Montana, southeast of Billings, Montana and northwest of Sheridan, Wyoming. Most of the speakers are enrolled members of the Crow Tribe, and virtually all Crow speakers also speak English. Historically, there were two main groups of Crow people: the River Crows and Mountain Crows; the latter constituted two subdivisions, the so-called Main Group and the Kicked-in-the-Bellies (Lowie, 1956, 4). Despite this, only a few differences have been reported across different groups of speakers, although I have noticed lexical and phonological differences between speakers of different age groups, families, and locales.

According to Golla et al. (2007, 13), there are around 3,000 to 4,000 first-language speakers of Crow, with most speakers over the age of 30. A survey in 1969 found an 82% fluency rate among Crow children in the Hardin schools, located just outside the reservation (Dracon, 1970). By 2005, this figure decreased to around 25% (Watts, 2005). Today, the main Crow speaker population are Elders, and while many of the middle generations can understand the language, most do not speak it. As a consequence, the vast majority of children are unable to understand or speak the Crow language. Readers may wish to refer to previ-

ous dissertations on the general state of Crow-English bilingual education, such as Dracon (1970), Read (1978), Watts (2005), and Crawley (2008, 2020).

One of the key sociolinguistic aspects that has not received much attention is code-switching. All speakers of Crow are also bilingual in English, and many people engage in Crow-English code-switching throughout their daily lives.[1] In my experience, when there are attitudes and ideologies that advocate for linguistic purism, as is the situation vis-à-vis Crow, many speakers tend to avoid code-switching when they are aware that the recordings will be archived for posterity's sake. A few speakers, however, are adamant that the documentation record should capture how speakers *actually* talk and continue to code-switch when being recorded. These ostensibly opposing views lead to complex, multifaceted documentation of not only the Crow language but also attitudes toward English in the 21st century.

### 2.1.2 Structure of the language

Crow has a relatively simple phonemic inventory that consists of at least ten consonants, as shown in Table 2.1, and five distinct vowel qualities with contrastive length, as shown in Table 2.2; unlike many other Siouan languages, the Crow language does have nasal vowels. Note that geminates [ʃʃ], [t͡ʃt͡ʃ], and cluster [ʃt͡ʃ] are orthographically represented as ⟨ssh⟩, ⟨tch⟩, and ⟨sch⟩, respectively.[2,3]

| | LABIAL | ALVEOLAR | PALATAL | VELAR | GLOTTAL |
|---|---|---|---|---|---|
| STOPS | p | t | t͡ʃ ⟨ch⟩ | k | |
| FRICATIVES | | s | ʃ ⟨sh⟩ | x | h |
| NASALS | m | n | | | |

Table 2.1: Consonant inventory (adapted from Graczyk 2007, 12)

| | FRONT | CENTRAL | BACK |
|---|---|---|---|
| HIGH | i(i) | | u(u) |
| MID | ee | | oo |
| LOW | | a(a) | |

Table 2.2: Vowel inventory (adapted from Graczyk 2007, 14)

[1] Direct affixation, although rare, does still occur, particularly among the younger generations.

[2] In addition to the glottal stop that only occurs as an interrogative marker, there are also geminates as well as pre- and post-aspirates whose phonemic status is unknown.

[3] Many previous researchers have treated geminates as clusters. If geminates are phonemic, then this is undesirable as it reduces the number of consonants the language actually has.

One of the phonological traits of Crow is the alternations involving *b/w/m* and *d/l/n*. The alternants occur in complementary distribution and can be described in the following way. Allophones *w* and *l* occur intervocalically, whereas *b* and *d* occur word-initially and adjacent to obstruents; the nasal alternants *m* and *n* occur elsewhere, but typically restricted to coda positions, following *h*, or geminates. The lack of convergent phonological analysis is perhaps best illustrated by analyses of these alternations. Following Gordon (1972), Martin (1989), and Graczyk (2007), I analyze them as underlyingly *m* and *n*, but as Golston (2015) observes, this analysis presents an inventory without liquids or glides. Kaschube (1967) suggests the underlying phonemes are /w/ and /r/, but this analysis presents a language without nasals. Golston (2015) presents an analysis in which the underlying phonemes are /b/ and /d/, but this analysis stipulates a language without liquids, glides, or nasals.[4]

The term 'ablaut' in the Siouan literature applies to select words that undergo a change in the stem-final vowel when the plural, imperative, benefactive, positionals, and *a*-initial suffixes immediately follows. For example, in (1a), the verb has the form *chiwakíi* 'pray', but in (1b), the main verb stem is followed by the continuative *-laachi*; notice how *chiwakíi* becomes *chiwaká(a)* when followed by the semantically-empty morpheme *-a* that is often referred to as the 'continuative' within the Siouan literature. Forms that do not originally participate in displaying ablaut may do so if they undergo reduplication, which is not a productive process in the language and only occurs on select verbs to imbue the meaning with distributive, repetitive, or intensive semantics.

(1) a. Logan chiwakíi-k
Logan pray-DECL
'Logan prayed'

b. Logan chiwaká(a)-a-laachi-k
Logan pray-JUNC-CONT-DECL
'Logan kept on praying'

In terms of its morphosyntax, Crow is an agglutinative language, and although it has prefixes and proclitics, it typically prefers to employ suffixes and enclitics. It is primarily head-marking, highly polysynthetic, and exhibits a high degree of compounding. Place names and names of characters in legends are particularly illustrative of compounding. Consider the examples given below.

(2) a. Baaxawua-ashé
bread-house
'Crow Agency (lit. bread house)'

b. Uuwat-isee
Metal-Big
'Big Metal'

Example (2a) shows a noun-noun compound, while (2b) is an example of a noun-verb compound, commonly referred to as noun incorporation.[5] In general, compounding is a process that exhibits a high degree of productivity in Crow.

[4]At least four accounts have been proposed for capturing the pattern of pitch accent in Crow by Kaschube (1954), Hamp (1958), Matthews (1959), and Gordon (1972). See Graczyk 2007, 19–23 for a general description of pitch accent in Crow.

[5]The Crow word *baaxawúa* 'bread (lit. something that roars') is so-named to refer to the sound that emanates from the milling of flour.

Within the nominal domain, nouns may occur with a definite or indefinite determiner or as a bare noun. Plural marking is also optional on nouns. The precise semantic differences between employing a determiner, a plural, or neither still need to be worked out. Relative clauses are internally headed with the overt lexical head of the clause being able to be marked with an indefinite, but not with a definite marker. A speaker of Crow may utilize one of the numerous strategies to nominalize verbs, such as conversion (or zero-derivation), a relativizer (e.g. *ala*, *ak*, *baa*), among others. The Crow language also makes a distinction between alienable and inalienable possession with examples given in (3a) and (3b), respectively.

(3) a. Alienable
bas-íilaalee
1POS.AL-car
'my car'

b. Inalienable
b-aashúua
1POS.INAL-head
'my head'

Crow is also a pro-drop language and generally exhibits SOV word order, but there is some flexibility, presumably depending on discourse-pragmatic factors. It has an active-stative (or split-S) morphosyntactic alignment that is observable via its pronominal agreement system, which has already been subject to two thorough examinations in two different theoretical frameworks (Wallace, 1993; Graczyk, 1991). Active verbs are mainly agentive and denote events, while stative verbs, in contrast, tend to denote states with a patientive subject (Ko, 2020). There are also both active and stative intransitive and transitive verbs, as shown in the examples below.

(4) a. Active intransitive verb
baa-xalússhi-k
1A-run-DECL
'I ran'

b. Stative intransitive verb
bii=hachká-k
1B=be.tall-DECL
'I'm tall'

(5) a. Active transitive verb
dii=baa-dáxpii-k
2B=1A-hug-DECL
'I hugged you'

b. Stative transitive verb
bii=lii=chichée-k
1B=2B=resemble-DECL
'I look like you'

In (4a), the subject is referenced using an A-set marker. In (4b), the subject is referenced using a B-set marker. In (5a), the subject is referenced using an A-set marker and the object is referenced using a B-set marker. In (5b), both arguments are cross-referenced using the B-set marker.[6] The A-set and B-set pronominals are provided in Tables 2.3 and 2.4, respectively.[7]

[6]According to Wallace (1993) and Graczyk (2007), there is some flexibility in terms of order of the B-set markers (and other proclitics) that allegedly has no effect on the overall meaning of the clause.

[7]Since plural subjects and objects are generally marked only once with a plural morpheme, it is possible for a given transitive clause with plural marking to be interpreted in multiple ways. For example, *dáxpuuk* may be interpreted as 'they hugged him/her', 'he/she hugged them', or 'they hugged them'.

| PERSON | SINGULAR | PLURAL |
|---|---|---|
| FIRST | baa- | baa- -uu |
| SECOND | daa- | daa- -uu |
| THIRD | Ø- | -uu |

Table 2.3: A-set pronominal markers

| PERSON | SINGULAR | PLURAL |
|---|---|---|
| FIRST | bii= | balee= |
| SECOND | dii= | dii= -uu |
| THIRD | Ø= | -uu |

Table 2.4: B-set pronominal markers

It is beyond the scope of this dissertation to provide an exhaustive list of the verbal morphemes in Crow. Instead, I briefly summarize the morphemes that are relevant to this dissertation, as shown in Table 2.5.[8] Note that this is the general basic order of verbal morphemes that may not be representative of all speakers of Crow given the variability across different speakers as well as differences that manifest based on semantic scope.

A recurrent theme throughout this dissertation is multiple exponence, a phenomenon in which a given morpheme with a given piece of information is redundantly marked within a single word. Example (6a) shows an active intransitive in which the first-person A-set pronominal is marked on the verb. In contrast, example (6b) displays two instances of first-person pronominal A-set markers: one that precedes the verb and the other that follows the carrier morpheme, desiderative *-wia*. There are several morphemes that participate in exhibiting multiple exponence, and all of the morphemes that do engage in showing multiple exponence are either suffixes or enclitics.

(6) a. baa-xalússhi-k
1A-run-DECL
'I ran'

b. baa-xalússhi-wia-waa-k
1A-run-DESID-1A-DECL
'I want to run'

Compared to the morphosyntax of Crow, the semantic grammar is significantly understudied. In this dissertation, I hope to contribute towards a better understanding of some of the thorniest issues, including the distinction between so-called continuative aspectuals *-daachi* and *-dahku* and the set of modal auxiliaries. For example, in the subsequent chapter, I argue that *-daachi* and *-dahku* is most appropriately analyzed as a continuative and an iterative, respectively. In the penultimate chapter on the history of multiple exponence, I claim that Crow has at least three modals that express necessity (i.e. *must*), epistemic possibility (i.e. *may*), and weak necessity (i.e. *should*).

### 2.1.3 History of documentation

The earliest known documentation of Crow was around the mid-18th century by James Isham (1716–1761), a fur trader who made observations in the Hudson Bay (Goddard, 1976,

[8]Readers who are interested in learning about specific details on the grammar of Crow are encouraged to seek this information in *A Grammar of Crow* published in 2007 by Randolph Graczyk.

| -3 | -2 | -1 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| REL | B-SET | A-SET | STEM | INCHO | BEN | ITER | INDIR.CAUS | DESID | NEG | PL | MOD | DECL |
| INSTR | REFL | | | DIR.CAUS | | CONT | | | | | | Q |
| | RECIP | | | | | | | | | | | IMPER |
| | INDEF | | | | | | | | | | | SS/DS |
| | | | | | | | | | | | | TEMP |
| | | | | | | | | | | | | COND |
| | | | | | | | | | | | | OPT |

Table 2.5: Verbal template

738).[9] In this sample, Isham (1949, 36) provides numerals from 'one' to 'ten' and refers to the Crow language as the "Earchethinue Language in a nother part of the Country." A list of 30 words later occurs in Edwin James's (1905) account of Major Stephen H. Long's (1784–1864) expedition to the Rocky Mountains in 1819 and 1820; these words were recorded by the naturalist Thomas Say (1787–1834). Prince Maximilian of Wied-Neuwied (1782–1867) then documented 20 words in the 1830s (Wied, 1906). At the age of 24, John Mason Brown (1837–1890), who fought for the Union against the Confederacy, wrote down several Crow words around 1861 while stationed along the upper Missouri River (Brown, 2013).

The geologist Ferdinand Vandeveer Hayden (1829–1887) incorporated a list of vocabulary, phrases, and even texts in the Crow Indian language into his 1862 *Contributions to the Ethnography and Philology of the Indian Tribes of the Missouri Valley.*[10] Lieutenant George Pfouts Belden (1844–1871) compiled a dictionary of the Crow language in 1868 before Reverend Francis Geisdorf(f) produced a vocabulary list one year later. These word lists were then followed by Crow terms for various bodies of water that social theorist and political figure Lewis Henry Morgan (1818–1881) had prepared; although it was intended for publication in 1881, it was never printed. In the 1890s, Reverend Francis Laslow produced vocabulary but also contributed some valuable early documentation of verb conjugations.

It would seem then that by the end of the 19th century, documentation of Crow proliferated and included vocabularies, grammatical descriptions, and short texts recorded by colonists, missionaries, and ethnologists. However, many of these records are undated and employ orthographies that are oftentimes idiosyncratic. Moreover, they do not provide sufficient provenance information, such as the names of the authors, the year that the documents were produced, or even the names of the consultants who were involved in the creation of these important historical documents. Still, these records provide an important glimpse into the early history of the Crow language.

As the field of linguistics emerged out of anthropology in the 20th century, the accuracy and consistency of transcriptions improved as did knowledge of Crow phonology. By the time the anthropologist Robert H. Lowie (1883–1957) did his fieldwork in the early 20th century, there was a tendency for a higher degree of regularity, although phonetic variation still existed. As noted by Luella C. Lowie on January 1960 in the preface of a word list of Crow she helped to publish after the death of her husband, "The Crow are not consistent about initial consonants; they appear to begin a word with whatever consonant will sound best after the last syllable of the preceding word or before the stem that is to follow" (Lowie, 1960b, vi–vii).[11,12] The extent of his entire fieldwork resulted in various major publications

[9]This is by no means an exhaustive listing of previous documentation of Crow. For example, I am less familiar with the Jesuit archival materials and other documentation on Crow that resides in archives in other parts of the country beyond Washington, D.C. and Philadelphia.

[10]Hayden (1862, 395) reports having been aided by a list of over a thousand words in Crow obtained by Reverend Brauninger, but I have not been able to locate this list.

[11]Graczyk (2007, 3) remarks that the Lowie (1960b) are "full of errors" since it had been published without correction or revision by Robert H. Lowie. See the review by Matthews (1961).

[12]In response to this comment, Matthews (1961, 313) writes that "only the triplets *m*, *w*, *b* and *n*, *r*, *d* are

(Lowie, 1918, 1930, 1932, 1933, 1941, 1960a,b), some of which were published posthumously.

While working in Oklahoma in the 1930s, the linguist Mary R. Haas (1910–1996) documented many languages of the area, one of which was Crow. During this time, she was only able to document a short list of words. In relation to his fieldwork on Hidatsa and Mandan, the linguist John P. Harrington's (1884–1961) work on Crow in the 1950s was comparatively brief, documenting cursory aspects of the Crow lexicon and grammar. Henrietta Pretty On Top from Lodge Grass, Montana collaborated with the anthropologist Dorothea V. Kaschube in the summer of 1953 at the Linguistic Institute at Indiana University and in subsequent years during Kaschube's fieldwork. These efforts resulted in two publications (Kaschube, 1967, 1978) and digitized cassette recordings that are archived and accessible at the Little Big Horn College Archives. Table 2.6 displays Crow numerals in their original transcriptions by select authors over a span of over two centuries.[13]

| | Isham c.1743 | Hayden c.1862 | Lowie c.1907 | Kaschube c.1967 | Medicine Horse c.1987 |
|---|---|---|---|---|---|
| 'one' | U'ma tau | ha-mat′ | hawáte | hawáta | hawáte |
| 'two' | Nu paw | nōp | dú꞉pə, nú꞉pə | rúhpá | dúupe |
| 'three' | nu'm | nam | dá꞉wi | rà꞉wí | dáawiia |
| 'four' | su pa | shōp | có꞉p(e) | -šó꞉pá | shoopé |
| 'five' | chau'k | tsih′-ōp | tsəxó | čiaxxo | chiaxxó |
| 'six' | au ker | a-ka′-mak | aká꞉wa | — | akaawé |
| 'seven' | sar po | ha̍′-pu-a | (i)sá'pua | sáhpua | sáhpua |
| 'eight' | nu paw pe | no′-pa-pe | nú꞉pa'pi | — | dúupahpe |
| 'nine' | U 'ma ta pe | a-ma′-ta-pe | á'piə | — | hawátahpe |
| 'ten' | Pi uck | pi-ra-ka′ | pirəké | -piraká- | pilaké |

Table 2.6: Transcriptions of numerals in Crow.

In the late 20th century, we are beginning to see more and more Crow people in charge of producing their own Crow language materials. The Bilingual Materials Development Center, included members of Crow descent such as George Reed Jr., Dale Old Horn, Henry Old Coyote, and Mary Helen Medicine Horse; George Hubert Matthews (1930–2020), who was not of Crow descent but a Siouanist, served as the consulting linguist and advised the former two at the Massachusetts Institute of Technology on their master's theses (Reed, 1975; Old Horn, 1975). Altogether members of the Bilingual Materials Development Center developed a dictionary (Medicine Horse, 1987), teaching materials (e.g. Bilingual Materials Development Center, 1986), and readers (e.g. Bilingual Materials Development Center,

interchangeable [...] Each of these triplets, however, represents a single phoneme, the allophones of which in many environments are in free variation." Today, these allophones are in complementary distribution.

[13]Note that numerals are presented in their original transcriptions.

1980a,b; Old Coyote, 1980, 1985) to promote bilingualism in Crow and English. However, since 1991, the Bilingual Materials Development Center has been defunct and most of the materials are currently housed at the Little Big Horn College archives.

Randolph Graczyk was a Capuchin-Franciscan priest at the St. Charles Parish on the Crow Reservation in Pryor, Montana from 1975 until his retirement in recent years. In 1982, he attended the linguistics graduate program at the University of Chicago and graduated in 1991. His 1991 dissertation laid the foundations for *A Crow Grammar* that was published in 2007 by the University of Nebraska Press. In addition to his grammar, he has several unpublished manuscripts on such topics as code-switching and switch-reference. In the earlier stages in the development of a dictionary of Crow, Graczyk collaborated with Raymond Gordon of SIL in the late 1970s. They incorporated entries found in the dictionaries compiled by Helen Medicine Horse and George Reed Jr. into their own dictionary. Graczyk continued this work during his tenure as the linguistic consultant for the Pryor bilingual program in 1994. The fruits of this labor resulted in an online Crow dictionary and the Crow dictionary published by the Crow Language Consortium in 2022.

The Crow language was also featured in the field methods classes at the University of California, Los Angeles with Crow speaker April Storey and at Georgetown University with speaker Arnold Jefferson; these courses were taught by Pamela Munro in 1987 and Mark Sicoli in 2016, respectively. Published works that resulted from the UCLA field methods course include Bradshaw (1989) and Martin (1989), and UCLA graduate student Karen Wallace continued to work on Crow. Collaborating with Crow speakers April Storey, John Stewart, Magdalene Medicine Horse, Betty Blackrock, and Francis Stewart, Wallace wrote a dissertation entitled *Verb incorporation and agreement in Crow* (Wallace, 1993) with Pamela Munro as her dissertation adviser. The materials from the Georgetown University field methods course are currently being reviewed by Arnold Jefferson before being archived at the California Language Archive at the University of California, Berkeley.

The Little Big Horn College (LBHC) archives and the museums in the surrounding area have made efforts to expand their collections and make them more accessible. In addition to the bilingual materials, there is a collection of works relating to the Crow language produced by Joseph Medicine Crow (1913–2016) that has been deposited at the LBHC archives. There are also audio recordings that resulted from the efforts of The Language Conservancy who used the Rapid Word Collection, a technique pioneered by the SIL. More recently, the LBHC archives digitized analog materials and placed them, as well as digital-born ones, on their website.[14] These include oral histories after World War II from the 1950s to the 1980s produced in 2018. Other museums such as the Western Heritage Center in Billings, Montana house recordings of oral histories that feature the voices of Grant Bulltail, Sam Plainfeather, Dora Rides Horse, Winona Plenty Hoops, among others as part of their American Indian Tribal Histories Project from 2003 to 2008.

[14]The LBHC archives website can be accessed via https://lbhc-mukurtu.org/.

## 2.2 The Siouan language family

Crow is a member of the Siouan language family. This family represents roughly twenty language varieties spoken across North America as well as the distantly-related language Catawba. The classification of the Siouan and Catawban languages is shown in Figure 2.1, which is adapted from the tree proposed by Rankin (2010). The terminologies used for the various subgroups were introduced by Voegelin (1941), who was the first to propose three main subgroups: (a) the Missouri River Siouan, which consists of Hidatsa of North Dakota and Crow of Montana, (b) the Ohio Valley (or Southeastern) Siouan, which consists of Tutelo(-Saponi) of Virginia, Ofo, and Biloxi, both of which were spoken in Louisiana, Mississippi, and the surrounding areas, and (c) the Mississippi Valley Siouan, which consists of Hocank (formerly Winnebago) of Wisconsin, Chiwere (or Ioway-Otoe-Missouria) of Missouri and Iowa, as well as the Dakotan and Dhegihan dialect continua. The Dakoton group consists of five main dialects: Santee-Sisseton (or Eastern Dakota), Yankton-Yanktonai (or Western Dakota), Teton (or Lakota), Assiniboine, and Stoney (Parks and DeMallie, 1992; Collette, 2022). On the other hand, Dhegihan has four main dialect groups: Quapaw, Omaha-Ponca, Kansa, and Osage.[15]

Many of the subgroups are readily accepted by most Siouanists, but the evidence used to support the individual subgroups is varied. Reviewing the classification of the Siouan family, Rood (1979) concludes that the only subgroup to receive strong evidence is the Missouri River branch, pointing to shared innovations that include denasalization of vowels and consonants. Evidence supporting the other proposed subgroups, Ohio Valley and Mississippi Valley, remain relatively weak. Since then, Oliverio and Rankin (2003) provide more convincing evidence that the Ohio Valley languages consist of a subgroup, based on shared innovations from various domains of grammar not found elsewhere across the other Siouan languages (e.g. $*\check{s} > \check{c}$, compounding of words meaning 'earth' + 'sweet' to yield 'salt', irregular sound changes occurring on select words).

In contrast, the Mississippi Valley subgroup, which Rood (1979, 254) attributes as Voegelin's "wastebasket", has received less attention. Exceptions include efforts by members of the Comparative Siouan Dictionary project. In the Comparative Siouan Dictionary, one finds cognate sets of idiosyncratic lexical innovations in Mississippi Valley, typically compounds (e.g. 'water' + 'sweet' → 'salt'), that are not found elsewhere in the Siouan language family (Rankin et al., 2015). In addition, the Mississippi Valley languages exhibit (a) syllable-initial clusters that were a product of syncope and (b) a voice/voiceless distinction among the fricatives *s/z*, *š/ž*, and *x/ɣ* that was possibly attributed to the result of a (conditioned) change involving Proto-Siouan phonemes $*s$, $*\check{s}$, and $*x$ (Rankin et al., 1997; Larson, 2016).[16]

[15]The term Omaha-Ponca refers to the mutually intelligible dialects spoken by the Omaha and Ponca peoples. While not much work has been done to study differences between these two varieties, Rudin and Shea (2005) report that differences "are slight and mostly involve recently innovated vocabulary."

[16]It is possible that the voice/voiceless distinction in the fricative series was inherited from Proto-Siouan in which case this would no longer constitute as evidence for subgrouping. Although Rankin et al. (1997)

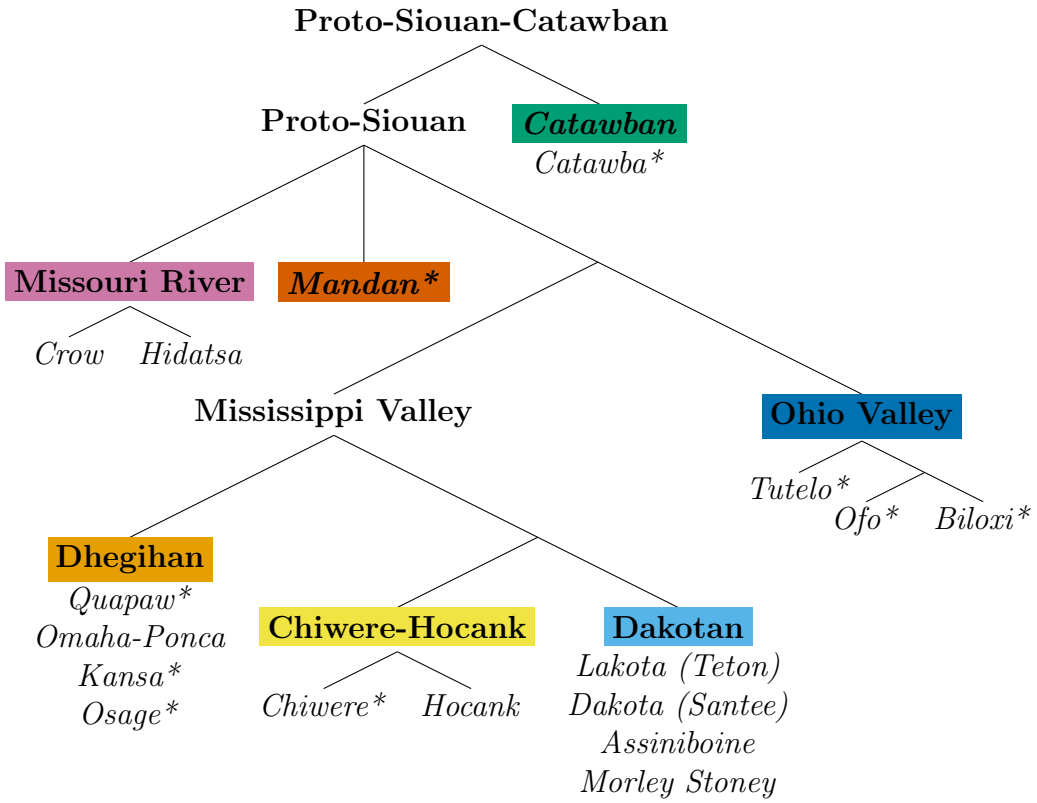



Figure 2.1: Classification of the Siouan-Catawban language family (Rankin, 2010). The asterisk (*) symbol indicates language varieties that have no known fluent speakers.

Other groupings in the Rankin tree are much more controversial. The first-order Mississippi Valley and Ohio Valley subgroup is less clear and previous proposals have Ohio Valley as a direct descendent of Proto-Siouan (e.g. Rood 1979; Rankin 1996a; Mithun 2001, 501). The only evidence I am aware of beyond lexical innovations for this higher-order subgroup is grammaticalization of the singular form of 'to be, do' as the so-called anterior aspect, which is similar to a perfect aspect (Bybee et al., 1994, 54, 61), in Mississippi Valley and Ohio Valley (Rankin, n.d.). However, this grammaticalization pathway is not particularly idiosyncratic, especially if the erstwhile morpheme can be used as a completive (Heine and Kuteva, 2002), which Rankin suggests. Therefore, as in other language families such as Indo-European (Garrett, 1999, 2006), the place of the higher-order subgroups still needs to be resolved.

There is also less certainty in the relative placement of the subgroups within Mississippi

write that "[Proto-Siouan] clearly had voiceless fricatives but probably not voiced ones," they do not provide any further clarification for this claim. If the issue were that positing fricatives as the only series to have a voicing contrast is typologically uncommon (Maddieson, 2013), they would still need to posit such a system for Proto-Mississippi Valley Siouan (as well as for several of the existing Mississippi Valley Siouan languages).

Valley, as noted by Rankin (2010) himself. The low-level subgroups which have diverged to a much lesser extent, such as the Dhegihan and Dakotan continua, are also issues that deserve greater attention. In general, Ofo and Biloxi have been considered to form a constituent (although see Wolff 1950a, who remarks that Biloxi and Tutelo are more closely related based on phonological evidence). However, support for this claim is not particularly strong—Oliverio and Rankin (2003) mention a single regular sound change (i.e. loss of initial $*w$) shared between the two languages, and Haas's (1968) suggestion comes from observations of morphological and lexical innovations, but she does not provide any examples.

Finally, the place of Mandan within the tree has been highly debated owing to a large number of shared vocabulary between Mandan and Hidatsa and the small number of shared innovations with the other more well-established subgroups (Parks and Rankin, 2001). According to Rankin (2010), some linguists analyze Mandan as being closer to the Missouri River subgroup (e.g. Headley, 1971), whereas others analyze it as closer to the Mississippi Valley subgroup (e.g. Voegelin 1941, John E. Koontz).[17] Still, some prefer Mandan be left in its own isolated subgroup, including Rankin himself.

Distant genetic relationships have also been proposed, such as the Catawban (or Eastern Siouan) languages, Catawba and Woccon, of South Carolina (Siebert, 1945a,b; Rankin, 1998) and Yuchi (or Euchee) of Oklahoma (Haas, 1951; Kasak, 2016; Rankin, 1998), with Catawban claimed to be more closely related to Siouan than Yuchi. The consensus is that Catawban is a distant relative of Siouan, with the most compelling evidence coming from comparisons of the classificatory, instrumental, and pronominal prefixes. However, Yuchi is still considered by some an isolate.

The geographical distribution of the language varieties considered in this study is shown in Figure 2.2. Keep in mind that the map conceals the migrations that have occurred in the recent past. For example, although speakers of Ofo and Biloxi were located in Louisiana and Mississippi at around the time of contact, it is likely that these two groups of people migrated from the Ohio Valley (Swanton, 1923).[18] In fact, as Swanton claims, the southward migration by the Ofo tribe from southern Ohio may have been as recent as the 17$^{\text{th}}$ century according to ethnohistorical research (Swanton, 1909, 1923, 1943). This claim, however, is tentative, but if accurate, would situate Ofo closer to Tutelo and Catawba, as indicated on the map below (see also Rankin, 1985).

[17][Article om Mississippi Valley linguistic subgrouping], undated, Box 1, Lakota, Dakota, Nakota Indigenous Language Dictionary, Papers (RG 12-05-16), Archives & Special Collections, University of Nebraska–Lincoln Libraries.

[18]In addition to Tutelo, other closely attested varieties spoken in and around Virginia include Saponi, Moniton, and Occaneechi (Oliverio and Rankin, 2003).

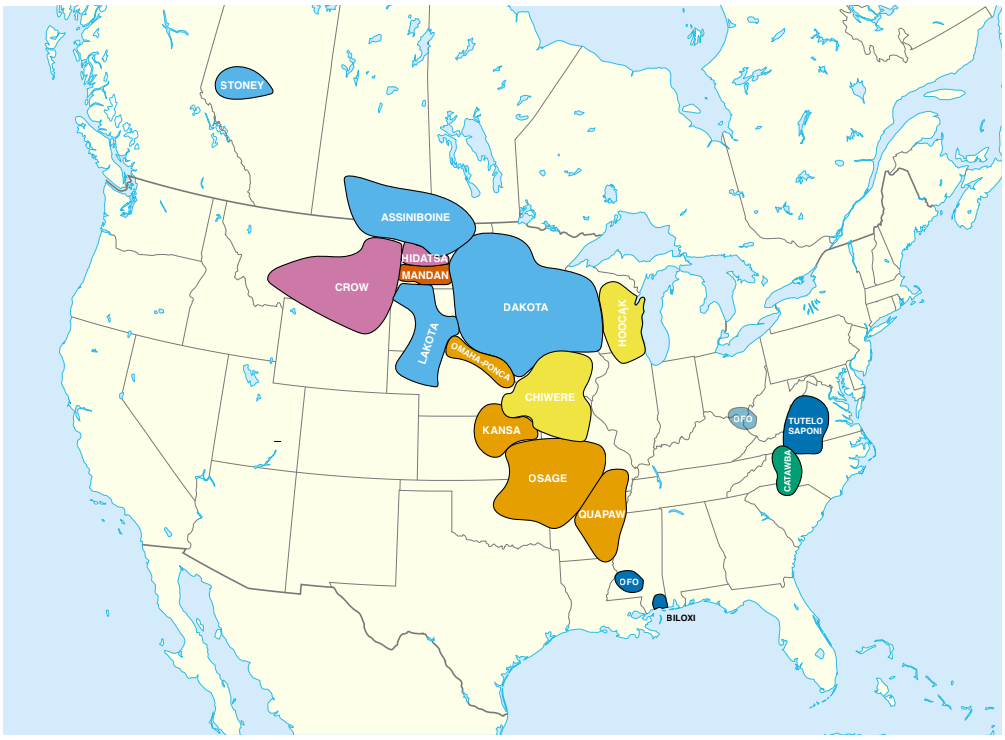



Figure 2.2: 'Pre-contact' distribution of the Siouan languages (adapted from Wikimedia Commons) and Siouan family tree with date estimates (adapted from Rankin, 2010).

Linguistic areas are regions where structural features are shared across three or more languages due to contact (Thomason, 2001, 99). At least two regions that are said to consist of linguistic areas coincide with the locations where Siouan languages have been spoken: the Great Plains and the Southeast. The Great Plains region, which spans west of the Mississippi River and east of the Rocky Mountains, consists of many neighboring languages from the same genetic lineage, including Algonquian, Siouan, Caddoan, Uto-Aztecan, and Kiowa-Tanoan. The Southeast region usually extends as far north as West Virginia and Maryland and as far west as Louisiana and Arkansas. Language families in this historically diverse area include Iroquioan, Siouan, and Muskogean (Martin, 2004), and the two Siouan languages, Quapaw and Tutelo, are on the periphery of this alleged Sprachbund. In his (1976) monograph *An areal-typological study of American Indian Languages north of Mexico*, Sherzer compiles information about the linguistic traits shared across languages in these two regions, but most of the traits he identifies as distinguishing each area are traits commonly found in languages throughout North America (see Campbell, 1997). Consequently, Sherzer (1976, 248) writes that "it seems valuable to view the Plains as consisting of several linguistic areas," and he makes the same conclusion for the Southeast.

The study of contact effects between Siouan and other language families in North America is relatively nascent. Still, there is evidence that borrowing occurred in many of the Siouan

languages with neighboring languages in all domains of grammar. Rankin (1993) reports loanwords of cultigens and technology, originally identified by John E. Koontz, from Algonquian and Uto-Aztecan (see also Parks and DeMallie 1992 and Collette 2022 for loanwords in Stoney from Plains Cree, Jacques 2012 on the etymology of 'bear' in Siouan, and Collette 2023 on the borrowing of bird terms).[19,20] Many other loanwords, such as Omaha *ttappuska* 'school' from Pawnee *taápuska*, have also been noted in drafts and correspondences found in archival records and in the archived Siouan linguistics mailing list from 1998 to 2014.[21]

Oliverio and Rankin (2003) identify semantic shifts in the Ohio Valley languages that were likely influenced by languages in the eastern U.S., such as 'sacred > snake'. Following the original work done by Rankin, Kaufman (2013) suggests that idiosyncratic uses of positional auxiliaries in Biloxi were a Muskogean influence.[22,23] There have also been some suggested phonological convergences. For example, Rankin proposes that the idiosyncratic simplification of heterorganic clusters in Dhegiha (e.g. Proto-Siouan **pk* > Proto-Dhegiha **kk*) was due to Algonquian influence and the retroflexion of sibilants in Quapaw is an areal trait of the Southeast (Rankin, 1988).[24] These examples thus illustrate that contact between Siouan and non-Siouan peoples (and among Siouan peoples) has been somewhat intense.[25]

Despite the many advances in the past century, work in comparative Siouan linguistics has faced several challenges. The most pressing concern is the scarcity of documented materials, especially for the Ohio Valley languages. Even when documentation does exist, a significant amount of philological work is often required to interpret the materials. This is particularly true of materials recorded by early language workers, such as James Owen Dorsey, who first worked as a missionary and then as a linguist under John W. Powell to document several of the Mississippi and Ohio Valley languages. Like many others before him, Dorsey did not consistently transcribe aspiration (and vowel length), which Siouansts concluded is phonemic

[19][Correspondences between Frank Siebert and John Koontz about Siouan-Algonquian loanwords], undated, Correspondence – Koontz, John, Box 2, Frank Siebert Papers, American Philosophical Society.

[20][Correspondences between John Koontz and David Costa about Siouan-Algonquian loanwords], 1989, JEK Siouan notes, Box 6, Robert Rankin papers (NAA.2014-16), National Anthropological Archives, Smithsonian Institution.

[21][Correspondences between Douglas Parks and John Koontz about Pawnee-Omaha borrowing], 1986, Correspondence for PS initial Koontz, Box 5, Robert Rankin papers (NAA.2014-16), National Anthropological Archives, Smithsonian Institution.

[22][Conference paper on areal features of the Southeast], Robert Rankin, 1978, Unpublicized areal features of the Southeast Musk conference paper, Box 30, Robert Rankin papers (NAA.2014-16), National Anthropological Archives, Smithsonian Institution.

[23][Conference paper on Muskogean influences on Biloxi phonology and morphology], Robert Rankin, 1982–1990, Further observations on Biloxi phonology and morphology, Box 31, Robert Rankin papers (NAA.2014-16), National Anthropological Archives, Smithsonian Institution.

[24][Dhegiha Siouan, Algonkian, and the languages of the Southeast: Some phonological convergences], Robert Rankin, 1975, RLR publications and manuscripts, Box 34, Robert Rankin papers (NAA.2014-16), National Anthropological Archives, Smithsonian Institution.

[25]Naturally, languages in other families also borrowed linguistic features from Siouan languages. See, for example, Rankin (1985) on the borrowing of 'eight' in Eastern Illinois Algonquian from the Ohio Valley languages, and Rankin (1987) and Hollow and Parks (1980) for borrowing of fricative ablaut—sound-symbolic alternations involving fricatives—from Siouan into Choctaw and Arikara, respectively.

in most, if not all, Siouan languages. As a result, many linguists in the mid-19$^{th}$ century who relied on the work of Dorsey's materials collapsed the inconsistent contrasts between tense (or geminated) and aspirated series that Dorsey had difficulty perceiving.[26] By the time the project to construct a Comparative Siouan dictionary of cognate sets and reconstructions began in 1984, members of this project were already aware of these and other issues (see Rood 1979 for a fuller discussion of issues in comparative Siouan linguistics until the late 20$^{th}$ century).

The 21$^{st}$ century presents a different set of issues. Members of the Comparative Siouan Dictionary (CSD) project today either have passed away or are no longer engaged in comparative Siouan linguistics. The task of understanding the decisions that went into developing the CSD is made even more difficult (see Larson, 2016). Yet, despite the fact that Rankin (2010), who was a principal member of the CSD project, expressed great uncertainty about subgrouping within Siouan strongly suggests that the traditional means of assembling cognates and identifying shared innovations, especially sound changes, did not shed much additional light on the problem of the internal classification of Siouan. For example, one reason why the Mississippi Valley branch is still considered impressionistic is that reconstructions of Proto-Mississippi Valley are almost always identical to reconstructions of Proto-Siouan.[27]

## 2.3 Structure of the dissertation

This dissertation is structured in the following way. Chapter 3 argues that fieldworkers who are describing the semantic grammar of a language may wish to consider co-speech gesture as an important resource for conveying abstract grammatical notions. The genesis of this work lies in the lack of previous work that rigorously analyzed the semantics of modal and aspect marking in Crow that participate in triggering multiple exponence. During the semantic elicitation sessions, I noticed that Jack Real Bird, a collaborator and fluent speaker of Crow, was employing gestures, in addition to his English utterances, to concretize the specific meanings of his Crow utterances. These gestures were not random and not devoid of semantic content; instead, they were meaningful within the situated, interactional setting. This chapter focuses on the aspect markers, *-dahku* and *daachi*, whose meanings are not entirely clear. Employing discourse and gesture analysis, I argue that the former is most appropriately analyzed as an iterative and the latter as a continuative.

[26][Interpreting the Transcriptions of James Owen Dorsey in Omaha, Ponca, Kansa, Osage, Quapaw, and Biloxi], Robert, Rankin, 2005, Siouan-Caddoan Conference, Box 27, Robert Rankin papers (NAA.2014-16), National Anthropological Archives, Smithsonian Institution.

[27]I surmise that the reason why Proto-Mississippi Valley is considered conservative lies in the fact that the suggested lexical cognates between languages in the Mississippi Valley branch and Catawba share similar sound correspondences. Thus, one way to explain the parallels in sounds correspondences across lexical cognates found in the distantly-related languages is to assume that those sounds were maintained when Proto-Mississippi Valley diverged from Proto-Siouan, but that Proto-Siouan had also preserved those same sounds when it diverged from Proto-Siouan-Catawban.

Chapter 4 presents an account of the patterns of multiple exponence in Crow within the framework of Distributed Morphology. Under the view that raising and control in Crow are derived via A-movement (Hornstein, 1999), the main generalization is that only unergatives may exhibit multiple-person marking in raising constructions. On the other hand, all verbs show multiple marking of person features in control and causative clauses. The analysis hinges on the crucial assumption that a necessary precondition for the (multiple) occurrences of A-set morphemes is agreement between a probe on Aux and the highest accessible DP argument, such that multiple-person marking is simply the result of pronouncing all copies that bear nominative Case within a single A-movement chain.

Chapter 5 investigates the diachrony of multiple exponence in Crow. Although most occurrences of multiple exponence in Crow can be explained by grammaticalization of a lexical verb to a grammatical suffix, cases of multiple exponence that involve modal auxiliaries developed through different pathways. In particular, first I argue that multiple exponence observed across the set of modal auxiliaries originated with the grammaticalization of the motion verb **híi* 'arrive there' as a future suffix *-ii*, retaining its agreement when it grammaticalized. Then, the inflectional future then served as the basis for the formation of modal auxiliaries *-iimmaachi* 'will, must', *-iih* 'may, might', and *-iishdaachi* 'should'. Finally, co-occurrence of person agreement on these modal auxiliaries was later extended to another modal *-isshi* 'feel like', for which cognates can be found across all Siouan languages—a distinct case of multiple exponence begetting additional multiple exponence.

Chapter 6 concludes. Appendix A, B, and C are finding aids for the archival materials that have been incorporated into this dissertation.

# Chapter 3

# Documentation

## 3.1 Introduction

Fieldworkers who investigate the semantic grammar of a language have a range of tools and techniques at their disposal.[1] One standard approach is to provide a discourse context (verbally or nonverbally) to language consultants and then ask for one of three things: a suggestion for a sentence in the target language that is based on the context ('What would you say...'), a translation of a sentence from the contact language (or meta-language) into the target language ('How would you say...'), or an acceptability judgment of a specific utterance in the target language ('Could you say...').[2] Because information about the semantics of an utterance can often be difficult to ascertain, approaches to exploring the semantics of a language help to provide us with important clues to truth conditions and felicity conditions. Moreover, while consultants often have clear and crisp judgments about certain sentences, the reasons for these judgments are almost always inaccessible to them (Matthewson, 2004). Thus, semantic fieldwork faces distinct challenges, and the range of available tools and techniques helps to facilitate the collection and analysis of semantic data.

The main proposal of this paper is that co-speech gesture constitutes a type of semantic data that can be used when investigating particular semantic phenomena, to provide additional clues about the semantics of elicited utterances. Although we may be the first to make this claim explicit in a paper about semantic methodology, examining gesture as semantic data is not a novel practice among fieldworkers. For example, in Enfield's investigation of the semantics of demonstratives (Enfield, 2003a) and kinship (Enfield, 2003b) in Lao, he places co-speech gesture in a central role in his analysis to indicate spatial meanings and relations. Dingemanse (2015) also analyzes gestures, describing how they can be used to shed light

[1] This chapter is based on a co-authored publication in the open-access journal *Semantic Field Methods* with Schuyler Laparle, who consented to my incorporating the article as a chapter in this dissertation. As such, I use the pronouns *we/us/our* to refer to Laparle and myself and retain the use of 'paper' in reference to this chapter.

[2] See Bochnak and Matthewson 2020 for an overview of the common strategies used to present contexts to language consultants.

on multimodal folk definitions and illuminate the elusive meaning of ideophones in Siwu, a Niger-Congo language. Lastly, Defina (2016) examines gesture in a study on serial-verb constructions in Avatine, also a Niger-Congo language, and finds that these constructions tend to occur with single gestures, suggesting that these constructions describe single events. Our paper therefore contributes to the ongoing discussion on how documenting and analyzing gestures co-produced with speech can shed light on properties of the language's semantic grammar.

However, the elicitation session itself is a situated, interactional setting that represents a site in which to study the moment-by-moment unfolding of social interactions between the co-participants, the linguist and the consultant. We therefore consider, unlike previous studies, the actions performed by both the linguist and the consultant, rather than just focusing on the latter. Our case study involves an elicitation session that investigates aspect in Crow, a Siouan language of Montana, USA. Utterances elicited during fieldwork are not typically regarded as 'naturally occurring' language.[3] Data for this study are drawn from video recordings of the elicitation session that were collected by the first author. By combining discourse analysis and gesture analysis, we argue that during elicitation, consultants sometimes employ gestures as an embodied resource to concretize and convey abstract grammatical notions, such as aspect. As such, clues to the semantics of the consultant's speech can also be found within the gestural component.

## 3.2 The alignment between speech and gesture

Language is inherently multimodal, consisting not only of the verbal mode but also of a kinesic mode in which such movements as facial expressions, posture, and, most prominently, co-speech gesture contribute directly to linguistic meaning (Stivers and Sidnell, 2005). As we speak we are constantly moving our hands and bodies, contributing semantic, pragmatic, and social meaning through both modalities. Early work by McNeill (1985; 1992) and Kendon (1980; 2004) popularized and emphasized the intertwining of co-speech gesture with human language. In these works, and in subsequent works that span different research disciplines, it has been shown time and time again that co-speech gesture aligns in both time and meaning with accompanying verbal utterances.

In particular, gesture scholars have increasingly observed that speakers often concretize grammatical notions, such as aspect and transitivity, in the form of co-speech gestures (e.g. Duncan, 2002; McNeill, 2003; Parrill et al., 2013; Boutet et al., 2016; Cienki and Iriskhanova, 2018; Wu and Cienki, 2019). Central to the study of aspect and gesture is the idea that aspect involves how speakers construe the (internal) structures of events. For example, as Comrie (1976, 3) puts it, aspect involves the "different ways of viewing the internal temporal constituency of a situation." While aspect encompasses a wide range of temporal phenomena,

[3]This is not to say that translation practices are strictly an artifact of linguists interacting with speakers. As an anonymous reviewer points out, individuals who are learning their heritage language may frequently ask more fluent speakers to translate certain words or phrases into the heritage language.

gesture research has primarily focused on the distinction between imperfective and perfective, in which the former involves viewing the situation from within (i.e. internally) and the latter involves viewing the situation as a whole (i.e. externally).

In describing gestures and their associations with accompanying verbal utterances, there is a bevy of kinesic features that can be considered, such as hand shape, position of the hands relative to the speaker's and interlocutor's bodies, movement schemas, speed, duration, repetition, and handedness (one- vs. two-handed). In previous studies, differences in complexity of movement, duration, and repetition of gestures have been linked to different aspects (e.g. Duncan 2002; Parrill et al. 2013). For example, longer-lasting, more complex gestures tend to be produced with the imperfective rather than the perfective. Other studies have analyzed gesture in terms of 'boundedness' (e.g. Boutet et al. 2016; Cienki and Iriskhanova 2018). Bounded gestures, which are characterized by accelerated, ballistic, and energetic movements, have been found to correlate with perfective aspect, whereas unbounded gestures, which are described as smooth, controlled, and continuous, tend to occur with imperfective aspect. While greater complexity of a gesture reflects the relatively complex internal event structure of the imperfective, greater care and control in producing the gesture reflects the greater amount of information about the internal structure of the event speakers have access to when they employ the imperfective.

This paper focuses on the semantic contribution of co-speech gesture during semantic elicitation. In particular, we discuss the ways in which co-speech gesture iconically depicts properties of an event's structure, either concretely by tracing the trajectory of movement involved in an event, or metaphorically by treating an event's duration and temporal structure as a virtual timeline in the gesture space.[4] By incorporating the notion of gesture complexity into our investigation of aspect in Crow, we find that whereas iterative aspect occurs with kinesically complex gestures that involve repeated movements, continuative aspect may be associated with simpler, uni-directional gestures, produced slowly and with greater control.[5] In fact, many of the gestures we observe and discuss are well-documented in the literature, including those that indicate time, duration (Cooperrider et al. 2014), and manner and path of certain motions (Ozyurek and Kita 1999), as well as those that contribute pragmatic information, such as emphasis (Loehr 2012) and illocutionary force (Kendon 1995). Nevertheless, considering gestures as a fundamental part of the meaning-making process, specifically between fieldworkers and consultants, remains underutilized.

This case study therefore aligns with previous studies on gesture and aspect by describing ways in which gesture reflects event structures. It also serves as an illustration of how the alignment between gesture and speech can be helpful in documenting and describing a language, especially when the semantic grammar is not yet well understood. Furthermore,

[4]By 'iconicity', we mean that some physical feature of the gesture, such as movement or shape, resembles some feature of the event described. See Mittelberg 2014 for a summary of the use of 'iconicity' in gesture studies, and debates therein.

[5]Since the data we analyze in this paper is limited, we do not make any claims about whether aspect is associated with complexity or boundedness of co-speech gesture. Instead, we focus our efforts on the iconicity of gestures as they pertain to the representation of the event structure.

in contrast to previous studies, the focus is not on perfectives and imperfectives, but on grammatical expressions that encode iterative and continuative aspect in Crow.

## 3.3 Aspectuals in Crow

Crow is a highly polysynthetic, head-marking language of Montana belonging to the Siouan language family. While there have been significant efforts to document and describe the language since the early 20th century (Lowie 1941, 1960a; Old Horn 1975; Kaschube 1978; Wallace 1993; Graczyk 2007, among others), its semantics remains understudied in comparison to other areas, especially morphosyntax.

Data used in this paper, unless otherwise indicated, come from the first author's fieldwork from 2018 to 2020 on the Crow Indian Reservation. Our investigations into aspectuals in Crow primarily involve Crow consultants Felice Big Day, Jack Real Bird, and Cyle Old Elk. The data are currently archived with the Survey of California and Other Indian Languages at the University of California, Berkeley (Alden et al., nd). The data we cite from other sources maintain their original orthography and interlinear glossing. In all other cases, the orthography used in this paper follows the conventions employed in Graczyk (2007, 9–12), and the list of IPA correspondences can be found therein.

### 3.3.1 Earlier descriptions: Wallace (1993) and Graczyk (2007)

In our investigation of aspect in Crow, we examine the semantic differences between *-dahku* and *-daachi*, which have both been roughly translated as 'keep on' by speakers and linguists alike. Brief descriptions for these two morphemes have previously been provided by Wallace (1993) and Graczyk (2007) who refer to the two morphemes as 'continuative' aspectuals.[6] In her dissertation on Crow, Wallace (1993, 129) notes that *-dahku* and *-daachi* have "subtle semantic variations (for example, continuous vs. intermittent activity)." Unfortunately, she does not provide any clarification as to which meaning corresponds to which morpheme. What she does provide are the two examples in (7a) and (7b) with the respective morphemes *-dahku* and *-daachi*.[7,8] However, not only are the two morphemes glossed in the same way, but the example given in (7a) also contains the habitual *-ii* which makes it more challenging to obtain a clear understanding of the differences between *-dahku* and *-daachi*.[9]

(7) a. B-iikukku-waa-**káhku**-ii-k.
1A-listen-1A-**continue**-HAB-DECL

[6]Lowie (1941, 9–10) provides an even more brief and vague description of the two aspectuals, describing them as denoting "continuation of a state or action."

[7]The forms of the two suffixes undergo suppletion when inflected for first- and second-person singular.

[8]In Crow, obstruents often undergo intervocalic laxing. Therefore, *b* and *d* may occur as *w* and *l*, respectively, in environments where they occur between vowels.

[9]The abbreviations used in the glosses are as follows: 1: first person, 3: third person, A: active, B: stative, DECL: declarative, DEF: definite, DIMIN: diminutive, HAB: habitual, INSTR: instrumental, JUNCT: juncture, POS: possessive, and REL: relativizer.

'Once in a while I listen.' (Wallace 1993, 129, Ex. 186a, emphasis ours)

b. Baakáat-kaate aw-iassia-waa-**lichi**-k.
child-DIMIN 1A-watch-1A-**continue**-DECL
'I kept on watching the kids.' (Wallace 1993, 129, Ex. 186b, emphasis ours)

On the other hand, Graczyk (2007, 307–308) writes that *-daachi* has the meaning "continue in a position or activity voluntarily," while *-dahku* "suggests more of an iterative activity than does *daachi*."[10] To illustrate the uses of *-dahku* and *-daachi*, Graczyk provides a set of example sentences, two of which are provided in (8a) and (8b).[11] Just like Wallace, Graczyk glosses the two aspectual suffixes as 'continue'. The accompanying English translations also use the aspectually vague English construction 'keep V-ing' which fails to discriminate between the two meanings.

(8) a. hinne shikáak-kaatee-sh baap-taatchée iseé ii
this boy-DIMIN-DEF day-every his.arrows INSTR
ihchilasshihk-a-**lahkú**-k
practice-JUNCT-**continue**-DECL
'everyday this boy kept practicing with his arrows.'
(Takes Gun 1984, 8, as cited in Graczyk 2007, 308, Ex. 33, emphasis ours)

b. íahk is-ak-baa-íassee-sh óotchia-lak baapí-lak
those 3POS-REL-INDEF-watch-DEF night-and day-and
kam-maa-íassii-a-**kaa**-u-k
then-INDEF-watch-JUNCT-**continue**-PL-DECL
'those watchmen of his kept watching night and day'
(Old Coyote 1980, 7, as cited in Graczyk 2007, 308, Ex. 37, emphasis ours)

In sum, the descriptions and the examples present at least two issues. First, despite their differences in meaning being acknowledged, the two morphemes are glossed in the same way. Second, without specific discourse contexts to target continuative or iterative meanings, it is not entirely clear how to interpret the example sentences and how they distinguish between *-dahku* and *-daachi*.[12]

Part of the reason there is a lack of precise descriptions and illustrative examples may involve the issue of translation. If Wallace's and Graczyk's claims about the two morphemes having distinct aspectual meanings are correct, then speakers of Crow who are asked to

[10]While we do not represent the aspectual morphemes as bearing any accent/stress, Graczyk (2007) considers them to be auxiliaries that undergo obligatory verb incorporation and represents them as *dahkú* and *daachí* in parallel with their verbal counterparts, both of which occur as independent words and are glossed as 'remain'.

[11]The suffix *-daachi* has the suppletive plural form *-kaa*.

[12]Most of the data that Graczyk (2007) provides in his grammar of Crow come from texts and so occur within context. However, many of the texts that he uses are not easily accessible, meaning that other researchers are not able to look at the surrounding context.

translate sentences with either *-daachi* or *-dahku* into English face a dilemma. Although it is possible for speakers of English to express continuative and iterative aspect (e.g. by using adverbials), the language lacks the same grammatical resources that Crow possesses to do so in a straightforward way. As Deal (2015, 169) remarks in her discussion about eliciting modality (and past tense) in Nez Perce, "[w]here speakers can't give translations that are equivalent in both content and implicature, they sacrifice equivalence of content to make sure that certain types of implicatures are avoided." Therefore, one possibility is that speakers of Crow who choose to translate both *-daachi* or *-dahku* using the aspectually vague English construction 'keep on' may do so to avoid implicatures produced by more precise English sentences. Another possibility is that speakers may simply be unable to easily pin down the precise meanings. Given the uncertainties of the descriptions, the two aspectual markers warrant further investigation and the initial insights and observations of Graczyk provide an ideal place to start.

### 3.3.2 Towards documenting co-speech gesture as semantic data

In initial investigations, the first author provided hypothetical scenarios in English before asking for acceptability judgments of selected Crow sentences to distinguish between *-daachi* and *-dahku*. Examples (9a) and (9b) come from Cyle Old Elk. Here, Cyle was provided a discourse context and then asked, based on the given context, if he could say *xaláalaachik* (with *-daachi*), *xaláalahkuk* (with *-dahku*), or both.

(9) Context: I wake up in the morning and I see that it is raining. Throughout the entire day, the rain does not stop at all. When I go to bed at midnight, I see that it is still raining. I tell my mom, "It keeps on raining."

a. chiláakshee-sh b-itchée-m kukáa kan-xaláa-**laachi**-k.
morning-DEF 1A-wake-up-DS from now-rain-daachi-DECL
'It has been raining since I woke up this morning.'

b. chiláakshee-sh b-itchée-m kukáa kan-xaláa-**lahku**-k.
morning-DEF 1A-wake-up-DS from now-rain-dahku-DECL
'It has been raining since I woke up this morning.'
(Cyle Old Elk; Cyle_070219_000.wav: 1:05:37–1:07:40)

In what was a single elicitation, Cyle indicated that "you could do both"; that is, both *-daachi* and *-dahku* are compatible with the discourse context. However, this is just one context and therefore does not prove that they are synonymous; it only means that we still have work to do in understanding exactly how the two forms differ. Even in this single context, as Bochnak and Matthewson (2020, 266) writes, "[t]here is always the risk that the consultant could still envision extra context beyond what the fieldworker verbally describes." As such, the data in (9) represents one of the first steps towards testing additional and perhaps more precise contexts, and supplying a context and then asking for speaker

judgments is only one of several elicitation tools a fieldworker has access to, so it may be worth considering other methods as well.

In particular, our investigation on aspect continues with an eye towards co-speech gesture. In an elicitation session with another Crow speaker, Jack Real Bird, the verb *awáache* 'sit down' was first elicited. Jack was then asked whether it is possible to employ *-daachi* and *-dahku* for that verb and if so, what meanings arise. Jack indicated that *ámmaache* 'I sit down', inflected for first person, can indeed occur with *-daachi* and *-dahku*, as in (10a) and (10b). The translations he provided for both phrases were 'I keep on sitting', which do not help to distinguish between the two sentences.

(10) a. ámmaat-**baa(l)ichi**-k
1A.sit.down-1A.daachi-DECL
'I keep on sitting' (Jack Real Bird; Jack_072519_002.mov)

b. ámmaat-**baakuhku**-k
1A.sit.down-1A.dahku-DECL
'I keep on sitting' (Jack Real Bird; Jack_072519_002.mov)

By examining co-speech gesture and the organization of conversation, we obtain important clues into the differences in semantics between (10a) and (10b). Our claim is that the use of iconic gestures represents different abstract grammatical meanings of the two aspectuals: (i) *-daachi*, which expresses continuative aspect, is associated with gestures that represent a single sitting event over an extended period of time, and (ii) *-dahku*, which denotes iterative aspect, is punctuated by gestures that are comprised of small vertical movements. Thus, our analysis is in concordance with the descriptions of the two aspectuals provided by Graczyk. In what follows, we examine the interactions during the elicitation session between the first author and Jack and provide empirical support for our claims.

## 3.4 Data and methodology

### 3.4.1 Data collection

The elicitation session with Jack Real Bird described above took place outdoors in his yard in Lodge Grass, Montana. During the session, a Sony FDR-AX53 video camera was mounted on a tripod and positioned facing Jack at a slight angle. The first author was seated directly opposite Jack with a pen and notebook. However, as seen in Figure 3.1, only Jack can be viewed within the frame of the video. Jack was also fitted with a lapel microphone that was connected to a Zoom H4n Pro recording device, providing audio from which to transcribe Jack's speech more accurately than via the use of video cameras alone. In total, there are approximately sixty-two minutes of video recordings and seventy-four minutes of audio recordings collected of this particular elicitation session.

The video data feature the first author as a participant, which has several distinct advantages. By being a participant, he is familiar with the setting in which the interactions

Figure 3.1: A still image from the video recording featuring Jack Real Bird.

take place. Although he is not seen within the frame of the video, he is able to recall a portion of his own embodied actions that may have affected Jack's own actions, verbal or otherwise (see Goodwin 2017 on how new actions are built from existing ones).[13] He also has an awareness of the types of meanings that he intended to convey and how he interpreted Jack's speech and gestures. Moreover, if there are any questions about a particular video segment, he can ask Jack for his insights.

### 3.4.2 Methods

To analyze the data and provide support for our claims, we employ discourse analysis and gesture analysis. To our knowledge, these methods have not yet been applied to study the discourse practices and patterns between the linguist and the language consultant during direct linguistic elicitation sessions. Although linguistic elicitation sessions target constructions that are in isolation or prompted by a visual or verbal stimulus and not typically regarded as 'naturally occurring' language, the elicitation itself is a situated, interactional setting which serves as the semiotic and contextual field in which actions and interpretations are (co-)constructed (see Gumperz 1982 on contextualization and Goodwin 2000 on semiotic fields). Regarded as such, the elicitation session constitutes a rich site to study how meanings are conveyed and understood between the co-participants of the speech activity – that is, the linguist and the language consultant – through gesture and speech. Therefore, while recording gesture enables one to analyze data better because gesture can provide clues into meaning, it is also important to consider how meaning is conveyed between the consultant and linguist in interaction.

Much of the gesture literature is concerned with treating communication as a fundamentally embodied phenomenon; that is, how people organize and employ their bodily resources

[13]Still, it is not possible to completely rule out gesture mimicry as a confounding factor.

(e.g. facial expressions, gaze, posture, and manual movements) and their material surroundings to construct meaning. Although discourse analysis has traditionally focused on the micro-level details of a verbal interaction (e.g. overlapping speech, timing of pauses, management of prosody; see Gordon 2015 for an overview of discourse analysis), increasing attention has been paid to the alignment of gesture with discourse structure. For example, eyebrow raises have been shown to reliably align with sentence focus, much like pitch accents (Flecha-García 2010), and mutual gaze has been shown to be a reliable predictor of turn transitions (Jokinen et al. 2009; Jokinen et al. 2013). Despite the emergent turn toward multimodal discourse analysis, the field has yet to take full advantage of considering the contribution of gesture to semantics.

To present the alignment between gesture and grammatical meaning as clearly and carefully as possible, we restrict our focus to gestures that co-occur with elicited Crow constructions involving the verb *ámmaache* 'sit down'. This case study provides a three-minute episode of verbal and embodied interactions between the linguist and the language consultant, Jack Real Bird. The verbal interactions are transcribed using an adapted version of the 'Santa Barbara School' transcription conventions in the table provided below.

| | |
|---|---|
| . | falling, or final, intonational contour followed by noticeable pause |
| ? | rising intonation followed by noticeable pause |
| , | 'continuing' intonation |
| * | grammatically incorrect (restricted to Crow utterances) |
| - | (self-)interruption, abrupt stop in speech |
| : | elongated syllable, additional colons indicate longer elongation |
| / / | phonetic transcription |
| Capital letter | start of sentence |
| (.) | pause ($<$ 0.5 seconds) |
| (0.5) | pause, timed (in seconds) |
| (()) | researcher's comments |
| = | 'latching', no discernible pause between one speaker and the next |
| [ | separate left square brackets, one above the other on successive lines with utterances or gestures by different or the same speakers, indicate onset of conversational overlap |
| *italics* | words spoken in the Crow language |
| **bold** | significant portions of the transcript |

Table 3.1: Transcription conventions

Gestures – specifically hand and arm movements – were coded for GESTURE PHASE, ORIENTATION, HAND SHAPE, and MOVEMENT. We follow Kendon (1980) and McNeill (2005) in dividing each gesture into several phrases that maximally include PREPARATION, PRE-STROKE HOLD, STROKE, POST-STROKE HOLD and RETRACTION. The stroke is considered the nucleus of the gesture in which most of the gesture's energy and meaning is concentrated. Pre- and post-stroke holds denote still portions of the gesture immediately preceding and following the stroke. Preparations are non-meaningful movements performed in order to appropriately position the hands for a proceeding gesture stroke. Retractions are also non-meaningful movements that return the hands to a neutral or rest position.[14] Gesture segmentation and speech alignment were transcribed using ELAN (Wittenburg et al., 2006), a time-alignment annotation software that allows researchers to use a series of tiers for different gesture and speech variables. Our transcription included two tiers for speech (one for each participant), three tiers for gesture phase (one for each form of handedness – left, right, both), and three for gesture description. A screenshot demonstrating a full annotation of a left-handed gesture sequence is given in Figure 3.2.[15] Lastly, hand shape and movement are described qualitatively following the tradition of considering gesture as simulated action (see Hostetter and Alibali 2008).

In total, there are eight gestures that overlap with either a Crow utterance involving the relevant aspectuals or an English translation. The elicitation session with Jack was selected because it was one of the few video recordings of an elicitation session and the only one that involved investigating aspect in Crow; the first author was eliciting place names and terms for specific geographical features at the beginning of the session with Jack (for which video recording was particularly helpful), and the choice to study co-speech gesture had not yet been made. Thus, future work should examine co-speech gestures produced by the same speaker as well as other speakers of Crow in investigations of aspect so as to further assess the reliability and validity of the claims presented in this paper. Despite this shortcoming, the focus on the gestures of a single consultant can still be a fruitful endeavor.

Meaning-making is a situated and dynamic phenomenon that is located within a participant framework alongside specific communicative goals (Goffman, 1974, 1981; Goodwin and Goodwin, 2004). In an elicitation session, a linguist works with a speaker to accomplish specific tasks and each individual takes up specific roles and alignments that allow them to make sense of the speech event. Thus, even if certain gestures are infrequent, we should not be quick to disregard them as random, one-off movements, just as speech is not typically regarded as random, one-off utterances. Instead, co-speech gestures constitute a type of "deliberately expressive movement" (Kendon, 2004, 12) that elaborate on other important meaning-making resources, such as speech and the artifactual environment (Goodwin, 2017).

[14]See Bressem and Ladewig 2011 for a comprehensive description of gesture phases and best practices for annotation.

[15]The gesture annotation scheme employed in our study is a simplified version of the three-tiered system used in Kipp et al. 2007.


Figure 3.2: A screenshot of a portion of our annotations in ELAN, demonstrating the use of speech tiers and the gesture phase and description tiers for left-handed gestures. The alignment between the LH_Phase (left-hand phase) and LH_Des (left-hand description) tiers shows how a single gesture, as segmented in LH_Des, includes multiple gesture phases, as segmented in LH_Phase.

## 3.5 Semantic elicitation: A look at co-speech gesture

To begin, we contrast and compare two interactions in 5.1, one in which a discourse context was not provided at all (i.e. an 'out-of-the-blue' context) and one in which a discourse context was supplied. Specifically, we analyze the elicitation techniques and discourse strategies of the linguist and the language consultant within these two interactions. In 5.2, we turn our attention to interactions where gestures are produced in the context of the aspectuals *-daachi* and *-dahku*. We suggest that *-daachi* corresponds with gestures that iconically depict a single sitting event over an extended period of time – that is, a continuous state or activity. On the other hand, *-dahku* corresponds with more complex gestures that are comprised of repeated vertical movements and serve as iconic depictions of the way in which Jack construes the structure of the event – one that involves iteration rather than continuity. Thus, clues to the abstract grammatical meaning of individual sentences may be found in the way speakers gesture.

### 3.5.1 Eliciting with and without a discourse context

In the interaction given in (11), Edwin and Jack had just been discussing the Crow word *ámmaatbaaichik* 'I keep on sitting', which contains the continuative aspectual suffix *-daachi*

inflected for first person. (The Crow aspectuals -*daachi* and -*dahkuk* appear in bold within the transcripts.)

(11)

1 Edwin: (4.0) And then can I also say (0.6) *ámmaat* (3.2) *baa*: (1.0) how would you
2 say that? (.) Like *baalahkuk*. (0.7) or *ba-* (0.7) *bakuk*. (1.2) Like /t$^{h}$ə:/- (.)
3 You know how (.) so /x/- there's *xaláa**laachi**k* and *xaláa**lahku**k*. (1.2) How
4 would I say (0.7) I- I kept on sitting with the- the: (1.6) /l/ (.) *akuk* something
5 like that.
6 Jack: (1.3) Mm, no.
((Shakes his head.))
7 Edwin: =No.
8 Jack: (0.8) *Ámmaachi- ámmaat**baaichi**k*.
9 Edwin: So I can't say something like *ámmaatbaa-* (0.9) ***baakuhku**k* or something.
10 Jack: Mm you can?
((Squints his eyes and produces a wry expression.))
11 Edwin: Uhuh.
12 Jack: *Ámmaat**baakuhku**k*. (1.3) Yeah, I guess you can say it like that.
((Nods slightly.)) ((Nods more energetically.))
13 Edwin: (2.7) The meaning
14 Jack: It's still the same.
15 Edwin: Yeah (1.7) so-
16 Jack: It's a certain way of saying it?
((Raises his left hand with his palm facing up and lowers it onto his knee.))
17 Edwin: I see.

(Jack_072519_002.mov: 00:53–01:44; Video 1)

At lines 1–5, Edwin attempts to conjugate the verb *awáache* 'sit down' with the suffix -*dahku* for first person, but stumbles and is unable to formulate the Crow form. (The agreement pattern of -*dahku* is highly irregular.) The "like"-prefaced design of his utterances (line 2) attempts to first approximate the form ("*baalahkuk*") and then to approximate the meaning; these non-commitments along with his lengthy pauses signal his uncertainty. However, Edwin abruptly shifts to discussing *xaláalaachik* and *xaláalahkuk* 'it keeps on raining' (lines 2 and 3), accompanied by the sentence-initial discourse marker "you know" indicating shared knowledge between the two participants (Schiffrin, 1987, 267–274). (At the beginning of the elicitation, Edwin had recalled a previous session over a month ago that was only audio recorded (Jack_060619_000.wav) and involved *xaláalaachik* and *xaláalahkuk* 'it keeps on raining', in which the former was characterized by Jack as "a continuous rain" and the latter as "hit-and-miss".)

Edwin endeavors to proceed with eliciting Jack's judgments on the target construction even though he is unable to provide the Crow form or the specific English meaning without

influencing Jack's responses. Note that Edwin also does not provide a discourse context. Instead, he assumes that Jack has picked up on the differences in form between *xaláalaachik*, with the continuative *-daachi*, and *xaláalahkuk*, with the iterative *-dahku*, and trusts that Jack can infer the form he has in mind (lines 4–5) – that is, *awáache* 'sit down' and iterative *-dahku* with first-person subject agreement. However, Jack responds negatively (line 6), Edwin repeats his response (line 7), and then Jack follows up by providing the Crow form (line 8) that was discussed just prior to this interaction ("*ámmaatbaaichik*") to indicate its monopoly over the general meaning of 'I keep on sitting'.

A commonly recurring discourse pattern that is found throughout this and other data is the quadripartite sequence that we refer to as Initiation-Response-Repetition-Evaluation (IRRE).[16] First, Edwin initiates by asking a question (lines 3–5) and then Jack responds (line 6). At this point, the question-answer sequence can be viewed as complete – but not quite yet. Once Jack provides a response, Edwin repeats it (line 7) and this is followed by Jack providing an evaluation of Edwin's animation of his own response (line 8), such as adjusting Edwin's pronunciation if the utterance is in Crow or providing additional (meta-linguistic) commentary. In this way, Edwin's repetition serves to extend the sequence of turns rather than closing it (Schegloff, 2007, 126). As a fluent speaker of Crow, Jack holds claim to the epistemic rights and authority to assess and declaratively respond to Edwin's questions about Crow (Heritage and Raymond, 2005). Edwin acknowledges this difference, and his latched utterance and respeaking of Jack's response (line 7) display his alignment towards and deference to Jack's speech as authoritative.

Even though Jack already provided a negative response, Edwin tries to verify his judgment by replicating it using another Crow form. Again, Edwin's use of hedges ("something like" and "or something") displays his non-commitment to the form ("*ámmaatbaakuhkuk*") as an actual Crow word. At first, Jack hesitates (line 10), marked not only by the rising intonation but also by his facial expressions. Yet as Jack utters *ámmaatbaakuhkuk* at line 12, his slight nod indicates his affirmation towards its ostensible validity. His nods then intensify as he concretizes his affirmation by stating it verbally ("Yeah, I guess you can say it like that."). As Randolph Graczyk (p.c., 2021) points out, the expected first-person singular form of *dahku* is *baa**ka**hku* and not *baa**ku**hku*.[17] When we reached out to Jack Real Bird (p.c., 2021), he noted that he prefers the form *ámmaatbaakahku* over *ámmaatbaakuhku* suggesting that during the session, he may have been accommodating for Edwin's pronunciation of *ámmaatbaakuhkuk*.

At line 13, Edwin's utterance, which noticeably lacks a rising intonation typical of questions, still carries the illocutionary force of one as evidenced by Jack's response at line 14 ("It's still the same."). Here, the function of "still" presupposes the existence of a specific meaning that can be understood as the one associated with *ámmaatbaaichik* (see 13) – that is, within the general semantic realm of 'I keep on sitting'. Just as Edwin was about to follow

[16]The IRRE pattern is reminiscent of the tripartite sequence Initiation-Response-Evaluation commonly found in classroom discourse (Cazden, 2001).

[17]In fact, later in the same elicitation session, Jack employs the expected form, *baakahku*, with the verb *ishtáxpua* 'close eyes'.

up on his response (line 15), Jack offers a speculation on the usage of *ámmaatbaakuhkuk* (line 16). In this case, the subject pronoun "it" refers to the form, while the object "it" refers to the meaning.

The significance of (11) is twofold. First, it highlights the importance for fieldworkers who attempt to produce utterances in the target language and ask for judgments to first double-check the accuracy of the form.[18] Second, it emphasizes the challenge of eliciting sentences in isolation and asking the language consultant directly for its meaning relative to other forms that may be semantically similar. Directly eliciting meta-linguistic commentary can sometimes be insightful, but it is often not sufficient. While Jack acknowledges that *ámmaatbaakuhkuk* fits within the domain of 'I keep on sitting', he is unsure how it is distinguished from the other forms, such as *ámmaatbaaichik*; again, his uncertainty is signaled by the rising intonation he employs.

In the stretch of talk given in (12), which takes place shortly after (11), Edwin provides Jack with a scenario and asks if he prefers *ámmaatbaaichik* or *ámmaatbaakuhkuk* within the given context.

(12)

1 Edwin: So (.) for (0.7) for the, for the I keep on sitting? (1.6) Is there one that
2 describes where (.) you know let's say you're just like sitting here: and you've
3 /sə/- you've sat here for like an entire day.
4 Jack: Mhm.
((Nods.))
5 Edwin: And someon- and you say oh (.) you know (.) I've kept on sitting. Or I- like I
((Dog whines.)) ((Jack nods.))
6 stayed seated. (0.8) Would you say (0.5) *ámmaat**baaichi**k* or would you say
7 *ámmaat**baakuhku**k*.
7 Jack: (0.6) *Ámmaat**baaichi**k*.
((Shifts his gaze slightly to the left.))
8 Edwin: =*Ámmaat**baaichi**k*.
9 Jack: =Would be easier?
((Hands move out from center palms up.))
(Jack_072519_002.mov: 02:07–02:34; Video 2)

At lines 1–3, Edwin begins to construct the context and continues at line 5, marked by prefacing the turn with the connective *and*. Here, Edwin shifts between two animation tiers. In one tier, Edwin speaks as himself as he places Jack within a fabricated but realistic

[18] An anonymous reviewer notes that "[c]onsultants may also accept infelicitous or even flatly ungrammatical constructions, cop to inaccurate glosses, or the like simply to appease a researcher or be regarded as especially helpful." The anonymous reviewer further suggests that the question 'Could I say...' posed by a linguist who is not fluent in the target language may elicit a different response from a question framed using the second person 'Could you say...'. Thus, it is worth considering how viewpoint may affect a speaker's response when formulating elicitation questions.

scenario ("you've sat here for like an entire day"). In the other tier, Edwin speaks as Jack as a figure within the scenario, and by animating Jack, Edwin highlights the target construction ("I've kept on sitting"). Moreover, in addition to the more general sense of 'I've kept on sitting', Edwin provides another target construction as an option, prefaced with "or" – "I stayed seated", which can be understood as more specific than the ambiguous "I've kept on sitting".[19]

In English, the disjunct "or" can give rise to inclusive and exclusive meanings. Within this interaction, however, "or" has an inclusive reading (see Schiffrin, 1987, 177–181). Thus, the options that are made available to Jack are the ambiguous 'I've kept on sitting' or the more specific 'I stayed seated', or both.[20] This is followed by Edwin presenting Jack a choice between two forms: *ámmaatbaaichik* or *ámmaatbaakuhkuk*. By virtue of being a language expert and being familiar with working with the first author, Jacks holds the epistemic authority and agency to construct his own responses to questions even if they may be in the form of a forced-choice task. As in previous elicitation sessions, Jack will sometimes indicate whenever both or neither forms are appropriate. In this way, there are implicitly at least two other choices: both and neither.

After a brief pause, Jack responds with *ámmaatbaaichik* (line 7), Edwin repeats his response (line 8), and then Jack provides additional commentary (line 9). As in (11), we again find the quadripartite IRRE sequence (lines 6–9). At line 9, Jack frames his assessment ('Would be easier?") in terms of relative ease, but his utterance is accompanied by rising intonation, which again indicates a degree of uncertainty. As this interaction shows, Jack asserts his preference for *ámmaatbaaichik* over *ámmaatbaakuhkuk*, and supplying a scenario allows us to gain a clearer understanding of the meaning of *ámmaatbaaichik*; that is, the use of *-daachi* seems to be compatible with a continuous activity or state. To briefly summarize, these two interactions serve to illustrate how context can aid in providing a common ground.

### 3.5.2 Gesture iconicity and grammatical aspect

Having discussed particular issues that arise during semantic elicitation as well as some notable discourse patterns that emerge within interactions between Edwin and Jack, we now examine interactions that involve iconic gestures that represent abstract grammatical notions of Crow utterances. In the interaction provided in (13) below, Edwin and Jack have just

[19]The construction *keep on* appears to be ambiguous between two readings: a continuative and an iterative. In the continuative reading of *Logan keeps on sleeping*, Logan remains asleep for some period of time. In the iterative reading, there are multiple sleeping events. In an earlier version of this paper, we indicated that *keep on V-ing* is a hypernym of *stay V-ing*, but this is not the case. For example, the sentence *Logan stays sleeping, but Logan does not keep on sleeping* is not necessarily contradictory if (a) *Logan does not keep on sleeping* is understood as involving multiple sleeping events, and (b) Logan fell asleep once and remained asleep. If, on the other hand, *Logan does not keep on sleeping* is understood to involve a stative reading, then the entire sentence is indeed interpreted as a contradiction.

[20]The option for both is distinct from the other two options because it is possible that Jack may have interpreted 'I've kept on sitting' with an iterative reading.

finished investigating quantification and Edwin elicits the construction 'I keep on sitting' in Crow.

(13)

1 Edwin: Um and I wanted to ask about (.) um so let's say that (0.6) um (1.2) for the
2 word to sit (2.3) *awáachik*. (1.5) If I said (1.7) */awa:la:ʔə/- (1.2) what was
((Jack nods.))
3 it? (1.0) How would you say to (.) like (.) to keep on sitting?
4 Jack: (2.3) *Ámmaat**baaichi**k*.
5 Edwin: (1.8) *Ámmaat**baaichi**k*.
6 Jack: That's to keep on [sitting. (1.9) I've sat a long time. *Ámmaache shíak*. (1.5)
7 Edwin: [So I keep on sitting.
8 Jack: [*Ámmaache* is to sit, (1.5) *shíak* is long.
((Palms lower.)) ((Left arm extends leftward.))
↳See Figure 3.3. ↳See Figure 3.4.
9 Edwin: [*Ámmaache*. =*Shíok*.
(Jack_072519_001.mov: 16:45–17:05, Jack_072519_002.mov: 00:00–00:29; Video 3)

Figure 3.3: Pre-stroke hold and post-stroke hold of the two-handed push down gesture aligned with an English translation of *ámmaache*, "to sit" (Ex.13, line 7).

At the beginning of the episode, Edwin introduces the Crow word 'to sit' using the form *awáachik*, a combination of *awáache* 'sit down' and declarative -*k* (lines 1 and 2). After he attempts (and fails) to produce the well-formed Crow form *awalaachik* 'he/she keeps on sitting' (he wrongly produces */awa:la:ʔə/-), Edwin asks Jack how to say "keep on sitting" in Crow (lines 2 and 3). Jack responds with the Crow *ámmaatbaaichik* 'I keep on sitting', which contains the continuative aspectual suffix -*daachi* and both the verb and the suffix are inflected for first person (line 4). Edwin repeats his response (line 5) and Jack follows up by providing an English translation at line 6 ("That's to keep on sitting."). However, Jack

Figure 3.4: Pre-stroke hold, stroke, and post-stroke hold of the lateral sweep aligned with an English translation of *shíak*, "long" (Ex.13, line 7).

later offers a different Crow sentence *ámmaache shíak* 'I've sat a long time'. He decomposes the sentence into what he conceives as distinct linguistic units – *ámmaache* and *shíak* – and proceeds to supply an English translation for each one ("*Ámmaache* is to sit, *shíak* is long."). At the same time, Edwin partially repeats Jack's speech in his overlapping and latched utterances which altogether displays his alignment towards Jack's speech as authoritative (lines 8 and 9).

At first blush, the sudden shift from talking about *ámmaatbaaichik* 'I keep on sitting' to *ámmaache shíak* 'I've sat a long time', which ostensibly bears a different meaning, seems unexpected. Why does Jack suddenly offer a different Crow phrase from the one under discussion? We highlight two key properties of the interaction that shed some light on this question. The first involves the way in which Jack's utterances at lines 6 and 7 are organized and unfold over time. At the start of line 6, Jack offers a meta-linguistic evaluation – a translation – in English of the Crow form *ámmaatbaaichik* ("That's to keep on sitting."). The translation serves to approximate the meaning of *ámmaatbaaichik* in English. After a short pause, Jack offers a similar but different English sentence ("I've sat a long time."). Note that the meaning of this sentence is one of the possible interpretations of the ambiguous "I've kept on sitting". In other words, Jack's utterance of "I've sat a long time" is an attempt to elucidate the meaning of *ámmaatbaaichik*. Finally, he translates "I've sat a long time" into Crow as *ámmaache shíak*. Jack's utterances therefore consist of a series of small steps traversing through a semantic space that gets mapped onto English and Crow forms along the way. In this way, each member of the sequence "*Ámmaatbaaichik*" > "I've kept on sitting" > "I've sat a long time" > "*Ámmaache shíak*" is constructed using the semantic resources of the preceding utterance.

The second key property involves the position of Jack's turn within the the larger sequence of turns. Specifically, the exchanges in lines 2–6 correspond to the familiar IRRE sequence also found in excerpts (11) and (12) and point to the relevance of Jack's utterances in line 6 within the interaction whose overarching goal is to answer the question posed by Edwin.

First, Edwin initiates by asking a question (lines 2 and 3) and then Jack responds with an utterance in Crow (line 4). After Edwin repeats Jack's response (line 5), Jack then provides additional commentary (line 6). In this way, the Crow sentence that Jack provides ("*Ámmaache shíak*") at line 6 should not be interpreted as irrelevant and a violation of Grice's (1975, 46) Maxim of Relation: "Be relevant." Rather, his utterance should be understood as being relevant by way of constituting part of his evaluation of *ámmaatbaaichik* and by way of being semantically similar to *ámmaatbaaichik*.[21]

Having discussed the verbal component of line 6, we now turn to the gestures Jack co-produces while uttering "*Ámmaache* is to sit, *shíak* is long". Like his speech, his gestures depict the manner and duration of the sitting event. The first gesture aligns with Jack's utterance "*Ámmaache* is to sit". Here, he performs a two-handed open palm gesture, lowering down-turned hands to his lap (Figure 3.3). The gesture's stroke (indicated by the red arrows) iconically represents the downward movement involved in sitting, and the post-stroke hold is self-referential to Jack's own sitting position. It is important to note that this gesture portrays only a single sitting event.

The second gesture occurs with the utterance "*shíak* is long". As shown in Figure 3.4, Jack performs an asymmetric two-handed tracing gesture, beginning with his index fingers held together in front of his body, and moving his left hand outward in a lateral sweep to its full extension. His right hand remains in the initial position (indicated by the red circles in the images), held up directly in front of his body as his left hand metaphorically traces the event's duration along a right-to-left virtual timeline.[22] Therefore, this gesture is considered to be kinesically simple: it is uni-directional and occurs with slow, controlled movement. Together, these two gestures represent the manner and temporality of *ámmaache shíak* – a single sitting event spanning some period of time. Although the gestures are co-produced with *ámmaache* and *shíak* (and into the English translations), we have discussed how *ámmaatbaaichik* and *ámmaache shíak* are in fact semantically alike. Thus, we suggest that the iconic representation produced by the pair of gestures also corresponds with *ámmaatbaaichik*, either directly or indirectly. We leave it for future investigation to determine whether such gestures may directly co-occur with *ámmaatbaaichik*.

The excerpt in (14) immediately follows the interaction in (12) and in the following exchanges, Jack and Edwin are seen contrasting *ámmaatbaaichik* with *ámmaatbaakuhkuk*. Here, Jack employs the vivid use of gestures to convey his construal of the event of *ámmaatbaakuhkuk*.

[21] In fact, in a follow-up, Jack shares the same interpretation after viewing the video segment: that *ámmaache shíak* is indeed semantically similar to *ámmaatbaaichik* and more so than between *ámmaache shíak* and *ámmaatbaakuhkuk*.

[22] English speakers typically move their hands from left-to-right to express a change in time (Casasanto and Jasmin, 2012). Here, Jack does the opposite. There are two potential factors at play: First, Jack is left-handed, making movement from the center leftward more natural. Second, the gesture may be influenced by the dimensional use of *shíak* by depicting a physical length (see Cooperrider et al. 2014 for discussion of cross-linguistic variation in time gestures).

(14)

1 Jack: But you see the oth- the other one would be
2 *ámmaat**baakuhku**k*.
((Left arm extends leftward as left hand pulses up and down.))
3 [*Ámmaat**baakuhku**k*.
((Left arm extends leftward as left hand pulses up and down.))
↳See Figure 3.5.
4 Edwin: [*Ámmaatba-*
5 Yeah.
6 Jack: I keep on sitting.
((Left arm extends leftward as left hand pulses up and down.))
7 Edwin: So it's kind of like if I (.) got up, (.) and then [sat back down, (.) got up, (.)
((Raises from his chair and sits back down twice.))
8 Jack: [Yep.
((Nods.))
9 Edwin: [and sat back down?
10 Jack: [Yep. =Yeah, [that's, that's *ámmaat**baakuhku**k*.
((Nods.))
((Left hand raises then moves leftwards palm center, pulses up and down.))
11 Edwin: [Okay. =O:kay.
12 Jack: That's the act of (0.9) [sitting up, sitting [up, standing up, sitting up, s- that's (.) that's
((Energetically raises and lowers, left hand palm up.))
↳See Figure 3.6.
13 Edwin: [Of. [Mm.
14 Jack: how you explain that part.
((Both palms up in front, beats for emphasis.))
15 Edwin: Yeah.
16 Jack: But the other one would be *ámmaache shíak*. (.) I sat a long time.
((Again, palms up front with beats.))
17 Edwin: =Okay.
(Jack_072519_002.mov: 02:34–02:59; Video 4)

At line 1, Jack prefaces his utterance with "but you see", signaling a shift in focus of the conversation – that is, a shift in attention from *ámmaatbaaichik* to *ámmaatbaakuhkuk*. In saying "the other one", Jack also acknowledges that the elicitation task at hand involves a comparison between at least two grammatical forms. The form *ámmaatbaakuhkuk* is uttered two consecutive times and each time, it is accompanied by a series of repetitive outward lateral sweeps. The first is relatively small, while the second, which is shown in Figure 3.5, is performed more confidently and involves a full extension of the arm. Unlike the slow

and flat lateral sweep performed with *shíak*, these sweeps are fast and punctuated by small vertical movements, as if moving across a bumpy surface. Also unlike the *shíak* gesture, Jack performs this series of gestures with an open down-turned palm. Therefore, this series of gestures simultaneously depicts the manner and duration of the sitting event: the lateral movement metaphorically conveys a span of time, whereas the downward facing palm and small vertical movements iconically depict the up and down motion of sitting multiple times.

Figure 3.5: Pre-stroke hold, stroke, and post-stroke hold of the punctuated lateral sweep aligned with *ámmaatbaakuhkuk* 'I keep on sitting' (Ex. 14, line 3).

At line 6, Jack offers the familiar English translation "I keep on sitting". Although the translation itself does not reveal much in terms of grammatical meaning of *-dahku*, Jack again provides gestures that share striking similarities to those that co-occur with *ámmaatbaakuhkuk*. In this particular repetition, Jack is using the gesture to convey information about the event to elaborate on the translation. Once again, Jack's verbal interaction alone provides little indication as to the semantics of the Crow phrase. Instead, his gestures carry an abundant amount of semantic information about the temporal properties of *ámmaatbaakuhkuk*.

Edwin attempts to put his reading of Jack's gestures into words and his rising intonation invites Jack to assess it (lines 7 and 8). Jack's overlapping and latched utterances as well as his head nods display his agreement towards and acceptance of Edwin's interpretation (lines 9 and 10). Again, Jack performs another series of gestures alongside the phrase "that's, that's *ámmaatbaakuhkuk*", where the demonstrative "that" refers to Edwin's reading of Jack's gestures ("it's kind of like if I got up, and then sat back down, got up, and sat back down"). However, at the start of line 12, "that" has a different reference – namely, *ámmaatbaakuhkuk* in his previous utterance – and directly following Jack's explanation of the meaning of *ámmaatbaakuhkuk* ("That's the act of sitting up, sitting up, standing up, sitting up") are two additional instances of the same demonstrative ("that's how you explain that part"). The first is used as a subject pronoun and references Jack's explanation, which the demonstrative immediately follows. The second is used as a determiner, as in "that part", which has as its referent the meaning of *ámmaatbaakuhkuk*.

Note that Edwin's interpretation of Jack's earlier gestures (line 7) specifically targets the occurrence of repeated sitting events rather than their temporal property, which is indicated by the lateral movements as seen in Figure 3.5. As Jack explicates the meaning of *ámmaatbaakuhkuk* (line 12), he moves his arm in large vertical pulses, flexing and extending at the elbow, as seen in Figure 3.6. Unlike the first series of *ámmaatbaakuhkuk* gestures which conveyed information about the manner and duration of the sitting events, the repetitive vertical pulses in this instance depict only manner – that is, the iterative nature of sitting down multiple times. Hence, this gesture can be regarded as less complex than his previous gestures that also encode temporality via movement across the lateral axis. Crucially, this gesture does not reflect Jack's own unprompted interpretation of *ámmaatbaakuhkuk*, and at no point aligns with the Crow word itself. Jack only simplifies his gesture when asked to clarify a particular part of the event.

Figure 3.6: Pre-stroke hold, stroke, and post-stroke hold of the large vertical pulse aligned with "that's the act of sitting up, sitting up, standing up, sitting up" (Ex. 14, line 12).

Finally, at line 16, which is prefaced with "but", Jack contrasts *ámmaatbaakuhkuk* with an alternative – *ámmaache shíak*. Note that the earlier comparison was between *ámmaatbaaichik* and *ámmaatbaakuhkuk*.[23] (Again, the interaction in (14) occurs directly after (12).) Why does Jack refer back to *ámmaache shíak* 'I've sat a long time' but not *ámmaatbaaichik*, which was mentioned just prior to this particular interaction? As we have suggested, *ámmaatbaaichik* and *ámmaache shíak* are semantically alike and, perhaps, so much so that Jack appears to employ both forms interchangeably. As such, the comparison in meanings is between (a) both *ámmaatbaaichik* and *ámmaache shíak*, and (b) *ámmaatbaakuhkuk*. The former set encodes a continuative meaning, whereas the latter encodes iterative meaning.

[23]In contrast to the other interactions, the exchanges in (14) consist of noticeably fewer silent pauses within and in between turns. It is likely that Edwin's verbal interpretation of Jack's gestures instills some excitement within Jack since he was previously unable to spell out the meaning of *ámmaatbaakuhkuk* in words.

Our analysis shows that the difference between *ámmaatbaaichik* and *ámmaache shíak* on the one hand and *ámmaatbaakuhkuk* on the other can be observed when attention is paid to how the language consultant gestures as they attempt to explain the meaning of the different forms. The right-to-left lateral sweeps that accompany both *shíak* and *ámmaatbaakuhkuk* metaphorically convey that both events are durative, occurring over a span of time. However, the difference in complexity of the lateral movements illustrates a difference in the internal structure of the two events that is not captured in speech until after several attempts at clarification. The lateral movements aligned with *ámmaatbaakuhkuk* are punctuated by small vertical beats, iconically depicting the iterative internal structure of the event. By contrast, although *ámmaatbaaichik* and *ámmaache shíak* are not accompanied by semantic gestures to the same degree of frequency, in the one instance of a clearly associated semantic gesture, the lateral movement is deliberate, slow, and flat, iconically depicting a continuous state of sitting. In sum, co-speech gesture ultimately functions as an additional type of indirect clue that can enrich the verbal interaction and may be helpful for (semantic) fieldworkers investigating particular semantic phenomena.

### 3.5.3 Gesture and discourse structure

There are also several points during the video segment where Jack performs what Kendon (2004) refers to as 'pragmatic gestures'; that is, gestures that relate to the social interaction rather than the content of the discourse.[24] Though pragmatic gestures may share formal features with semantic gestures, such as hand shape, their functions are distinct. Common pragmatic gestures include the 'palm-up open hand' gesture in which speakers present an idea as a virtual object (Müller 2004), and 'beats' which are small vertical movements often considered to be a gestural form of emphasis (e.g. McNeill, 2005). Two examples of palm-up open hand gestures that are accompanied by emphatic beats are given in Figure 3.7.

The gesture that appears in the left pane of Figure 3.7 aligns with Jack stating at line 14 in (14), "that's how you explain that one". The gesture that is shown on the right pane of Figure 3.7 takes place seconds later at line 16 where Jack says "I sat a long time" – here, he repeats the English translation of the contrasting grammatical form. These gestures are nearly identical, consisting of symmetric up-turned palms and small rhythmic vertical movements. Note that while the gesture overlaps with a translation of the Crow utterance, this particular gesture form, which has been described as a 'hand-shrug', is associated with expressions of obviousness (Debras 2017; Jehoul et al. 2017). In other words, the gesture expresses a discourse-pragmatic meaning rather than a semantic one. As these two gestures occur as Jack summarizes his description of the contrasting grammatical forms, we suggest that these pragmatic gestures – in particular, hand shrugs – indicate the conclusion and coda of Jack's remarks about the differences between *ámmaatbaakuhkuk* and *ámmaache shíak* at that moment, rather than reflecting the semantics of the utterance.

[24]See also Bavelas et al. 1992 for similar discussion of 'interactive gesture'.

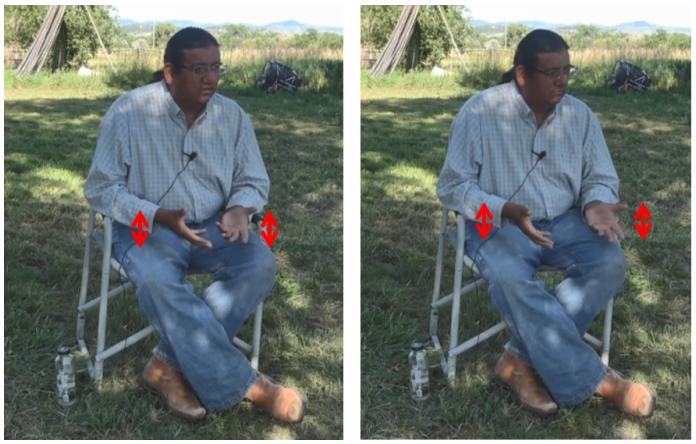


Figure 3.7: Hand shrugs with beats accompanying "that's how you explain that one" (left; Ex. 14, line 14) and "I sat a long time" (right; Ex. 14, line 16).

## 3.6 Conclusion

Following the works of other field linguists and gesture researchers, we have argued that co-speech gesture provides another angle from which to investigate particular semantic phenomena. By focusing on aspectuals in Crow, we have suggested that gesture constitutes a form of semantic data that can lend insight into speakers' construal of the event structure – and thus, the semantics of the utterances. In Crow, continuative aspect may be associated with gestures that iconically depict a single event that is extended over a period of time, while iterative aspect co-occurs with gestures that involve more complexity and represent repeated events. While this paper is concerned with semantic meaning, co-speech gesture may also be useful in investigating pragmatic meanings (e.g. conversational implicatures) as well as discourse and information structures (e.g. topic- and focus-marking) of utterances. Since gestures are known to be multifunctional (Kok et al. 2016), the researcher is thus tasked with disentangling the semantic and pragmatic meaning of a particular gesture.

Naturally, the collection and analysis of co-speech gesture necessarily involve video recording. In fact, as Himmelmann (1998, 168) remarks, "[g]iven the holistic view of linguistic behavior, the ideal recording device is video recording" and increasingly, there have been calls for fieldworkers to document video recordings (e.g. Ashmore, 2008; Margetts and Margetts, 2012; Seyfeddinipur, 2012; Seyfeddinipur and Rau, 2020). Good (2011, 215) describes that some of the choices that are made in recording equipment "may be mostly pragmatic in nature." Others, he reckons, that involve sessions being "deemed to be visually 'uninteresting' may actually be informed by an underlying, if only implicit, theory of recording." As we have argued, documenting and analyzing gestures that are co-produced with speech can be a useful addition to a semantic fieldworker's toolkit. Therefore, elicitation sessions can actually be visually interesting as they contain not only information about the physical appearance of a person's material environment, but also embodied displays of participation

that are involved in the meaning-making process. Although it is not always possible to video record, doing so allows for a more enriched documentation record that would provide information, linguistic or otherwise, that would otherwise be lost if only audio were recorded. Thus, we advocate for (semantic) fieldworkers to consider video documentation as a part of their linguistic elicitation workflow.

# Chapter 4

# Control and raising in Crow

## 4.1 Introduction

Raising and control phenomena have long been the subject of intense scrutiny in theoretical linguistics. Despite their surface structural similarities, raising and control constructions exhibit a number of differences in terms of their semantic and syntactic behaviors. Although initial accounts have attributed these differences to distinct syntactic mechanisms (Hornstein, 1999, 2001, 2003; Boeckx, 2000; Boeckx and Hornstein, 2003, 2004, 2006; Boeckx et al., 2010; Hornstein and Polinsky, 2010). In raising and control constructions, subjects are base-generated in a relatively low position, such as within embedded clauses, and undergo movement to a higher A-position.

As scholars investigate control and raising in a wider range of languages, they have found that these phenomena are subject to cross-linguistic variation. In raising and control constructions in English, only the higher copy is pronounced, while the anaphoric elements (i.e. trace or copy) are deleted. In contrast, Tsez deletes the highest copy in favor of pronouncing the lower copy (Polinsky and Potsdam, 2002). The purpose of this chapter is to contribute to the typology of control and raising by analyzing Crow (Apsáalooke), a highly polysynthetic, active-stative Siouan language spoken in Montana. Despite decades of intense research on control and raising, not much attention has been paid to the properties of these phenomena in languages that exhibit a high degree of polysynthesis, such as Crow (although see Potsdam and Polinsky 2012 on raising in Adyghe). In fact, much of early theorizing of raising and control has focused on data from English. Therefore, it remains unclear whether polysynthetic languages display properties that are similar or different to those reported for other non-polysynthetic languages.

The view I adopt in this chapter is that raising and control in Crow are derived via A-movement. I will argue that pronominal subjects in control and raising in Crow undergo A-movement and morphological merger (henceforth referred to as m-merger; Matushansky 2006). I will show that unlike English or Tsez, raising and control clauses in Crow obligatorily pronounce both higher and lower copies – a case of multiple copy spell-out (or clitic doubling,

à la Harizanov 2014). The main argumentation of this chapter focuses on the distribution of A-set (or active) markers. In Crow, A-set markers may be realized multiple times when certain morphemes are present and I refer to the multiple realizations of person marking as *multiple-person marking*.[1] While the first-person A-set marker occurs only once in (15a), it is realized twice in (15b). I claim that morphemes, such as *-iimmaachi*, that trigger multiple-person marking belong to the set of raising and control predicates.[2]

(15) a. **baa**-lisshí-k
1A-dance-DECL
'I danced'

b. **baa**-lisshí-***(w)**-iimmaachi-k
1A-dance-1A-will-DECL
'I will dance'

Multiple-person marking in Crow presents a puzzling array of patterns when we consider raising and control of more complex constructions and their behaviors with different classes of verbs. Specifically, raising constructions display an unergative-unaccusative split whereby multiple-person marking is observed *only* across unergatives, but not unaccusatives, as in (17a). However, in control (17b) and causative constructions (17c), the distinction between unergative and unaccusative verbs in expressing A-set agreement morphology becomes neutralized and is observable for all verbs, including unaccusatives. The distinction between raising and control predicates in Crow relies on the inchoative marker *-dee* which appears only in control of unaccusatives; I analyze the presence of *-dee* in these constructions as a repair that feeds A-movement of the subject into the theta-position associated with the control predicate. Furthermore, the constructions in (b) as well as (c) gain the ability to exhibit multiple-person marking when formed with raising and control predicates. I refer to this bundle of agreement phenomena as the *multiple-person marking generalization*:

(16) Multiple-Person Marking Generalization: Only unergatives may exhibit multiple-person marking in raising constructions, whereas all verbs show multiple marking of person in control and causative clauses.

(17) a. Raising:

i. **baa**-xalússhi-**w**-iimmaachi-k
1A-run-1A-will-DECL
'I will run' (Unergative)

ii. bii=hachk-íimmaachi-k
1B=tall-will-DECL
'I will be tall' (Unaccusative)

[1] This phenomenon is also referred to as *multiple exponence*, *extended exponence*, and *exhuberant exponence* (e.g., see Harris, 2017, 1–2).

[2] Note that in the data I do not gloss third person null morphemes, nor do I distinuish between affixes and clitics in the breakdown of the morphemes.

b. Control:

i. **baa**-xalússhi-wia-**waa**-k
1A-run-DESID-1A-DECL
'I want to run' (Unergative)

ii. hachká-***(wee)**-wia-**waa**-k
tall-1A.INCHO-DESID-1A-DECL
'I want to be tall' (Unaccusative)

c. (Indirect) causatives:

i. dii=chiwakíi-**wa**-hche-k
2B=pray-1A-CAUS-DECL
'I made you pray' (Unergative)

ii. dii=ámmit-**ba**-hche-k
2B=fall-1A-CAUS-DECL
'I made you fall' (Unaccusative)

To account for the Multiple-Person Marking Generalization, I will demonstrate that multiple-person marking is derived in exactly the same way across raising, control, and causative constructions: A-movement and m-merger. Specifically, the analysis hinges on the crucial assumption that a precondition for the (multiple) occurrence of A-set morphemes is agreement between a probe on Aux and a highest accessible DP argument. The DP that enters into an Agree relation with Aux is then able to receive nominative Case and undergo A-movement. Postsyntactically, pronominals undergo m-merge and become part of the verbal complex. In this way, multiple-person marking is the result of pronouncing all copies that bear nominative Case within a single A-movement chain. Therefore, this approach captures the generalizations about raising, control and multiple-person marking in Crow in a uniform way.

## 4.2 Multiple-person marking in Crow

Data used in this chapter come from my fieldwork with 10 native speakers (4 female) aged 24–62 between 2017–2020 on the Crow Indian Reservation.[3] Crow is a head-final, head-marking language with an active-stative alignment expressed via its verb agreement system. In this section, I first describe the active-stative agreement system in Crow before providing an overview of the relevant patterns of multiple-person marking in Crow.

[3]Some of the data collected between 2019 and 2020 come from elicitation sessions that were held virtually through video conferencing platforms with Crow speakers who are residing on the Crow Indian Reservation.

In an active-stative language, verbs generally belong to one of two classes, *active* and *stative* verbs.[4] In general, the two classes are predictable based on their meanings. Active verbs tend to denote events with agentive subjects while stative verbs are commonly states with non-agentive subjects (Ko, 2020). In active intransitives, subjects are referenced with so-called A-set morphemes (18), whereas stative intransitives are marked using B-set markers (19). In an active transitive, as in (20), A-set marks subjects and B-set marks objects.[5] The A- and B-set morphemes are given in Table 4.1. Note that third person A- and B-set markers are phonologically null.[6,7,8]

(18) baa-lisshí-k
1A-dance-DECL
'I danced'

(19) bii=ámmichi-k
1B=fall-DECL
'I fell'

(20) dii=waa-láxpii-k
2B=1A-hug-DECL
'I hugged you'

| | A-SET | B-SET |
|---|---|---|
| 1SG | baa- | bii |
| 2SG | daa- | dii= |
| 3SG | Ø- | Ø= |

Table 4.1: A- and B-set agreement in Crow

Multiple-person marking (MPM) in Crow is pervasive and is triggered by a variety of morphemes. I will argue that the morphemes that trigger MPM are in fact raising and

[4]Active-stative languages are also referred to as *split-intransitive*, *split-S*, and *agentive-patient*, and among others. For a more comprehensive list of terms variously used in the literature for this type of morphosyntactic alignment system, see Mithun 1991.

[5]When A- and B-set morphemes co-occur, B-set morphemes must occur at the left-edge of the word, as in (20).

[6]In Crow, obstruents often undergo intervocalic laxing. Therefore, *b* and *d* may occur as *w* and *l* in environments where they occur between vowels.

[7]With exception of the first-person plural B-set morpheme, the plural is discontinuously marked as *-uu* that directly precedes the declarative marker. The first-personal plural B-set morpheme *balee=* is a portmanteau consisting not only of person features but also number. The plural forms are not mentioned in the rest of this chapter as they are not relevant to the current discussion.

[8]The A-set morphemes exhibit rampant allomorphy that is conditioned by the phonological shape of the verbal root it attaches to, whereas B-set morphemes are generally invariant.

control predicates. Table 4.2 provides a list of the raising and control predicates that will be discussed in this chapter.

| | |
|---|---|
| CONTROL | *-bia* 'want to', *-isshi* 'wish to', *-dee* 'go (motion) to' |
| RAISING | *-iimmaachi* 'will, must', *-iishdaachi* 'should', *-iih* 'may, might', *-ii* 'will', *-bia* 'going to', *-dahku* 'keep on (iterative)', *-daachi* 'keep on (continuous)' |

Table 4.2: Raising and control predicates in Crow

However, not all verbs display MPM even if morphemes that trigger it occur on the verb. The basic generalization is that in constructions with raising predicates, MPM occurs on active verbs but not stative verbs. One consequence of this is that only A-set morphemes may surface multiple times to cross-reference the same argument. In (21) and (22), *-iimmaachi*, *-dahku* and *-bia* are MPM-triggering morphemes and I will argue in this chapter that they are raising predicates.[9] However, MPM is only found among active verbs in (21) but not stative verbs in (22).[10] Thus, the occurrence of MPM in raising constructions falls alongside the active-stative split.

(21) a. **baa**-xalússhi-**w**-iimmaachi-k
1A-run-1A-will-DECL
'I will run'

b. **baa**-lissá-a-**wahku**-k
1A-dance-JUNCT-1A.CONT-DECL
'I keep on dancing'

c. dii=**waa**-lít-bia$_1$-**waa**-k
2B=1A-hit-going.to-1A-DECL
'I am going to hit you'

(22) a. bii=hachk-íimmaachi-k
1B=tall-will-DECL
'I will be tall'

[9]The morpheme *-bia* is ambiguous between a futurate meaning and a desiderate meaning. To distinguish between these two meanings, I notate futurate *-bia* as *-bia*$_1$ and desiderative *-bia* as *-bia*$_2$ in the data.

[10]In Crow, the so-called juncture morpheme *-a*, which is cognate with the continuative/contemporaneous morpheme in other Siouan languages, is a historical relic that is semantically vacuous and co-occurs with aspectual auxiliaries and the benefactive (cf. Graczyk 2007 who glosses *-a* as a continuative). The juncture morpheme triggers what is referred to in the Siouan literature as *ablaut*, whereby certain morphemes trigger a shift in quality of the preceding vowel. Ablaut has been described in many Siouan language, such as Crow (Graczyk, 1996, 2007), the Dakotan langauges (Shaw, 1980; Albright, 2002; Ullrich, 2011), Hidatsa (Jones, 1992; Park, 2012), Mandan (Kasak, 2019), and Quapaw (Rankin, 1995), and among others.

b. bii=awélit-dahku-k
1Bfall-CONT-DECL
'I keep on falling'

c. dii=ámmit-bia$_1$-k
2B=fall-going.to-DECL
'You are going to fall'

While the basic generalization about MPM in raising constructions is that stative verbs do not exhibit MPM, this is not the case for other types of constructions. When stative verbs appear in certain constructions, such as desideratives and causatives, the asymmetry between active and stative verbs becomes neutralized. First, in these constructions, A-set morphemes are used to index subjects of all verbs. Second, when MPM triggers are present, additional instances of A-set morphemes occur again for all verbs. In what follows, I describe the constructions that neutralize the agreement distinction between active and stative verbs starting with desideratives, which I argue are control predicates.

In Crow, there are two desiderative morphemes, *-bia* and *-isshi*. The former is used to express any kind of general desire, whereas the latter conveys a sense of uncontrollable urge and is often used with verbs of bodily excretion. When these desiderative morphemes attach to active verbs, we obtain an additional instantiation of A-set marking. In (23), *-bia* occurs with *disshí* 'dance', an active verb, and the additional A-set *-baa* appears as a suffix on the desiderative. However, MPM also occurs on stative verbs with desideratives. In (24), the occurrence of the desiderative on the stative verb *hachká* 'be tall' must be accompanied with the so-called inchoative morpheme *-dee*, which inflects for person of the subject. Like (23), an A-set morpheme referring to the first-person subject also appears on the desiderative. Because person features are encoded in two sites – the inchoative and the A-set marker – this construction also displays MPM.

(23) **baa**-lisshí-wia$_2$-**waa**-k
1A-dance-DESID-1A-DECL
'I want to dance'

(24) hachká-***(wee)**-wia$_2$-**waa**-k
tall-1A.INCHO-DESID-1A-DECL
'I want to be tall'

Another construction in which the active-stative agreement split does not hold involves involves causative constructions. Crow distinguishes between direct and indirect causative constructions which are formed with *-aa* and *-hche*, respectively. The direct causative marker typically only occurs on stative verbs while the indirect causative may occur on active or stative verbs. Despite the morphological and semantic differences between the two causatives, there are similarities in how person marking surfaces in these constructions. First of all, both causatives introduce a subject argument and inflect for person of that argument. Second, both are able to exhibit MPM whenever a trigger appears in the construction.

This is exemplified in (25) and (26) for direct causatives. In (25a), *óosshi* 'be cooked' is a simplex stative intransitive with *xóoxaashe* 'corn' as its subject. With the direct causative *-aa*, as in (25b), an agent is introduced and is indexed via A-set marking. (26a) consists of a stative verb *úuchi* 'be dry' with the trigger *-bia* 'going to'. The B-set marker is used to refer to the subject and we see that MPM does not surface at all. In contrast, in (26b), which contains a direct causative, person features are exponed twice, once on the direct causative and once as an A-set marker directly following *-bia*, both indexing the subject.

(25) a. xóoxaashe óosshi-k
corn be.cooked-DECL
'The corn is cooked'

b. xóoxaashe óosh-**baa**-k
corn be.cooked-1A.CAUS-DECL
'I cooked the corn'

(26) a. bii=úut-bia$_1$-k
1B=be.dry-GOING.TO-DECL
'I am going to be dry'

b. baaaxúassee úut-**baa**-wia$_1$-**waa**-k
clothes dry-1A.CAUS-GOING.TO-1A-DECL
'I am going to dry the clothes'

Now, in indirect causatives, A-set morphemes are used to cross-reference the subject (i.e. the causer) while all other arguments are marked using B-set morphemes. In (27a), which contains the active verb *chiwakíi* 'pray', the A-set morpheme refers to the second-person subject, the agent of the praying event. With an indirect causative, as in (27b), the A-set morpheme refers only to the first-person causer while the B-set morpheme is used for the agent. In (28a), which contains the stative verb *ámmichi* 'fall', the B-set morpheme is used to mark the subject, the theme of the falling event. When an indirect causative attaches to this construction, as in (28b), the A-set marker refers to the causer while the B-set continues to cross-reference the theme. As in desiderative constructions, A-set morphemes must be used to refer to the subject of the entire clause, regardless of which class the verb belongs to.

(27) a. **dah**-chiwakíi-k
2A-pray-DECL
'you prayed'

b. **dii**=chiwakíi-**wa**-hche-k
2B=pray-1A-CAUS-DECL
'I made you pray'

(28) a. **dii**=ámmichi-k
2B=fall-DECL

'you fell'

b. **dii**=ámmit-**ba**-hche-k
2B=fall-1A-CAUS-DECL
'I made you fall'

As in the case of direct causatives, constructions that consist of an indirect causative morpheme and a trigger will multiply expone subject person features. The constructions in (29) and (30), which are similar to (27b) and (28b) but include the desiderative morpheme *-bia*, contain an active and stative verb, respectively. Yet, despite the different verbs that appear in these constructions, their agreement patterns are identical. The first-person A-set morpheme refers to the causer, whereas the B-set is used to refer to all other arguments. In addition, multiple instances of A-set are seen on the causative and on the desiderative which follows the causative.

(29) dii=chiwakíi-**wa**-hche-wia$_2$-**waa**-k
2B=pray-1A-CAUS-DESID-1A-DECL
'I want you to pray (lit. 'I want to make you pray)'

(30) dii=ámmit-**ba**-hche-wia$_2$-**waa**-k
2B=fall-1A-CAUS-DESID-1A-DECL
'I want you to fall (lit. 'I want to make you fall)"

Overall, if a given construction displays an active-stative agreement split, then MPM can only be observed across active verbs. Conversely, if a given construction references subject person features via A-set morphemes for both active and stative verbs, such as in constructions with desideratives and causatives, then MPM can be observed for all types of verbs; this is what I refer to as the multiple-person marking Generalization. These agreement patterns are summarized in Table 4.3. I argue that the generalizations about A-set marking and MPM are in fact two sides of the same coin in that both of them require establishing an Agree relation between Aux and a highest accessible DP argument. If there is no agreement between Aux and a DP, then neither A-set agreement nor MPM occurs. If agreement does indeed take place, then the DP receives a nominative Case feature. Furthermore, if Aux bears an EPP feature, the DP also moves to its specifier position. The higher DP copies then undergo m-merger postsyntactically and are rebracketed as part of a complex head.[11] Copies that bear nominative Case within the movement chain are then spelled out as distinct A-set morphemes. This approach therefore treats MPM as a type of clitic doubling that is decomposed into two parts: A-movement and m-merger (e.g. Harizanov, 2014; Kramer, 2014). This account forms the premise for the discussion in the following sections.

[11] I assume here the Copy Theory of Movement (see Chomsky 1993; Nunes 1995, 1999, 2004, among others).

| | Simplex | | Control | | Causatives | |
|---|---|---|---|---|---|---|
| **Property** | ACTIVE | STATIVE | ACTIVE | STATIVE | ACTIVE | STATIVE |
| A-set references subjects? | ✓ | ✗ | ✓ | ✓ | ✓ | ✓ |
| Multiple-person marking? | ✓ | ✗ | ✓ | ✓ | ✓ | ✓ |

Table 4.3: Summary of A-set agreement patterns

## 4.3 Raising and control in Crow

In a nutshell, raising, or more specifically raising-to-subject, has often been viewed as A-movement of a subject from an embedded clause, into a subject position within the matrix clause. Crucially, an external theta-role is assigned to the subject in the low position but not in the higher position. In (31a), the subject *the cat* is generated within the embedded clause and moves into the subject position of the matrix clause. However, the subject can also remain in-situ within the embedded clause, as in (31b). In such cases, the expletive subject *it* occupies the subject position of the matrix clause; the presence of the expletive subject indicates that the raising verb *seem* does not assign a theta-role to its argument.

(31) a. The cat$_i$ seems $t_i$ to be out of the bag.
b. It seems that the cat is out of the bag.

Obligatory control, on the other hand, has been analyzed in different ways (see Landau 2013, Polinsky 2013, and Potsdam and Haddad 2017 for recent overviews of the various proposals within historical perspective). The classic view is to have the controller base-generated in the subject position of the matrix clause while a phonologically null element PRO occupies the subject position of the embedded clause, as in (32a). This empty category is coindexed with and bound by the controller in the main clause. An alternative view, dubbed Movement Theory of Control (MTC) and advanced by Hornstein (1999), analyzes control in terms of movement and has been a subject of ongoing debate (for criticisms against the MTC, see Culicover and Jackendoff 2001, 2006; Landau 2003, 2007; Bobaljik and Landau 2009; Wood 2012, among others; for works that advocate for the MTC, see Hornstein 2001, 2003; Boeckx 2000; Boeckx and Hornstein 2003, 2004, 2006; Boeckx et al. 2010; Hornstein and Polinsky 2010, among others). Under this account, the controller is generated in the subject position of the embedded clause and moves into the matrix clause, as in (32b), much like in a raising construction. The controller is therefore assigned theta-roles twice by the embedded verb and then the matrix verb, violating the Theta Criterion, which states that each argument must bear only a single theta-role and that each theta-role must be assigned to only one argument (Chomsky, 1981, 35). Accordingly, Hornstein not only dispenses with the need for PRO, but he also rejects the Theta Criterion.

(32) a. The cat wants PRO to be out of the bag.
b. The cat$_i$ wants $t_i$ to be out of the bag.

Raising and control are subject to cross-linguistic variation. Although English only spells out the higher copy, other languages may pronounce the lower copy or both; in the case of Crow, both copies are pronounced. The typology of raising and control phenomena is displayed in Table 4.4. An example of control constructions in which both higher and lower copies are pronounced occurs in San Lucas Quivini Zapotec, which is given in (33).[12] In (33), the subject *bxuuhahz* 'priest' is spelled out not only in the subject position of the matrix clause, but also in the embedded clause. If instead the controlled element is a phonetically null PRO, one would predict that such constructions should not exist. Therefore, how exactly does the controlled element come to be pronounced in these types of control constructions?

(33) *San Lucas Quivini Zapotec* (Lee, 2003, 177, Ex.2)

R-cààa'z bxuuhahz [ch-iia bxuuhahz]
HAB-want priest IRR-go priest

'The priest wants to go'

| **Higher copy pronounced** | **Lower copy pronounced** | **Resulting structure** |
|---|---|---|
| ✓ | ✗ | forward raising/control |
| ✗ | ✓ | backward raising/control |
| ✓ | ✓ | copy raising/control |

Table 4.4: Typology of raising and control (Polinsky and Potsdam, 2006)

One principled way of accounting for control constructions that spell out the lower copy, as in (33), is to adopt MTC in which the control dependency arises via A-movement. This approach has been proposed for control in San Lucas Quivini Zapotec (Boeckx et al., 2008),

[12] As a terminological aside, control clauses in which both controller and controllee are pronounced have been referred to as 'copy control' in the control literature (e.g. Boeckx et al. 2008; Haddad 2009; Landau 2013, §4.4.2; Polinsky and Potsdam 2006; Potsdam and Haddad 2017. The term 'copy raising', formerly 'Richard', has been used primarily to refer to constructions where a subject appears in a non-thematic position with a pronominal copy in the non-thematic position (e.g. *The dog$_i$ seems like it$_i$ wants your attention*; see Potsdam and Runner 2001 and Asudeh and Toivonen 2012 for definitions on copy raising). Approaches have differed from analyzing these constructions as involving raising of the subject from its thematic position to the non-thematic position (e.g. Ura, 1998) to involving base-generation of the subject in the non-thematic position (e.g. Potsdam and Runner, 2001). Therefore, the use of the term does not necessarily describe constructions that involve raising (see Polinsky and Potsdam 2006, who although generally use copy raising to involve movement, caution that some reported cases may in fact be imposters and not 'true' instances of copy raising). In this chapter I use the somewhat clunkier phrase 'multiple copy spell-out derived via movement' and variants thereof to describe copy raising that involves both raising and copy control.

Telugu (Haddad, 2009), Greek and Romanian (Alexiadou et al., 2010), and among others.[13] In (33), *bxuuhahz* 'priest' is base-generated within the embedded clause and moves to the subject position of the main clause. Thus, the controller and controlled element form the head and tail of the A-chain, and both elements are eventually spelled out. The account I just sketched can also be applied to raising constructions to explain how raising may come to pronounce both higher and lower copies. In this chapter, I pursue an analysis along these lines to capture the generalizations about multiple-person marking (MPM) in Crow. The core proposal is that MPM in Crow are instances of raising and control with *multiple copy spell-out*, in which higher and lower copies are pronounced, derived by means of A-movement (and m-merger).[14]

Surveying raising and control predicates and their meanings across languages around the world reveals an emergent trend. Raising predicates tend to involve modal and aspectual verbs while control predicates often express intention and desire (Polinsky, 2013). In Crow, morphemes that trigger MPM express meanings that resemble those of prototypical raising and control predicates found in other languages. In what follows, I present an analysis in which constructions that consist of modal and aspectual auxiliaries involve raising and those with desiderative or andative morphemes involve control. The list of morphemes belonging to each category are displayed in Table 4.5.[15,16]

[13]Clauses in which both the controller and controllee may be pronounced appear to be typologically rare. To my knowledge, analyses of this phenomenon have only been provided by Boeckx et al. (2008) on San Lucas Quivini Zapotec (SLQZ) and by Haddad (2007, 2009) on Assamese and Telugu. However, there are several differences between the data they present and Crow. In Crow, the controllee must be spelled out as pronominal elements and they are not optional as is the case for SLQZ and Telugu. Moreover, overt full DPs cannot undergo multiple copy spell-out in Crow, whereas SLQZ and Telugu can. Finally, the control structures analyzed in Telugu by Haddad (2009) are adjunct control and both copies may be pronounced only when certain structural conditions are met (cf. Kissock 2014 for arguments against the existence of control in Telugu).

[14]A caveat about control constructions in Crow vis-à-vis current debates about MTC is in order. According to Pamela Munro, as cited in Polinsky and Potsdam (2006, 183), San Lucas Quivini Zapotec control constructions with overt nouns have the option of pronouncing either both copies or either the higher or lower copy. In contrast, control constructions that involve pronouns require both copies to be pronounced. As a result, control clauses in this Zapotec variety have been argued as compelling evidence in favor of the MTC. Control in Crow is similar to control in SLQZ in that pronominal A-set morphemes must also be expressed. However, the important difference is that in control constructions of Crow, overt nouns cannot be expressed more than once. It is therefore unclear to what extent control in Crow may be used as empirical support for the MTC.

[15]The list of MPM triggers in Table 4.5 is not exhaustive. In addition to the applicative constructions which display MPM, there is a number of morphemes that are not considered in this chapter, including other aspectual auxiliaries *-datchi* 'continue (by mouth)', *-dawi* 'begin to', and *-koowee* 'finish', and among others. I surmise that the analysis for the aspectual auxiliaries analyzed in this chapter largely applies to these other aspectual auxiliaries. As for the applicatives, more work is still needed to determine how they fit in with respect to the analysis of MPM.

[16]Surprisingly, the suffixes *-chichee* and *-ta* meaning 'seem', 'appear', or 'resemble' do not participate in MPM. The former shares form and function with the stative transitive verb chichée 'resemble' which marks both of its arguments with B-set morphemes. Like most of the other MPM triggers, it is likely that the suffix *-chichee* grammaticalized from the stative transitive. However, unlike the other morphemes which come from

| | | |
|---|---|---|
| **Raising** | MODAL | *-iimmaachi* 'will, must', *-iishdaachi* 'should', *-iih* 'may, might', *-ii* 'will' |
| | ASPECTUAL | *-bia* 'going to', *-dahku* 'keep on (iterative)', *-daachi* 'keep on (continuous)' |
| **Control** | DESIDERATIVE | *-bia* 'want to', *-isshi* 'wish to' |
| | ANDATIVE | *-dee* 'go (motion) to' |

Table 4.5: Raising and control predicates in Crow

### 4.3.1 Unaccusativity and active-stative agreement

Before we turn to the discussion on raising and control in Crow, I provide an overview of the mechanisms underlying the basic active-stative agreement system in the language. Active intransitives behave syntactically like unergatives and stative intransitives behave like unaccusatives (Ko, 2020). One diagnostic involves noun incorporation, which is attested only for nouns that are objects of transitive verbs, as in (34a), and nouns that are subjects of stative intransitives, as in (34b).

(34) a. Logan bishka-lúupia-k
Logan dog-dislike-DECL
'Logan dislikes dogs'

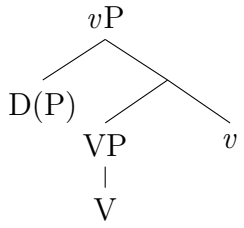
b. ilúk-hilahp-ak
meat-scarce-SS
'meat is scarce' (Graczyk, 2007, 282)

Active intransitives, on the other hand, do not allow incorporation of their subjects and attempts to elicit such constructions have been unsuccessful. What this test indicates is that subjects of stative intransitives are in a similar syntactic position to those of objects of transitive verbs. In addition, this position allows for incorporation into the verb. Based on the facts about noun incorporation in Crow, I analyze active intransitives as unergatives and stative intransitives as unaccusatives. Their structures are given below in (35) and (36).[17]

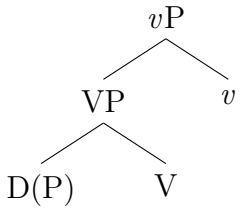
active verbs and kept their original inflections, *-chichee* appears to have lost them. It is unclear why *-ta* does not display any inflections, but I speculate that its historical development also plays an important role.

[17]In the rest of this chapter, I refer to active intransitives as unergatives and stative intransitives as unaccusatives.

(35) Unergative (active intransitive)

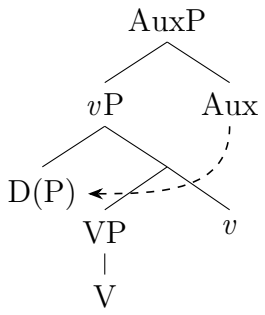



(36) Unaccusative (stative intransitive)

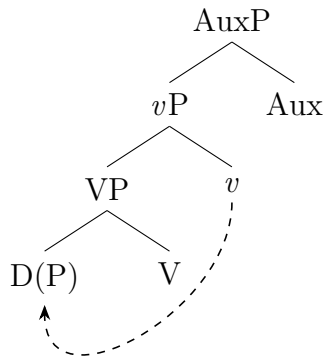



The unergative/unaccusative distinction is especially relevant to the discussion on raising because in simplex constructions, MPM only occurs on unergatives but not unaccusatives. While the realization of A-set morphemes appears to be a precondition for MPM, I argue that it is actually the underlying mechanisms that give rise to A-set that also governs whether or not MPM will surface. In particular, I pursue an analysis that leverages the structural differences between unergatives and unaccusatives. I assume that the basic clause structure of Crow includes an AuxP that sits directly above $v$P and I analyze A-set marking as a response to Agree between a $\varphi$-probe on Aux with the highest accessible goal. On the other hand, B-set agreement is the result of Agree between a $\varphi$-probe on $v$.[18] These assumptions allow us to capture the agreement asymmetry between unergatives and unaccusatives, which are schematized in (37) and (38).[19]

(37)




(38)




In (37), which represents an unergative, Aux probes and agrees with the highest DP argument, the external argument. In (38), which represents an unaccusative, $v$ agrees with

[18]There is a small set of stative transitive verbs in Crow, which, unlike active transitives, mark both arguments with B-set morphemes. While they are not discussed in this chapter, they provide some support for an analysis of $v$ as an insatiable probe that interacts with all DP goals within its search domain (Clem, 2019; Deal, 2020). I analyze stative transitives as consisting of two internal arguments within the VP domain. Under an account in which $v$ targets only the highest accessible DP, one would expect only a single B-set morpheme in stative transitives. Thus, $v$ must be able to probe and interact with both DPs within its search domain. However, since insatiability does not figure into the arguments in this chapter, I will continue to analyze $v$ under the standard approach.

[19]The CP layer is omitted for simplicity's sake.

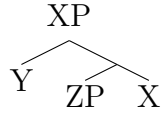
the internal argument and copies its $\varphi$-features. Why is it the $v$ and not Aux that enters into an Agree relation with the VP-internal DP? Following Legate (2003) and Deal (2009), I assume that unaccusative $v$ is a phase head and agreement between Aux and the internal argument is simply not possible. By the time Aux is merged into the structure, VP, the complement of the phase head $v$, has been sent to PF and LF (see Chomsky 2000, 2001 on the *phase impenetrability condition*, henceforth abbreviated as PIC). Therefore, the differences between agreement in unergatives and unaccusatives stem from what probes and where the subject DP is located within the clausal spine. In unergatives, Aux agrees with the subject, an external argument, which occupies Spec$v$P; since Spec$v$P is at the edge of the phase, this position is accessible to the Aux probe. In unaccusatives, $v$ agrees with the subject, an internal argument, which resides within the VP.

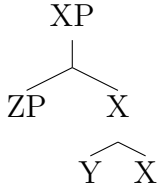
Upon interacting with Aux, the DP in unergatives receive a nominative Case feature. This point is crucial since it is precisely these features that allow unergatives to index subjects with A-set morphemes. The view that I adopt here is that agreement morphemes in Crow are essentially pronominal arguments. The vocabulary items for A-set and B-set morphemes are given in (39) and (40). Unlike the B-set morphemes which are only specified for person features, the A-set morphemes are also specified for nominative Case features; in the elsewhere, default condition, such as the case for third person DPs, a phonologically null element is inserted. How does the agreement morpheme show up in the verbal complex despite being realized on D? I assume that D(P)s that occupy a specifier undergo *m-merger* with the head of that specifier. Simply put, m-merger is a postsyntactic operation (preceding Vocabulary Insertion) that rebrackets a Spec-Head configuration as a single complex head (Matushansky, 2006). By rebracketing the head and its specifier, m-merger feeds affixation of these adjacent elements. This morphological operation is illustrated in (41). In (41a), Y is an element occupying SpecXP. When m-merger is applied, Y is rebracketed as part of the complex X head, as in (41b).

(39) A-set morphemes
  a. [1, NOM] ↔ /baa/ / D
  b. [2, NOM] ↔ /daa/ / D

(40) B-set morphemes
  a. [1] ↔ /bii/ / D
  b. [2] ↔ /dii/ / D

(41) M-merger ⇒

a. 


b. 


To summarize, A- and B-set agreement are derived from differences in syntactic positions. Subject DPs in unergatives occupy Spec$v$P and form an Agree relation with Aux which

results in A-set marking while subject DPs in unaccusatives, which results in B-set marking, are internal arguments that are inaccessible to the probe on Aux. Having laid out the necessary groundwork, we are now able to capture the generalization in which unergatives exhibit MPM, whereas unaccusatives do not (see Table 4.6). What I argue is that structural differences once again have a crucial role to play. Whereas the spell out of A- or B-set morphemes are dependent on probes and their search domains, MPM hinges on whether movement to certain landing sites is permitted. The analysis of MPM which I take up in the following section suggests that the occurrence of MPM is a consequence of clitic doubling (i.e. A-movement and m-merger).

| | **Simplex** | |
|---|---|---|
| **Property** | UNERGATIVE | UNACCUSATIVE |
| A-set references subjects? | ✓ | ✗ |
| Multiple-person marking? | ✓ | ✗ |

Table 4.6: Summary of agreement patterns in simplex clauses

### 4.3.2 Raising

An additional distinction between unergatives and unaccusatives is that only unergatives may exhibit MPM with certain morpheme combinations. I analyze the morphemes that demonstrate this dichotomy as raising predicates. In (42) and (43), which consist of an unergative and an unaccusative, the so-called modal auxiliary *-iimmaachi* 'will, must' attaches to the verb roots *xalússhi* 'run' and *hachká* 'be tall'. However, MPM is only observed in the former case. Furthermore, when *-iimmaachi* attaches to transitive verbs, such as *daxpíi* 'hug' in (44), MPM also surfaces. Morphemes that show these patterns include other modal auxiliaries and aspectual auxiliaries (see Table 4.5). Their similarities in meaning and the fact that raising predicates found in other languages are often aspectual and modal is, I believe, not a coincidence. Rather they suggest that modal and aspectual auxiliaries in Crow are in fact raising predicates.

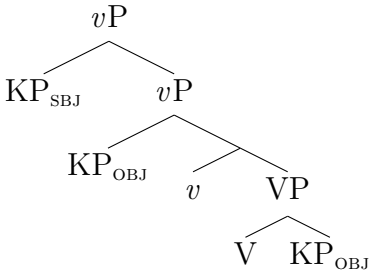
(42) **baa**-xalússhi-**w**-iimmaachi-k
1A-run-1A-will-DECL
'I will run'

(43) bii=hachk-íimmaachi-k
1B=tall-will-DECL
'I will be tall'

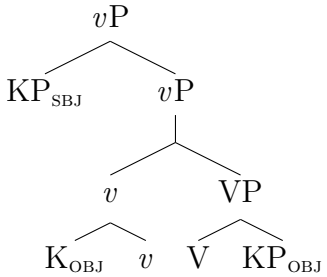
(44) dii=**waa**-laxpíi-**w**-iimmaachi-k
2B=1A-hug-1A-will-DECL
'I will hug you'

In what follows, I propose an account in which MPM in Crow is analyzed as a type of clitic doubling. I adopt an analysis in particular in terms of A-movement and m-merger, following Harizanov (2014). Before turning to the analysis of MPM, it is instructive to first consider Harizanov's account of clitic doubling in Bulgarian. Harizanov argues that clitic doubling in Bulgarian involves multiple spell-out of a single element in different structural positions as a result of A-movement. Under his analysis, an internal argument KP undergoes A-movement from its base-generated position to Spec$v$P ('tucking in' under the external KP argument), as in 45a), to fulfill an EPP feature $v$, and then undergoes morphological restructuring (i.e. m-merger). When the displaced KP in Spec$v$P undergoes m-merger, it is reduced to its K head – comprised of Case- and $\varphi$-features – and is rebracketed as part of a complex $v$ head, as in 45b).[20] As a result, the K head, which resides within the complex head, is rendered invisible to the linearization algorithm; this point is crucial in ensuring that neither the KP in the base position (i.e. the associate) nor the K head (i.e. the clitic) within the verbal complex are deleted. On the other hand, if the moved element does not undergo m-merger, then only the c-commanding copy comes to be pronounced.

(45) a. Movement to Spec$v$P




b. M-merger

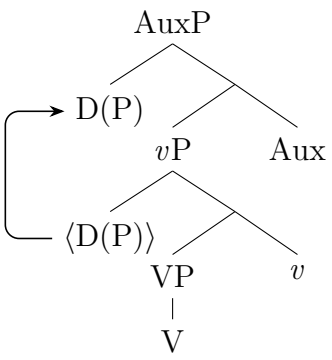



I argue that MPM (or clitic doubling of subjects) in Crow proceeds in a similar way to Harizanov's (2014) proposal of clitic doubling of objects in Bulgarian. To account for the raising constructions in (42) and (43), I assume that modal and aspectual auxiliaries in Crow reside in Aux and that both $v$ and Aux are endowed with m-merger triggering properties. Furthermore, I assume these morphemes bear an EPP feature that requires the specifier of Aux to be filled. In an unergative, as in (46), movement to SpecAuxP occurs without issue: the external argument, the highest accessible DP argument of Aux, raises from its base position in Spec$v$P to the landing site in SpecAuxP. However, in an unaccusative, as in (47), movement fails to occur. $v$ is a phase head and accordingly, by the time when Aux is merged into the structure, its complement, VP, is ineligible for additional syntactic operations having already been sent to Spell-Out. Since VP (and its daughters) can no longer be the target for further operations, movement of the internal argument DP out of the VP is blocked. To satisfy the EPP feature on Aux, I assume a null expletive ($\emptyset_{\text{EXPL}}$) is

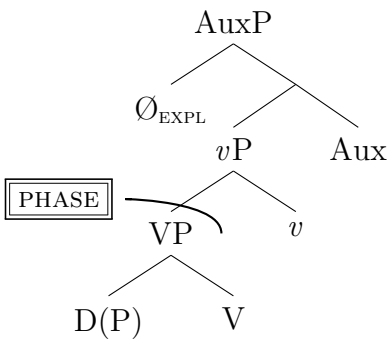
[20]Harizanov (2014, 1067) reformulates Matushansky's (2006) original proposal of m-merger by allowing both branching and non-branching maximal projections to be rebracketed. In his revised version of m-merger, morphological restructing of a branching maximal projection first reduces it to its head before deriving a new complex head. As will be clear below, I do not adopt his reformulation of m-merger in this chapter.

inserted into its specifier, which is analogous to the insertion of expletives *it* and *there* in English to fulfill the EPP feature on T.

(46)

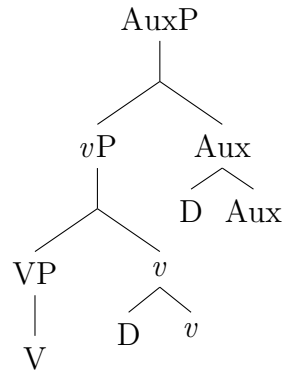



(47)




Ultimately, the occurrence of MPM is dependent on the syntactic position of the DP. In constructions with raising predicates, movement (and agreement) occurs only with unergative verbs but not unaccusatives.[21] For an unergative structure like (46), m-merger applies to Aux and $v$ postsyntactically which rebrackets the higher and lower D copies as part of the complex heads. The result of this rebracketing is shown in (48). Recall in (39) that A-set morphemes are specified for both local person and nominative Case features. Because both D heads bear nominative Case features, both copies are spelled out as A-set. Therefore, under this view, MPM in Crow is a type of multiple copy spell-out phenomenon that is derived via A-movement.

(48)




The order of operations in a structure consisting of an unergative verb root and a raising predicate is as follows. Aux bears uninterpretable (unvalued) $\varphi$-features, a nominative Case feature, and an EPP feature while the external argument has uninterpretable (unvalued) Case features and interpretable $\varphi$-features. Aux probes and forms an Agree relation with the highest element with $\varphi$-features – the DP residing in Spec$v$P. Consequently, Aux is valued with $\varphi$-features of the DP and assigns nominative Case to the DP. The nominative

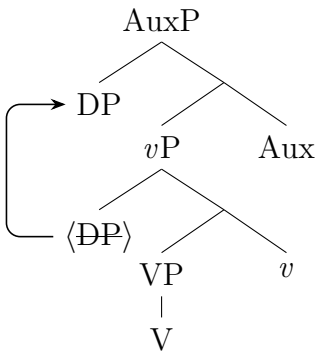
[21]To my knowledge, I know of no other languages that displays an unergative/unaccusative split in the ability to undergo raising.

Case-marked DP then raises and merges with Aux, leaving behind a copy which also bears nominative Case. Postsyntactically, the higher and lower copies undergo m-merger and become part of the verbal complex. Finally, at Vocabulary Insertion, A-set morphemes are inserted as the spell out of local person and nominative Case features on the D heads. Note that neither the D head in the complex verbal head nor its associate in the base position are deleted as the former is rendered invisible to the linearization algorithm.

Although MPM only co-occurs with local person subjects, it is worth considering raising clauses that contain third person subjects. In Crow, A-set (and B-set) morphemes that index third person subjects are phonologically absent. As such, MPM is not directly observable for third person subjects. Moreover, in raising constructions with third person subjects, as in (49a), only a single nominal DP may be overtly expressed. Thus, how does the analysis sketched above extend to clauses with an overtly expressed third person subject DP nominal? An important distinction that I make is that pronominals undergo m-merger whereas full DP nominals do not. This stipulation follows from Matushansky's (2006) proposal of m-merger, which is a part of her reconceptualization of the mechanisms of syntactic head movement. In her original formulation, m-merger can take place for phrases only if they are simultaneously heads and maximal projections (Matushansky, 2006, 83). As a result, when the subject DP raises to SpecAux, as shown in (49b), m-merger does not apply since the DP is not itself a head. Both copies reside in their associated A-positions, SpecvP and SpecAuxP, and at linearization, the lowest copy is deleted leaving the highest copy to be pronounced.[22]

(49) a. Logan xalússh-iimmaachi-k
Logan run-will-DECL
'Logan will run'

b.




Under this analysis, the origins of the distinct agreement patterns between unergatives and unaccusatives lie in their structural differences. In simplex unergatives, the external argument is in a syntactic position that can be accessed by the Aux probe. In contrast, simplex unaccusatives contain an internal argument that is outside of Asp's search domain.

[22]In Crow, third person DP subjects are often not expressed. In these cases, I assume that clitic doubling proceeds in the same way for local persons; that is, the third person pronominal also undergoes A-movement and m-merger. However, the vocabulary items for third-person A-set morphemes lack phonological content.

This distinction is important because it is precisely interaction with Aux that determines whether A-set marking will occur. With raising predicates, movement enters into the picture but Aux is still the main driving force. Because subjects of unergatives are accessible to Aux, they undergo movement and each copy is eventually spelled out with an A-set marker. With unaccusatives, subject DPs do not interact with Aux and remain in their base position. As a result, raising constructions with unaccusatives display neither A-set marking nor multiple occurrences of A-set markers.

### 4.3.3 Control

I turn now to control constructions, which unlike raising, employ A-set morphemes to refer to subjects and exhibit MPM for both unergative and unaccusative verbs, as in (23) and (24) which are repeated in (50) and (51). The agreement patterns for control constructions are summarized in Table 4.7. For raising constructions, I proposed an account that brings to the forefront the structural differences between unergatives and unaccusatives. The argument I make for control in Crow is that there are in fact structural similarities in control clauses between unergatives and underlying unaccusatives. What I propose is that both kinds of structures consist of an argument DP in the specifier of $v$P which feeds A-set agreement and MPM.

(50) **baa**-lisshí-wia$_2$-**waa**-k
1A-dance-DESID-1A-DECL
'I want to dance'

(51) hachká-**wee**-wia$_2$-**waa**-k
tall-1A.INCHO-DESID-1A-DECL
'I want to be tall'

| | **control** | |
|---|---|---|
| **Property** | ACTIVE | STATIVE |
| A-set references subjects? | ✓ | ✓ |
| Multiple-person marking? | ✓ | ✓ |

Table 4.7: Summary of agreement patterns in control clauses

In (52), the sentence contains the suffix *-bia* with an unergative verb *disshí* 'dance'. This construction is semantically ambiguous and may be interpreted with a futurate reading or a desiderative reading. Although both futurate and desiderative *-bia* appear to display similar morphosyntactic properties, I argue that the former involves a raising predicate while the latter involves a control predicate. Because clauses with futurate and desiderative *-bia* and unergative verbs are virtually indistinguishable, I turn to unaccusatives in search of evidence for the raising/control distinction.

(52) baa-lisshí-**wia$_{1/2}$**-waa-k
1A-dance-going.to/DESID-1A-DECL
'I am going/want to dance'

In raising constructions of unaccusative verbs, raising predicates attach directly to the verbal root, as in (53). This is exemplified by (53a) with *-bia* 'going to' which suffixes onto the unaccusative verb *ámmit* 'fall'. However, (53a) can only receive a futurate meaning but not a desiderative meaning. Directly attaching control predicates, such as the desideratives *-bia* and *-isshi* and the andative *-dee*, renders the sentence ungrammatical, as in (54). It is precisely this behavior that distinguishes raising from control predicates. Raising predicates may directly attach to unaccusatives but control predicates may not.

(53) a. bii=ámmit-**bia$_1$**-k
1B=fall-going.to-DECL
'I am going to fall'

b. bii=ámmich-**iimmaachi**-k
1B=fall-WILL-DECL
'I will fall'

c. bii=ámmit-**dahku**-k
1B=fall-CONT-DECL
'I keep on falling'

(54) a. *bii=ámmit-**bia$_2$**-k
1B=fall-DESID-DECL
Intended: I want to fall

b. *bii=ámmich-**isshi**-k
1B=fall-DESID-DECL
Intended: I wish to fall

c. *bii=ámmit-**dee**-k
1B=fall-go-DECL
Intended: I went to fall

Is the ban on forming control predicates with unaccusatives semantic or is it syntactic? Perhaps the intended meaning of a sentence like 'I want to fall' is simply infelicitous in Crow and therefore not permitted. As we see in (55), this cannot be the case. In order to express control constructions with unaccusative verbs, the so-called inchoative marker *-dee* must be used.[23] I suggest that the source of the ungrammaticality in (54) is in fact syntactic, not

[23]The term 'inchoative' is borrowed from Graczyk (2007, 120) who also uses the gloss 'become' to interchangeably refer to *-dee*. Moreover, **?**, 139, fn.9 characterizes *-dee* as 'volitional be/become' based in part on her analysis that it creates an unergative out of an unaccusative. Outside the Crow literature, 'inchoative' is generally used to either express a beginning of a state or it can be used to indicate a change of state.

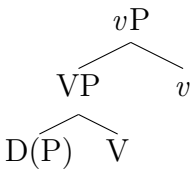
semantic, in that the absence of *-dee* serves a necessary syntactic function (i.e. as a repair). In (55), the inchoative attaches close to the verbal root and inflects for person. In addition, multiple occurrences of A-set can be found in these constructions, one on the inchoative and one on the control predicate. Note that in these constructions, the B-set that usually indexes subjects in unaccusatives is obligatorily absent. Thus, the raising/control distinction emerges with unaccusatives but not with unergatives.

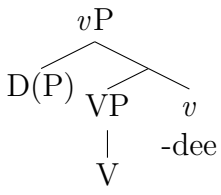
(55) a. ámmit-**bee**-wia-**waa**-k
fall-1.INCHO-DESID-1A-DECL
'I want to fall'

b. ámmit-**bee**-**w**-isshi-k
fall-1.INCHO-DESID-1A-DECL
'I wish to fall'

c. ámmit-**bee**-**waa**-lee-k
fall-1.INCHO-1A-go-DECL
'I went to fall'

Why does the inchoative marker obligatorily co-occur in control constructions and how exactly does it feed the occurrence of MPM? Wallace (1993, 143) suggests that the inchoative *-dee* transforms unaccusatives to unergatives and "allows a predicate which otherwise assigns no agentive roles to be interpreted as having an agentive subject." In other words, Wallace proposes that the inchoative brings about semantic and syntactic changes when it co-occurs with unaccusatives, as opposed to just a syntactic change as mentioned above. It is difficult to diagnose the precise functions of the inchoative since it often co-occurs with other morphemes and is restricted to unaccusatives. Nevertheless, I adopt Wallace's proposal that the inchoative *-dee* converts an unaccusative into an unergative, as illustrated in (56). The structure in (56a) represents an unaccusative in which the DP subject is externally merged as the complement of V. When the inchoative attaches to the unaccusative, which I analyze as residing within *v*, it yields the structure (56b) in which the DP subject is instead externally merged with *v*.

(56) a. 

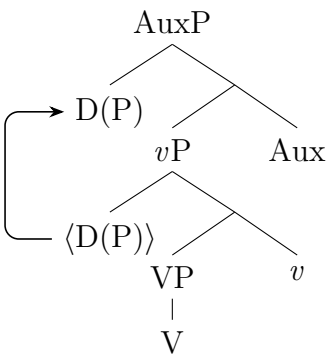
⇒
b. 


I consider the application of the inchoative in control constructions with unaccusative verbs as a repair strategy, which would otherwise yield an ungrammatical structure. Assum-

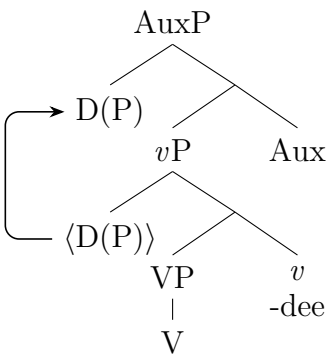
Although the characterization of *-dee* as an inchoative may be incorrect, some of the meanings that arise from the use of *-dee* appear to fit the latter definition. First, *-dee*, which only occurs on stative verbs, typically co-occurs with desideratives or imperatives which are associated with a result state. Second, when it occurs in texts without a desiderative or imperative, it is often translated as 'become' or 'get'.

ing that control predicates also reside in Aux and bear an EPP feature, movement in control constructions with unergatives is derived in much the same way as their raising counterpart. In (57), which represents a control clause with an unergative, the external argument moves to SpecAuxP, the same landing site for raising constructions. But in control clauses, this landing site is a theta-position. The structure of a control clause with an underlying unaccusative is diagrammed in (58). Since the inchoative creates an unergative out of an unaccusative, the derivation proceeds in exactly the same way – the external argument DP raises to SpecAuxP followed by m-merger and multiple copy spell-out.

(57)

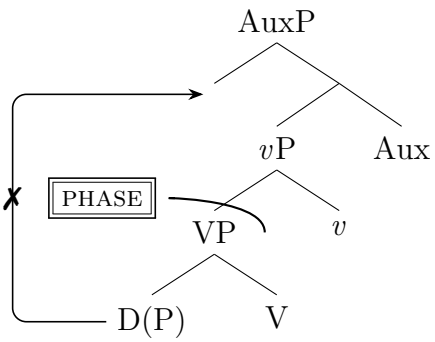



(58)




Now, consider the scenario in which the inchoative is absent from control constructions of unaccusatives. It would look similar to their raising analog. Movement of the DP element out of VP to SpecAuxP would be blocked for the same reason why raising constructions of unaccusatives do not display MPM; $v$ is a phase head and movement of the DP out of VP would violate PIC. The structure with this illicit A-movement is given in (59). Without an accessible DP, the structure would fail to satisfy the EPP feature on Aux. While raising constructions repairs this pernicious scenario by inserting a null expletive, control constructions are unable to do so because (null) expletives are unable to receive a theta-role.

(59)




Moreover, the inchoative *-dee* does not occur in raising constructions of unaccusatives, but why exactly should this be? If the VP-internal DP is unable to be extracted out of the phase, we might expect *-dee* to similarly act as a repair. Instead of inserting a null expletive, the inchoative creates an unergative from the unaccusative allowing for the subject DP to

raise to the specifier position of Aux to satisfy its EPP feature, as in (58). My proposal draws on the fact that control predicates in Crow must locally assign a theta-role to a DP argument; in contrast, raising predicates do not assign a theta-role to their argument. Inserting a null expletive, which cannot receive a theta-role, as a repair presents no issue in raising constructions, but in control clauses, it is insufficient. The solution that is adopted in Crow is to recruit the inchoative to convert an unaccusative into an unergative which subsequently allows a DP to move into SpecAuxP where it is assigned a theta-role.

With aspectual triggers of MPM, only unergatives participate in MPM. But with desiderative triggers, all intransitive verbs participate. I have argued that this is because aspectual suffixes trigger raising, whereas desiderative suffixes trigger control. The differences between raising and control of unergatives in Crow therefore appear imperceptible. Both constructions display A-set agreement and both exhibit MPM. Only when we direct our attention to unaccusatives can we detect differences in behaviors between raising and control. In raising constructions, A-set agreement and MPM are restricted to unergative verbs and I have proposed an account that taps into the differences in argument structure. In control constructions, this distinction becomes neutralized and I have provided an analysis in which the positions of core arguments in control constructions of unergatives and unaccusatives are actually identical. In the following sections, I turn to causative constructions that also neutralize this distinction, and argue that structural similarities and restrictions on Agree, a subcomponent of movement, continue to play a vital role.

## 4.4 The structure of causatives

In Crow, there are two causative morphemes. The direct (or 'lexical') causative *-aa*, which is relatively unproductive, is restricted to unaccusatives, while the indirect causative *-hche* may combine with any verb. Although both causatives introduce an external argument into the clause, usually an agent or a causer, there is a number of semantic differences between the uses of the two morphemes. Differences in meaning can be readily observed in minimal pairs where each causative morpheme occurs on the same stem (Graczyk, 2007, 325-6, Ex.110):

(60) a. bas-íilaalee xachíi-w-**aa**-k
1POS-car move-1A-CAUS-DECL
'I moved my car (e.g., by pushing it)'

b. bas-íilaalee xachíi-wa-**hche**-k
1POS-car move-1A-CAUS-DECL
'I moved my car (e.g., by turning the ignition key and starting the engine)'

The sentences in (60) contain the unaccusative verb *xachíi* 'be moved, feel movement'. In (60a), the use of the direct causative suggests that the agent, which is introduced by the causative, exerts energy to bring about the result intentionally and directly. In (60b), the causer, which is introduced by the indirect causative, achieves similar results but through an

intermediary – the engine. By turning the ignition key, the causer starts the engine which converts the energy from the heat of burning gasoline into mechanical torque – and thus the car is set in motion.

Another semantic difference observed between the two causative morphemes involves animacy. In general, the direct causative strongly suggests an animate agent. A plausible explanation is that the direct causative expresses agency which tends to imply animate entities. Direct/indirect causative minimal pairs involving an animate and inanimate subject are given in (61) and (62), respectively. In (61), the first-person animate subject can be used with either causative marker. In contrast, we find that when the subject is inanimate, such as *microwave* in (62a), its co-occurrence with direct causative is rendered infelicitous.[24]

(61) a. xóoxaashe tawée-w-aa-k
corn hot-1A-CAUS-DECL
'I heat up the corn'

b. xóoxaashe tawée-wa-hche-k
corn hot-1A-CAUS-DECL
'I heat up the corn'

(62) a. %microwave kooté xóoxaashe tawée-a-k
microwave like.that corn hot-CAUS-DECL
Intended: the microwave heat up the corn

b. microwave kooté xóoxaashe tawée-hche-k
microwave like.that corn hot-CAUS-DECL
'the microwave heat up the corn'

Despite these semantic differences, the direct and indirect causative constructions exhibit a number of morphosyntactic similarities, which are summarized in Table 4.8. Crucially, both causative morphemes, when attached to any verb, display A-set agreement to index the DP they introduce, as in (61) (cf. *xóoxaashe tawéek* 'the corn is hot'). When formed with raising and control predicates, direct and indirect causative constructions will also exhibit multiple-person marking (MPM) with *bia*, as in (63a) and (63b), respectively.

[24]Direct affixation of Crow morphology onto insertions of English nouns is generally not permitted. To add Crow morphology onto English nouns within a Crow matrix frame, the element *kooté* must co-occur with the inserted noun to form the base onto which Crow nominal morphology may be added. This appears to be a nominal counterpart to insertions of English verbs in Crow in which the 'helping' or light verb *kootá*, which has the same underlying form as *kooté*), accompanies the inserted verbal element. These so-called light verb constructions have been more widely reported in other contact situations involving code-switching, such as Navajo-English (Canfield, 1980), Marathi-English (Joshi, 1982), Hindi-English (Ritchie and Bhatia, 1999), Japanese-English (Azuma, 1997), among many others.

Table 4.8: Summary of agreement patterns in causative clauses

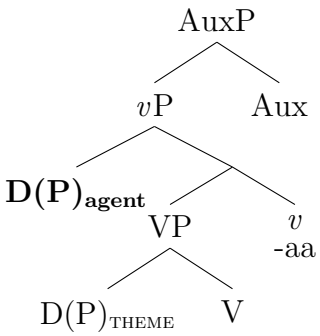
| | **Causatives** | |
|---|---|---|
| **Property** | ACTIVE | STATIVE |
| A-set references subjects? | ✓ | ✓ |
| Multiple-person marking? | ✓ | ✓ |

(63) a. xóoxaashe óosh-**b**-aa-wia$_{1/2}$-**waa**-k
corn cook-1A-CAUS-going.to-1A-DECL
'I'm going/want to cook the corn'

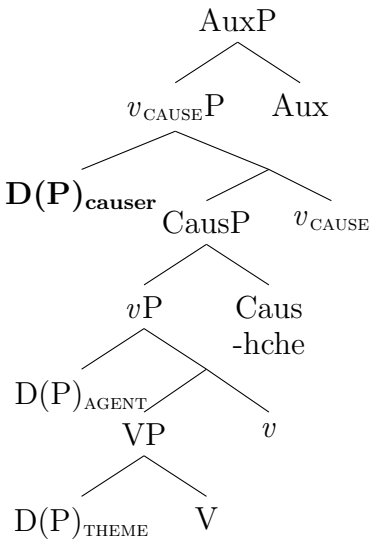
b. dii=hachká-**wa**-hche-wia$_{1/2}$-**waa**-k
2B=fall-1A-CAUS-going.to-1A-DECL
'I'm going/want to make you to be tall'

In light of the fact that the direct causative marker attaches to unaccusatives to introduce an external argument, I assume that the direct causative is housed within $v$. On the other hand, the indirect causative may attach to any verb and I assume a bipartite structure comprised of not only a $v$ layer that introduces an external argument, but also a Caus(ative) layer below it that yields causative semantics (Pylkkänen, 2002, 2008). The structures involving the direct and indirect causatives are given in (64a) and (64b), respectively. In both structures, the DPs that are introduced by the causative morphemes are not only accessible to the probe on Aux, but they are the *closest* accessible DPs. Thus, A-set agreement in causative constructions always cross-references the arguments introduced by the causative markers.

(64) a.




b.



### 4.4.1 Direct causative constructions

The direct causative is generally restricted to unaccusative verbs to introduce an agent into the clause.[25] A simplex unaccusative with the verb *óosshi* 'be cooked' and subject *xóoxaashe* 'corn' is given in (65a). With the direct causative, the subject of the clause is an agent, as in (65b), and the A-set morpheme reflects the person feature of the agentive argument. In (65c), the raising predicate -$bia_1$ 'going to' is added and we obtain two instances of A-set agreement. By applying the direct causative, not only does A-set morphology surfaces, but in the presence of a MPM trigger, multiple A-set morphemes surface.

(65) a. xóoxaashe óosshi-k
corn cook-DECL
'The corn is cooked'

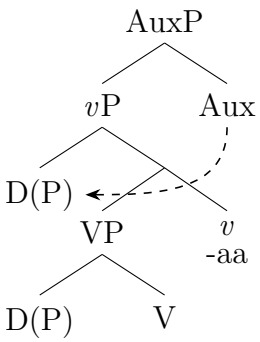
b. xóoxaashe óosh-**b**-aa-k
corn cook-1A-CAUS-DECL
'I cooked the corn'

c. xóoxaashe óosh-**b**-aa-wia$_{1/2}$-**waa**-k
corn cook-1A-CAUS-going.to/DESID-1A-DECL
'I'm going/want to cook the corn'

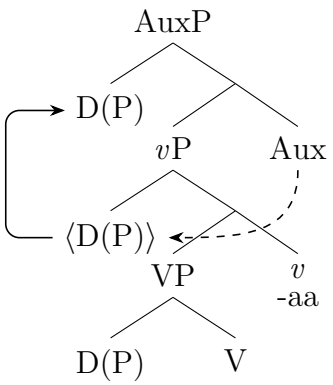
As mentioned above, I assume that the direct causative morpheme resides within the *v* head which introduces an agent DP into its specifier. The VP-internal theme DP is unaffected and remains in-situ. The structures of (65b) and (65c) are given in (66a) and (66b), respectively. Introducing an external argument into the structure has two important consequences. First, Aux can now probe a DP element; with plain unaccusatives, Aux is unable to access the VP-internal DP. By interacting with the external argument, the DP receives nominative Case, a prerequisite for the occurrence of A-set agreement. The second consequence is that with raising and control predicates, the external argument can now also move to SpecAux which allows for multiple copy spell-out and results in the multiple occurrence of A-set morphemes. Thus, the facts about MPM once again fall out from an account that critically relies on A-movement and m-merger.

[25] According to Gordon and Graczyk (nd), there is a single exception involving the active intransitive verb *xii* 'move (in a direction)' which may combine with the direct causative -*aa*. However, this verb does not occur independently. I postulate that the combination of *xii* with -*aa* underwent lexicalization, resulting in a transitive verb in contemporary Crow that is no longer decomposable.

(66) a.




b.




### 4.4.2 Indirect causative constructions

Let us first consider what happens when we add an indirect causative to a transitive verb. A simplex transitive construction is given in (67a). Here, the A-set morpheme cross-references the first-person subject, whereas the B-set morpheme indexes the second-person object. The constructions in (67b) and (67c) are causativized transitives with the same verb.[26] In (67b), the second-person causer is indexed with the A-set morpheme *-da* that is inflected onto the indirect causative marker. In Crow, third-person is phonologically null, so the first-person B-set marker *bii-* can either refer to the 'hitter' or the 'hittee'. Under the former reading, the agent of the main verb is referenced not with an A-set marker, but with with a B-set. This becomes more apparent in (67b) in which the core arguments of the verb *dichí* 'hit' are both indexed via B-set. Thus, the main generalization in (67) is that in simplex transitive clauses, A-set indexes the subject – the agent. However, when with causativized transitives, A-set must index the causer. All other arguments are referenced via B-set.

(67) a. dii=waa-lichí-k
2B=1A-hit-DECL
'I hit you'

b. Logan bii=lít-da-hche-k
Logan 1B=hit-2A-CAUS-DECL
'you made me hit Logan' / 'you made Logan hit me'

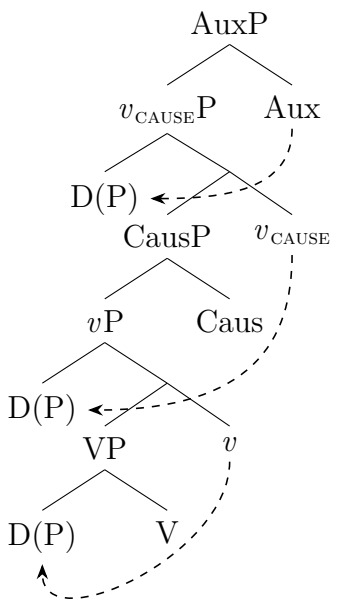
c. Logan dii=wii=lichí-hche-k
Logan 2B=1B=hit-CAUS-DECL
'Logan made me hit you' / 'Logan made you hit me'

The main generalization of (67) can be captured under an account where the indirect causative marker sits above active and non-active *v*P. The structure in (68) represents a

[26] According to Wallace (1993, 86-87) and Graczyk (2007, 199-200), B-set morphemes enjoy a great deal of freedom in terms of their ordering. Accordingly, (67c) is considered ambiguous – the first person B-set morpheme *dii-* can either refer to the 'hitter' or the 'hittee'.

causativized transitive clause. The indirect causative is comprised of two layers – $v_{\text{CAUS}}$ and Caus – wedged between $v$P and AuxP. The $v_{\text{CAUSE}}$ head introduces the causative argument into its specifier which becomes the target of Aux and receives nominative Case; this newly introduced DP is not only accessible, but is also the closest DP to the probe on Aux. Moreover, I assume that $v_{\text{CAUSE}}$ is a $\varphi$-probe that targets the closest accessible DP within its search domain – the agentive DP in Spec$v$P. Finally, the $v$ probe locates and agrees with the theme inside the VP. Thus, the only argument to receive nominative Case is the causer which is therefore the only argument that is cross-referenced via A-set.

(68)




I have argued that A-set agreement is intimately linked to the probe on Aux having direct access to a DP argument. However, this is insufficient. Assuming $v_{\text{CAUSE}}$ does not constitute a phase, then in (68), there are two DP arguments within the search domain of Aux: the causer and the agent. But A-set morphology is used to refer to the causer. What seems to also matter is not just accessibility of the DP, but also its relative position within the clausal spine. The causer is situated higher than the agent, so Aux must not only be concerned with accessible DPs. Rather, Aux cares about the *highest accessible* DP – the classic case of locality of Agree. We can also see how this proposal handles unergatives and unaccusatives that co-occur with the indirect causative, as in (69a) and (69b). In these two constructions, the active-stative agreement distinction between the two intransitives is neutralized and the A-set morpheme refers only to the causative argument; all other arguments receive B-set marking. If the DP that is introduced by the indirect causative is the highest acccessible DP, then it follows that it should be referenced using A-set morphology.

(69) a. dii=chiwakíi-**wa**-hche-k
2B=pray-1A-CAUS-DECL

'I made you pray'

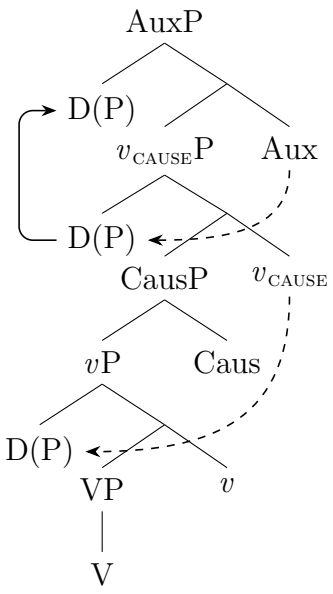
b. dii=ámmit-**ba**-hche-k
2B=fall-1A-CAUS-DECL
'I made you fall'

I turn now to causative constructions with raising and control predicates. While the analysis below focuses on the control predicate *-bia*$_2$ 'want to', it extends to other control and raising predicates that follow the indirect causative. The control equivalent of (69) is given in (70). With unergatives and unaccusatives, A-set morphemes are multiply realized on the indirect causative and the desiderative. It is important to also note that even with an unaccusative verb, the inchoative is no longer required. The structural configurations of (70) are displayed in (71).

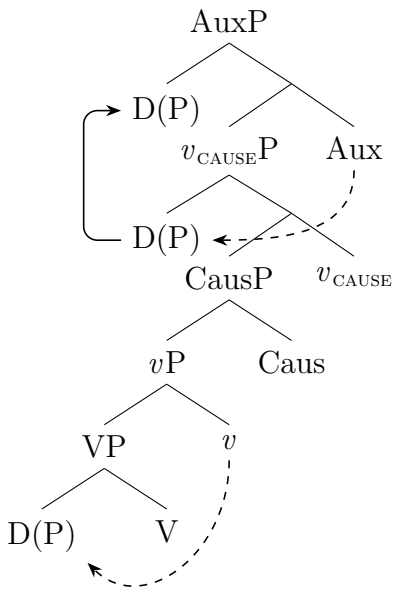
(70) a. dii=chiwakíi-**wa**-hche-wia$_2$-**waa**-k
2B=pray-1A-CAUS-DESID-1A-DECL
'I want you to pray'

b. dii=ámmit-**ba**-hche-wia$_2$-**waa**-k
2B=fall-1A-CAUS-DESID-1A-DECL
'I want you to fall'

(71) a.




b.




Under a clitic doubling analysis of MPM, the patterns observed in (70) can be accounted for in a straightforward manner. In both structures presented in (71), the $v_{\text{CAUSE}}$ head introduces an external argument. As I have discussed above, this argument, by virtue of being introduced in a position higher than all other arguments in the clause, is the highest accessible DP element for Agree with Aux. The causative DP agrees with Aux, receives

nominative Case, moves to its specifier where it receives a theta-role and fulfills the [EPP] feature on Aux. The higher and lower copies of the causative DP, which bears a [NOM] feature, undergo m-merger and are then eventually pronounced as A-set markers. The point about the assignment of theta-roles in the specifier of Aux that occurs in the two structures is important. The inchoative, which obligatorily co-occurs with unaccusatives in control clauses, is notably absent in (70b), which contains an unaccusative. I have argued that the inchoative acts as a repair strategy when there are no DP arguments that can move into the specifier of Aux to receive a theta-role. Because the argument introduced by the indirect causative is able to move into SpecAux, an inchoative is no longer needed as a repair.

## 4.5 Conclusion

In this chapter, I have argued that Crow, a highly polysynthetic language, displays a number of raising and control constructions. The central claims of the analysis come from two main arguments: (a) multiple-person marking is derived from A-movement and m-merger, and (b) the inchoative *-dee* acts as a repair strategy for allowing theta-roles to be marked on subjects of underlying unaccusatives.

The specific analysis of the multiple-person marking Generalization considers the occurrence of multiple A-set markers as a type of clitic doubling phenomenon, decomposed into two parts: A-movement and m-merger. To account for the agreement split between unergatives and unaccusatives in the realization of A-set markers in raising constructions, I proposed an analysis in which subjects of unergatives may raise from Spec$v$P into SpecAuxP to satisfy the EPP, whereas subjects of unaccusatives must remain in-situ. In raising constructions with unaccusatives, A-movement out of the VP-internal base position would violate the PIC; instead, a null expletive is inserted into SpecAuxP to satisfy the EPP. Therefore, the occurrence of A-set agreement and multiple-person marking is conditioned on whether A-movement of the DP argument to the higher landing site is permitted. In control clauses, which neutralize the agreement distinction in unergatives and unaccusatives, evidence that distinguishes them from raising comes from unaccusatives. In control of underlying unaccusatives, the inchoative *-dee* obligatorily attaches to the verb root and functions as a repair by allowing subjects of underlying unaccusatives to receive a theta-role from the control predicate – the ability to assign theta-role is a distinguishing feature of control predicates. Finally, I have shown that the analysis of raising and control can be straightforwardly extended to causative constructions, which also neutralize the agreement distinctions between unergatives and unaccusatives. In causative constructions, a (highest) external argument is introduced and serves as the target for clitic doubling. Since the causative external argument is the highest accessible DP for the Aux probe, it undergoes A-movement. Under this view, multiple-person marking crucially involves A-movement, which helps to paint a clearer picture of the mechanisms that underlie raising and control constructions in Crow.

Identifying control and raising in polysynthetic languages is a non-trivial task. Some of the classic diagnostics of control and raising rely heavily on properties that are associated

with biclausal constructions. In addition, evidence for A-movement is not always easy to come by in languages with a high degree of polysynthesis. The Crow picture presented here is just one way in which control and raising manifest in these types of languages. In particular, studying the distribution of agreement markers or pronominals across a variety of clauses, such as those with meanings often attributed to control and raising in other languages, may reveal important insights about the true nature of these clauses. In this chapter, I have analyzed A-set agreement markers as pronouns. In some sense, this is desirable since we can come to see how control in Crow shares similarities with other languages, such as San Lucas Quivini Zapotec. In Crow and San Lucas Quivini Zapotec, pronouns that reference controller and controllee must be overtly pronounced. In contrast to control in San Lucas Quivini Zapotec, however, in which controller and controllee nominal DPs may both be expressed, at most one nominal may be overtly expressed in Crow. Thus, the properties of raising and control in Crow contribute to our understanding of the possible typological space of raising and control. Future work investigating control and raising in polysynthetic languages may find that studying the behavior of agreement and pronominals is a fruitful endeavor.

# Chapter 5

# The evolution of multiple exponence

## 5.1 Introduction

Multiple exponence is a phenomenon in which morphemes that encode a given piece of information are realized multiple times within a single word. In other words, multiple exponence displays redundancy in morphological marking.[1] While some have questioned its very existence (for references, see Harris, 2017, 6), multiple exponence has been reported to occur in at least 25 language families (Caballero and Harris, 2012). Nevertheless, multiple exponence is generally considered to be relatively uncommon (Harris, 2017). In the past decade or so, there has been a renewed interest in understanding the origins of multiple exponence (Harris and Faarlund, 2006; Harris, 2008; Harris and Antonenko, 2011; Harris, 2017; Brody, 2019; Joseph, 2016). An important contribution towards this endeavor is the monograph by Alice Harris, entitled *Multiple exponence* (2017), in which Harris identifies several frequently occurring types of multiple exponence and common diachronic pathways such as grammaticalization, externalization of inflection in which "trapped" morphemes typically become externalized to the right edge of the word as a suffix (Haspelmath, 1993), analogical extension and borrowing.

The three types of multiple exponence identified by Harris that are relevant to the present study include REINFORCEMENT, PERIODIC and ALTERNATING. Reinforcement multiple exponence involves exponents that typically occur adjacent to one another and while they tend to express the same information, they often differ in form. Khvtisiashvili (2013, 96–99; also discussed in Harris 2017, 64) provides plural formation across different noun classes in Xinaliq, a Caucasian language.

(72) Xinaliq

[1] This chapter is based on my paper that has been published in the journal *Diachronica*. Throughout this chapter, I retained references to 'paper' rather than 'chapter'.

| a. taka-**d** | b. halamx̣er-**ir** | c. kixir-**d-ir** |
|---|---|---|
| goat-PL | shepherd-PL | drop-PL-PL |
| 'goats' | 'shepherds' | 'drops' |

In (72a), the noun receives the plural suffix *-d* and in (72b), the noun takes the suffix *-ir*. As Harris notes, nouns such as *kixir* 'drop' in (72c) may occur with both plural markers *-d* and *-ir*, which are evidently fused since their co-occurrence is obligatory and they are analyzed as a single unit by Khvtisiashvili. In contrast, periodic multiple exponence occurs in a dependency relation and minimally involves four morphemes: the stem and its exponent, and a carrier (or bound) morpheme that is co-present with an exponent that bears the same information as the exponent on the stem, as in the following schema:

(73) INFL-ST-INFL-CA

where the two INFLs represent exponents carrying identical information, ST represents the stem, and CA represents the carrier/bound morpheme. An example of periodic multiple exponence in Crow, which is a member of the Siouan family spoken in Montana in the United States, is given in (74) where we find two instances of the so-called first-person A-set agreement marker. Here, the two A-set markers, which are underlyingly /maa/, occur within a single word and refer to the same argument. As I will discuss below, Crow employs two sets of person agreement markers (i.e., A- and B-set) to reference subjects of intransitive verbs.[2]

(74) Crow

**baa**-lisshí-wia-**waa**-k
1A-dance-DESID-1A-DECL

'I want to dance' (Cyle Old Elk; COE_2018–17.029.001)

Similar to periodic multiple exponence is alternating multiple exponence which differs in exhibiting optionality or gaps in its paradigm. Moreover, as Harris (2017, 59) notes, another characteristic of alternating multiple exponence is that "the carrier morpheme does not host the doubled exponent when the carrier occurs as an independent word." For example, across dialects of Spanish found in Spain, countries in Latin America, and among the Judeo-Spanish diaspora, alternating multiple exponence of the plural can be found in such constructions as the imperative.

(75) Spanish

vénd-a-**n**=lo(-**n**)
sell-IMPER-PL=M.ACC.SG(-PL)

'sell (pl.) it' (Harris and Halle, 2005, 196, ex.2a)

[2]I provide on the first line the name of the language for examples that do not come from Crow.

In (75), the additional realization of the plural marker *-n* on the clitic *lo* is optional – its absence is typically considered to be standard. Furthermore, in contexts where *lo* occurs independently, it does not display number agreement (i.e., **lo-n*; Harris 2017, 60). As such, it is considered as an example of alternating multiple exponence. In general, as Harris suggests, analogical extension and borrowing produce reinforcement multiple exponence, grammaticalization and compounding produce periodic multiple exponence, and externalization of inflection produces alternating multiple exponence.

The goal of this paper is to provide an account of the historical pathways that have led to multiple exponence in Crow. Some pathways such as grammaticalization are relatively conventional, while others, such as those involving compounding and analogy, are less so. This paper also attempts to explain how Crow came to display a pattern in which A-set but not B-set markers participate in displaying multiple exponence. Data for this study come from fieldwork materials collected between 2017 and 2022, which are currently archived (Alden et al., nd), published sources, and materials developed by the Crow-English Bilingual Materials Development Center. In Crow, the vast majority of multiple exponence is periodic and involves subject person agreement; as multiple exponence involving plural marking on verbs is much more idiosyncratic and infrequent, I restrict my focus to multiple exponence of person agreement.[3] Although most occurrences of periodic multiple exponence in Crow can be explained by grammaticalization of a lexical verb to a grammatical suffix, cases of periodic multiple exponence that involve modal auxiliaries developed through different pathways. In particular, I argue that multiple exponence observed across the set of modal auxiliaries originated with the grammaticalization of the motion verb *híi* 'arrive there' as a future suffix *-ii*, retaining its agreement when it grammaticalized.

The inflectional future then served as the basis for the formation of modal auxiliaries ***-ii****mmaachi* 'will, must', ***-ii****h* 'may, might', and ***-ii****shdaachi* 'should'. In this way, multiple exponence was spread to these three modals, all of which are innovations of Crow and do not occur in any other Siouan languages. Finally, co-occurrence of person agreement on these modal auxiliaries was later extended to another modal *-isshi* 'feel like', for which cognates can be found across all Siouan languages. But unlike the cognates in the other Siouan languages, Crow *-isshi* is the only one that co-occurs with person agreement. Thus, in Crow the emergence of periodic multiple exponence developed through (a) compounding of a carrier morpheme, and (b) analogical extension – a distinct case of multiple exponence begetting additional multiple exponence.

This paper is organized in the following way. After the section on the background to multiple exponence in Crow (Section 5.2), the diachronic analysis of multiple exponence across the Crow modals is presented in Section 5.3–5.5. The paper concludes with a brief discussion about why only A-set morphemes have multiple exponence (Section 5.6) followed by a conclusion (Section 5.7).

[3]Multiple plural exponence is observed for verbs that display plural suppletion. For example, the verb *dáachi* 'remain, stay' has the plural suppletive allomorph *kaá* which can occur with the regular plural marker *-u(u)* (i.e., 1PL: *bakaá-u*, 2PL: *dakaá-u*, 3PL: *kaá-u*) and with the plural imperative *-(a)lah* (e.g., *káa-lah* '(you all) stay!'; Graczyk 2007, 210, ex.133).

## 5.2 Multiple exponence in Crow

To fully appreciate the patterns of multiple exponence in Crow and their origins, it is necessary to have a basic understanding of the agreement system of the language.[4] Like most of the Siouan languages, Crow exhibits active-stative agreement in which both intransitive and transitive verbs consist of two classes: ACTIVE and STATIVE. Subjects of active verbs are referenced using A-set agreement morphemes, whereas B-set agreement morphemes index subjects of stative verbs as well as objects in transitive constructions. The term "active-stative" is somewhat of a misnomer because while A-set and B-set agreement marking typically occurs on verbs that denote events and states, respectively, there are exceptions (Ko, 2020). Verbs that denote states such as *chilíi* 'be afraid' and *ilutchítchi* 'feel guilty' receive A-set marking, and verbs that denote events such as *bíile* 'tattle', *bíisshi* 'tell a lie', and *ámmichi* 'fall' receive B-set marking. The alignment is also not based on agentivity as there are verbs with non-agentive subjects that employ A-set marking such as *shée* 'die, faint', *pía* 'fart', *baashíali* 'dream', and *kalée* 'vomit', and verbs that reference agentive subjects via B-set also exist, such as *bíile* 'tattle' and *bíisshi* 'tell a lie'.

The list of A- and B-set agreement morphemes which index person is given in Table 1. Third-person forms are phonologically null, and apart from the first-person B-set plural proclitic *balee=*, the plural *-uu* is discontinuously marked as a suffix on the verbal stem. Note that while pitch accent in Crow tends to fall on the verbal stem, accent generally shifts when there is a second-person prefix (i.e. non-B-set) markers occurring on the verb.

Table 5.1: A- and B-set agreement morphemes in Crow

| **Person** | **A-set** | **B-set** |
|---|---|---|
| 1 | *baa-* | *bii=* |
| 2 | *daa-* | *dii=* |
| 3 | *Ø-* | *Ø=* |

The active-stative agreement system of Crow is illustrated in (76). In an active intransitive situation (76a) and active transitive situation (76b), the subject arguments are cross-referenced via the first-person A-set prefix *baa-*. Note that *w* and *l* are realized in intervocalic positions, whereas *b* and *d* occur word-initially and adjacent to obstruents. In stative intransitives (76c) and stative transitives (76d), subjects are cross-referenced via B-set proclitics. In both active and stative transitive constructions, objects are also indexed with a B-set proclitic.

(76) Crow

a. Active intransitive:

[4] An anonymous reviewer remarks that it is also possible to interpret Crow subject and object inflection as pronominal arguments (Jelinek, 1984).

**baa**-lisshí-k
1A-dance-DECL
'I danced' (Cyle Old Elk; Cyle_072018_005)

b. Active transitive:
**dii**=**waa**-láxpii–k
2B=1A-hug-DECL
'I hugged you' (Cyle Old Elk; 2018–17.084.003:32)

c. Stative intransitive:
**bii**=ámmichi-k
1B-fall-DECL
'I fell' (Jack Real Bird; FBD_JRB_2018–17.029.001)

d. Stative transitive:
**dii**=**wii**=chichée-k
2B=1B=resemble-DECL
'I resemble you' / 'you resemble me' (Felice Big Day; 2018–17.084.002:25)

In the literature on Crow, only Wallace (1993) identifies A-set and B-set agreement markers as affixes and clitics, respectively; while Graczyk (2007) does not explicitly state that the A-set markers are affixes and B-set markers are clitics, these markers display a range of properties that corroborates Wallace's analysis of the agreement markers. A-set agreement marking exhibits a high degree of lexically-dependent allomorphy, such as occurring as prefixes (e.g., *baa-*, *bah-*), infixes (e.g., *-b-*, *-w-*), and even suffixes (e.g., *-waa*, *-wa*), and must typically occur adjacent to the verbal root. In contrast, B-set agreement proclitics are (i) generally invariant, (ii) typically occur on the left edge of their host, (iii) can also attach to hosts that already contain a clitic, (iv) exhibit variable ordering with other clitics, and (v) display morphophonological idiosyncracies by displaying optional intervocalic laxing (Ko 2019; Zwicky and Pullum 1983; for further discussion, see Graczyk 2007, 277–278 and Wallace 1993, 52–54).

As shown in (74), Crow exhibits multiple exponence, displaying more than one instance of person agreement within a single word to index the same argument.[5] However, multiple exponence in Crow is restricted to the A-set agreement prefixes; B-set proclitics are never multiply exponed nor do they co-occur with A-set affixes to refer to the same argument. In fact, excluding some of the modal auxiliaries that are discussed later in this paper, the lexical sources of all known multiple exponence triggers, many of which are given in (77),

[5]As a reviewer points out, periodic multiple exponence of person marking may also be found in other Siouan languages, such as Hocank (Helmbrecht and Lehmann, 2008), Lakota (de Reuse 2006; Ullrich and Black Bear 2018, 538–544), Omaha-Ponca (Marsault, 2021, 186–191) and Osage (Quintero, 2004, 142–144). Although it would be interesting to compare the other Siouan languages, it is beyond the scope of this paper.

involve active verbs.[6] As I will suggest in Section 5.6, the fact that A-set markers are affixes and B-set markers are clitics plays an important role in accounting for this observation.

(77) a. Pre-Crow *dáachi 'remain, stay' > *dáachi* 'remain, stay', *-daachi* 'continuative'
b. Pre-Crow *dahkú 'dwell, stay' > *dahkú* 'dwell, stay', *-dahku* 'iterative'
c. Pre-Crow *dáawi 'go ahead, start' > *dáawi* 'go ahead, start', *-dawi* 'continuative (motion), inceptive'
d. Pre-Crow *koowée 'stop (an activity), finish' > *koowée* 'stop (an activity), finish', *-koowee* 'completive'
e. Pre-Crow *ilúu 'stand' > *ilúu* 'stand', *-iluu* 'frequentative'
f. Pre-Crow *dée 'go' > *dée* 'go', *-dee* 'andative'
g. Pre-Crow *húu 'come' > *húu* 'come', *-huu* 'venitive'
h. Pre-Crow *kú 'give' > *kú* 'give', *-ku* 'benefactive'
i. Proto-Crow-Hidatsa *híi 'arrive there' > *híi* 'arrive', *-ii* 'will, must'
j. Proto-Crow-Hidatsa *waaíihee 'want' > *íhee* 'bet', *-bia* 'desiderative' > 'future'

With the exception of (77j), the lexical sources that grammaticalized as suffixes, which co-occur with their own agreement prefixes, are still used as independent verbs in present-day Crow.[7,8] Furthermore, most of these verbs display idiosyncratic agreement paradigms that are also found on their grammaticalized counterparts. Consider the benefactive suffix *-ku* which came from the verb *kú 'give'. Like the lexical verb, the benefactive suffix can co-occur with one of two agreement paradigms: Paradigm I or Paradigm II.[9] In Paradigm I,

[6]There is a sizeable number of verbs referred to as "doubly inflected verbs" (Graczyk, 2007, 146). Many of these verbs arose via compounding and other word-formation processes, and as Harris (2017, 72–82) discusses, it is not clear whether these cases should also be considered as multiple exponence. Since multiple person agreement marking in these cases is lexically-specific, I do not discuss them any further.

[7]An anonymous reviewer suggests that the occurrence of multiple exponence in these constructions may be accounted for if one views them as involving verb incorporation (or compounding) and verb serialization. However, the occurrence of multiple exponence on active verbs but not stative verbs cannot be easily explained if one adopts the view that these constructions are compounds or serial verb constructions.

[8]The Hidatsa cognate of the Crow desiderative suffix *-bia* is *maaíihee* which can also be found in its reduced form *míihee* that functions as a direct evidential enclitic; according to Park (2012, 257), the Hidatsa suffix expresses 'near or unavoidable future'. The diachronic stages of *waaíihee > *-bia* are as follows: *waaíihee > *wíihee (syncope of *aa*) > *wíi-hee (reanalysis of *hee as a direct causative, cf. Hidatsa *-hee* 'direct causative') > *wii-aa (deletion of *h in onsets of unaccented syllables, loss of accent as a result of grammaticalization, and the direct causative surfacing as *a(a)* following stem-final vowels *ii*, *ee*, or a diphthong; see Graczyk 2007, 144) > *-bia* (*w > *b* and vowel syncope). Since the direct causative displays subject agreement in Crow, this diachronic account provides an explanation for why *-bia* is the only multiple exponence trigger that co-occurs with agreement that follows the suffix, as seen in (74).

[9]Although Graczyk (2007, 146) only includes Paradigm II of *kú* 'give' and the benefactive in his grammar of Crow, both Paradigms I and II are reported by Wallace (1993, 144–145). Paradigm II typically occurs in traditional texts and in bilingual materials produced in the 1970s and 1980s, and speakers often regard the forms of this paradigm as 'more proper'. Thus, it is possible that Paradigm I is a more recent innovation that arose by extending the regular agreement paradigm of active transitive verbs to the ditransitive verb

as in (78), both constructions cross-reference the subject and indirect object via A-set and B-set markers, respectively. Paradigm II, which is given in (79), also indexes subjects with A-set, but indexes indirect objects with what I refer to as C-set markers.[10]

(78) Paradigm I

a. bapáalikisshe-m **dii**=**wa**-kú-k
flower-INDEF 2B=1A-give-DECL
'I gave you a flower'

b. **dii**=wah-chiwakáa-Ø-**wa**-ku-k
2B=1A-pray-JUNCT-1A-BEN-DECL
'I prayed for you' (Felice Big Day; 2018–17.110)

(79) Paradigm II

a. bapáalikisshe-m **ba**-**lá**-ku-k
flower-INDEF 1A-2C-give-DECL
'I gave you a flower'

b. bah-chiwakáa-Ø-**wa**-**la**-ku-k
1A-pray-JUNCT-1A-2C-BEN-DECL
'I prayed for you' (Felice Big Day; 2018–17.110)

Comparative evidence also strongly suggests that lexical verbs did indeed serve as the source of the multiple exponence triggers in Crow. In Hidatsa and Mandan, the former of which is the sister language of Crow, benefactives are expressed using multi-verb constructions involving the verb 'give' as an independent (phonological) word – not only does it bear its own accent (or stress) in both languages, but the initial segment of the agreement prefix *m* is a result of word-initial phonological processes.

(80) a. Hidatsa
mada-macidóò-hgee óbcaai-Ø m-**gú$^{ʔ}$**-Ø
1POS-awl-DIMIN stick.in-JUNCT 1B-give-IMPER.SG
'Thread the needle for me!' (Park, 2012, 543, ex.116)

b. Mandan
áanwe rusháa=Ø ma-**kú'**=ta
all take=JUNCT 1B-give=IMPER.M
'take all of it for me'
(Hollow 1973, 78, as cited in **?**, 93, ex.2.36b, adapted)

*kú* 'give'. Nevertheless, in this paper I report on the regular patterns of Crow as it is currently spoken by contemporary speakers rather than reporting on an idealized ancestral code (see, e.g., Bowern 2015, 157; Childs et al. 2014; Florey 2004).

[10]The C-set agreement markers, which are identical in form to A-set markers but reference indirect objects, only occur in Paradigm II of the verb *kú* 'give' and the benefactive.

Indeed, it is well known that phonological and morphosyntactic criteria in determining wordhood do not always converge (for a recent review, see Tallman 2020). Phonological properties such as primary accent and word-initial phonology indicate that words that consist of the lexical verb *kú* in (78a) and (79a) constitute single phonological words in Crow. On the other hand, these same properties show that the elements comprised of the benefactive marker and the co-varying agreement in (78b) and (79b) do not constitute a phonological word. In fact, a number of morphosyntactic tests discussed by Haspelmath (2017) show that in Crow, the phonological word and morphosyntactic word do align. As such, unlike their lexical counterparts, multiple exponence triggers in Crow, such as the benefactive, are no longer considered to be independent words, phonologically or morphosyntactically. Below, I focus on constructions involving Paradigm II, but the results are identical when applied to constructions involving Paradigm I.

First of all, as shown in (81), it is possible to front the lexical verb *balákuk* in (79a). In contrast, fronting the portion of the verb that includes the benefactive in (79b) results in an ungrammatical sentence.

(81) Crow

a. ba-lá-ku-k bapáalikisshe-m
1A-2C-give-DECL flower-INDEF
'I gave you a flower'

b. *ba-la-ku-k bah-chiwakáa-Ø
1A-2C-BEN-DECL 2B=1A-pray-JUNCT
Intended: 'I prayed for you' (Felice Big Day; 2018–17.127)

Second, as in (82), intervening material such as the proclitic *kan=* 'already' may occur with the lexical verb but may not directly precede the benefactive or the co-varying agreement markers. In fact, the benefactive occupies a fixed slot within the verbal template, that is, directly following the root and preceding other suffixes such as the continuatives, desideratives, negation, modals, habitual, and among others.

(82) a. bapáalikisshe-m kam=ba-lá-ku-k
flower-INDEF already=1A-2C-give-DECL
'I already gave you a flower'

b. *bah-chiwakáa-Ø-kam=ma-la-ku-k
1A-pray-JUNCT-already=1A-2C-BEN-DECL
Intended: 'I already prayed for you' (Felice Big Day; 2018–17.127)

Third, as an independent verb, *kú* can only be interpreted with the lexical meaning of 'give', as in (83a). Such meanings as 'I did something for you' are never permitted. Instead, the verb *día* 'do' occurring with the benefactive may be used, as shown in (83b).

(83) a. ba-lá-ku-k
1A-2C-give-DECL

'I gave it to you' NOT 'I did it for you'

b. día-waa-wa-la-ku-k
do-1A-1A-2C-BEN-DECL
'I did it for you' (Felice Big Day; 2018–17.127)

Fourth, only the lexical verb can be coordinated using switch-reference markers but not the benefactive. In clause chains featuring the same subject, as in (84), the benefactive occurs on the utterance-final verb and may scope over preceding clauses to produce two possible readings.

(84) baa-liss-ák bah-chiwakáa-Ø-wa-la-ku-k
1A-dance-SS 1A-pray-JUNC-1A-2C-BEN-DECL

a. 'I danced for you and then prayed for you'

b. 'I danced and then I prayed for you' (Felice Big Day; 2018–17.110)

Finally, the benefactive exhibits some phonological idiosyncrasy that is not observed with the lexical verb. Specifically, the benefactive obligatorily co-occurs with the so-called juncture morpheme, a quasi-dependency marker, that triggers Siouan ablaut in which stem-final vowels of certain verbs shift in quality.[11] In (85), there are two clauses each containing the verb *chiwakíi* 'pray'. Notably, the clause-final verb, which occurs with the benefactive (cf. 78b and 79b), displays ablaut and surfaces as *chiwakáa*.

(85) bah-**chiwakíi**-t Apsáalook-tatchia
1A-pray-TEMP Crow-every
bah-**chiwakáa**-Ø-wa-k(u)-kaat-b-aa-ii-k
1A-pray-JUNCT-1A-BEN-DIMIN-1A-CAUS-HAB-DECL
'when I pray, I pray for all the Crows'
(Bulltail 1980, 4, as cited in Graczyk 2007, 314, ex.64)

In general, the emergence of periodic multiple exponence of A-set marking occurring with the set of morphemes in (77), such as *-daachi* 'continuative' (< *dáaachi 'remain, stay') and *-dahku* 'iterative' (< *dahkú 'dwell, stay'), involves grammaticalization of an active verb that brings with it its own agreement. The development of multiple exponence resulting from grammaticalization is illustrated below:

(86) *INFL-V INFL-V > INFL-V-INFL-SUFFIX

where the precursor stage involves a multi-verb construction in which both linearly adjacent verbs (V) bear agreement marking (INFL). Over time, the second verb grammaticalizes as a suffix and retains its original agreement, thereby resulting in multiple exponence.

[11] It is unclear to me whether the juncture morpheme actually acts as a coordinator, subordinator, or some other marker of dependency. Further investigation is needed.

However, grammaticalization alone is unable to explain the occurrence of multiple exponence of A-set agreement marking on several of the modal auxiliaries. The modal auxiliaries that will be described in this paper include the inflectional future *-ii* 'will, must', the necessity modal *-iimmaachi* 'will, must', the epistemic possibility modal *-iih* 'may, might', the weak necessity modal *-iishdaachi* 'should' and the involuntary desiderative *-isshi* 'feel like', as shown in (87).

(87) a. Inflectional future *-ii* 'will, must':
**baa**-xalússhi-**w**-ii-k
1A-run-1A-FUT-DECL
'I will run' (Felice Big Day; 2018–17.084.004:46)

b. Necessity modal *-iimmaachi* 'will, must':
**baa**-xalússhi-**w**-iimmaachi-k
1A-run-1A-MOD-DECL
'I will run' (Cyle Old Elk; 2018–17.0.84.002:56)

c. Epistemic possibility modal *-iih* 'may, might':
**b**-eé-**w**-iih
1A-have-1A-MOD
'I may have' (Graczyk, 2007, 343, ex.26, adapted)

d. Weak necessity modal *-iishdaachi* 'should':
**baa**-waláx-**b**-iishdaachi-k
1A-sing-1A-MOD-DECL
'I should sing' (Cyle Old Elk; 2018–17.084.002:29)

e. Involuntary desiderative *-isshi* 'feel like':
**b**-eeláx-**b**-isshi-k
1A-urinate-1A-DESID-DECL
'I need to urinate' (Cyle Old Elk; COE_2018–17.029.001)

In these constructions, which feature a first-person subject, the modal auxiliaries are preceded by the same A-set agreement morpheme that is realized as either *-b* or *-w*; the former surfaces in word-initial positions and adjacent to obstruents, while the latter is realized intervocalically.

In the following sections, I discuss the origins and historical development of multiple exponence across the set of modal auxiliaries after providing brief descriptions. In Section 5.3, I propose that the source of the inflectional future in Crow and Hidatsa is the motion verb *híi 'arrive there' in Proto-Crow-Hidatsa (henceforth abbreviated as PCH). In Section 5.4, I suggest that the emergence of the modal auxiliaries *-iimmaachi* 'will, must', *-iih* 'may, might', and *-iishdaachi* 'should' was a result of compounding between the inflectional future, the punctual, and speech-act markers. In Section 5.5, I claim that the occurrence of multiple

exponence on the involuntary desiderative *-isshi* was due to analogical extension based on the patterns found on the other four modals, thereby representing an extension of an alternating pattern to a formerly non-alternating pattern (Garrett, 2008). Table 5.2 illustrates the analogical extension of multiple exponence to the involuntary desiderative *-isshi*.

Table 5.2: Extension of multiple exponence to *-isshi*

| | 'will, must' | 'may, might' | 'will, must' | 'should' | 'feel like' |
|---|---|---|---|---|---|
| 1SG | *-b-ii* | *-b-iih* | *-b-iimmaachi* | *-b-iishdaachi* | ***-isshi* → *-b-isshi*** |
| 2SG | *-d-ii* | *-d-iih* | *-d-iimmaachi* | *-d-iishdaachi* | ***-isshi* → *-d-isshi*** |
| 3SG | *-iimmaachi* | *-iih* | *-iimmaachi* | *-iishdaachi* | *-isshi* |

## 5.3 The inflectional future *-ii* 'will, must'

While I refer to the inflectional future as *-ii*, the form *-ii* does not actually surface with third-person subjects; instead, third-person singular and plural forms are suppletive and occur as *-iimmaachi* and *-oommaachi*, respectively, as shown in Table 5.3.[12] The inflectional future is a future-oriented modal, and the first- and second-person forms can only be used to express circumstantial necessity (i.e., claims of necessity compatible with a given set of facts or circumstances). Accordingly, the suffix *-ii* is glossed as 'will, must'. A peculiar characteristic of the agreement paradigm that co-varies with *-ii*, not found in other areas of the language, is the inclusive-exclusive distinction. While the first-person inclusive has the suppletive form *oo*, the first-person exclusive employs the suffix *-lu* that also appears on the second-person plural form.

Table 5.3: Paradigm of modal *-ii* 'will, must'

| **Person** | **Singular** | **Plural** |
|---|---|---|
| 1 | *-b-ii* | *-b-oo* (INCL.)<br>*-b-ii-lu* (EXCL.) |
| 2 | *-d-ii* | *-d-ii-lu* |
| 3 | *-iimmaachi* | *-oommaachi* |

The occurrence of the suffix *-lu* is restricted to a number of other morphemes in Crow that include the habitual *-ii*, which is homophonous with the inflectional future, the weak necessity modal *-iishdaachi*, and the set of contrastive and emphatic independent pronouns.

[12]This view differs from Graczyk's (2007, 302) proposal that third-person forms are suppletive and surface as *-bia* and *-bio* for singular and plural, respectively. Unlike *-iimmaachi* and *-oomaachi*, *-bia* and *-bio* are used to express desiderative and future meanings.

The former two occur in complementary distribution with the inflectional future, and typically occur directly before speech-act markers, which are always in word-final position. The singular and plural forms of the habitual are shown in (88a) and (88b), respectively.

(88) Habitual *ii*

a. Uuwatisaa-sh daachéetaa iaxpáaliia chilasshihchí-**ii**-k
Big.Metal-DEF sometimes power think.about-HAB-DECL
'Big Metal would sometimes think about his power (lit. medicine)'
(Old Coyote, 1985, 18, adapted)

b. dappi-áhi-**ii**-**lu**-k
kill-PUNCT-HAB-PL-DECL
'they (instantly) kill it'
(Bilingual Materials Development Center, 1980b, 15, adapted)

Unlike the inflectional future, the habitual does not co-occur with person marking. In other words, the habitual remains invariant as *-ii* regardless of the person of the subject. For example, in (89a), when the subject is first-person singular, the habitual occurs without any adjacent person agreement marking; attempting to produce an utterance with person agreement with the intended meaning of a habitual render it ill-formed, as in (89b).

(89) Habitual *ii*

a. baa-xalússh-ii-k
1A-run-HAB-DECL
'I run' (Felice Big Day; 2018–17.084.004:46)

b. *baa-xalússhi-w-ii-k
1A-run-1A–HAB-DECL
Intended: I run (Felice Big Day; 2018–17.084.004:47; cf. ex.87a)

Cognates of the habitual and inflectional future can also be found in Hidatsa. The singular and plural forms of the habitual in Hidatsa are realized as *-ʔii* and *-ʔiiruu*, respectively, and like the habitual in Crow, the habitual in Hidatsa does not co-occur with subject agreement marking. The Hidatsa inflectional future occurs as *-hi* and its forms are given in Table 5.4. Besides the obvious differences in sound correspondences, the inflectional future in Hidatsa does not make an inclusive-exclusive distinction, and the plural forms are simply marked with the general plural marker *-a*. Finally, although the first- and second-person singular forms are somewhat irregular, the third-person singular form, which retained the initial *h*, occurs in the plural forms.

Table 5.4: Paradigm of future *-hi* in Hidatsa (Boyle 2007, 174; see also Park 2012, 280)

| **Person** | **Singular** | **Plural** |
|---|---|---|
| 1 | *-wi* | *-wi-hi-a* |
| 2 | *-ri* | *-ri-hi-a* |
| 3 | *-hi* | *-hi-a* |

Both Hidatsa and Crow are the only Siouan languages that share the innovated inflectional future, which sprung from the same process of grammaticalization discussed above. And like Crow, Hidatsa exhibits multiple exponence of subject person marking, as in (90). Note that the Hidatsa alternants *m* and *n* are realized word-initially, while *w* and *r* occur word-internally (Boyle, 2007, 28). Interestingly, multiple exponence in Hidatsa appears to occur with both active verbs, as in (90a), and stative verbs, as in (90b).[13]

(90) Hidatsa: Inflectional future

a. **maa**-háhgu-**wi**-c
1A-stay-1.FUT-DECL
'I will stay' (Park, 2012, 410, ex. 14)

b. Hiri ooree-rug **mii**-ihabi-**wi**-c
This pass-TEMP 1B-happy-1.FUT-DECL
'When this passes, I'll be happy.' (Dora Gwin; John Boyle, pers. comm. 2020)

The central claim regarding the diachrony of the inflectional future is that in Crow (and in Hidatsa), the inflectional future arose from the motion verb *híi 'arrive there' in PCH and maintained its set of agreement markers.[14] The overall development of the inflectional future in Crow is summarized in Table 5.5.

[13]The occurrence of multiple exponence on stative verbs with first- or second-person subjects appears to be exceptionally rare in the extant documentation of Hidatsa, which according to John Boyle (pers. comm. 2020), may be due to "the nature of the discourse" that has typically been recorded in past documentation efforts. For example, no instances are found in the texts of Lowie (1939) and Parks et al. (1978) or in the works of Boyle (2007) and Park (2012), and among others. Further investigation is needed to determine how widespread multiple exponence is in Hidatsa.

[14]The motion verb *hĩi* 'arrive' in Crow and Hidatsa exhibits a high degree of paradigmatic irregularity as a result of the collapse between a distinction between 'arrive here' and 'arrive there', which is maintained in many other Siouan languages (Taylor, 1976). However, the history of the motion verb is beyond the scope of the paper.

Table 5.5: Diachronic stages of the development of the inflectional future in Crow

| | **PCH** | 'arrive there' > 'arrive' > 'will, must' | | | | | **Crow** |
|---|---|---|---|---|---|---|---|
| | **I** | **II** | **III** | **IV** | **V** | **VI** | **VII** |
| 1SG | *waa-híi | *-wii-hii | *-w-ii | *-b-ii | *-b-ii | *-b-ii | *-b-ii* |
| 2SG | *rá-hii | *-ri-hii | *-r-ii | *-d-ii | *-d-ii | *-d-ii | *-d-ii* |
| 3SG | *híi | *-hii | *-ii | *-ii | *-ii | *-ii | *-iimmaachi* |
| 1PL.INCL | *waa-híi-a | *-wii-hii-a | *-w-ii-a | *-b-oo | *-b-oo | *-b-oo | *-b-oo* |
| 1PL.EXCL | | | | | | *-b-ii-lu | *-b-ii-lu* |
| 2PL | *rá-hii-a | *-ri-hii-a | *-r-ii-a | *-d-oo | *-d-oo | *-d-ii-lu | *-d-ii-lu* |
| 3PL | *híi-a | *-hii-a | *-ii-a | *-oo | *-ii-lu | *-ii-lu | *-oommaachi* |

In pre-PCH, a distinction was made between *rahíi 'arrive here' and *híi 'arrive there'. In Stage I, this distinction was neutralized and *híi was generalized to convey the meaning of 'arrive'. The forms in the paradigm of the erstwhile *híi 'arrive there' – without the proximal deictic prefix *ra- 'here, now' – then grammaticalized as the inflectional future. In Stage II, vowels of overt agreement morphemes harmonized with the vowel of the carrier morpheme *hii. Stage III represents forms after *h-deletion occurred, and Stage IV shows forms after *w > *b and *r > *d took place. Stage IV also shows the emergence of the idiosyncratic plural formation in Crow, such as *iia > *oo, which likely resulted from vowel assimilation.[15] Evidence for the chronology of *h-deletion and vowel assimilation can be seen in the following forms:[16,17]

(91) a. 'mouse': PCH *íituha > Cr *iísuu*, H *íitahu*
b. 'thunder': PCH *túuha > *táahu > Cr *suú*, H *tahú*

In Stage V, the third-person inflectional future underwent proportional analogy with the now homophonous habitual suffix, schematized in (92), which extended the plural suffix *-lu to the third-person plural future form.

(92) *-ii HAB.SG : *-iilu HAB.PL :: *-ii FUT.3SG : X, X = *-iilu FUT.3PL

[15]The plural marker has a number of allomorphs and the choice of allomorph is conditioned by the stem-final vowel. Graczyk (2007, 34) summarizes the calculus of plural allomorphy in the following way: "Stems that end in a short vowel simply delete that vowel and add *uu* for the plural. For stems ending in *ii*, *ee*, *uu*, *ia* and *ua*, the plural form adds *o* to the stem. For stems ending in *aa* and *oo*, the plural adds *u* to the stem."

[16]The reconstructed PCH forms for 'mouse' and 'thunder' come from the *Comparative Siouan Dictionary* (Rankin et al., 2015).

[17]There are a number of Crow (Cr) and Hidatsa (H) cognates in which *h-deletion and vowel assimilation did not occur that seem to involve a shift in accent, such as Cr *akaawá*, H *akáawa* 'six', Cr *hísshi*, H *hishí* 'red', Cr *íihchii*, H *iihkíi* 'beard', Cr *kuleé*, H *kúree* 'keep', Cr *deetá*, H *néesha* 'nothing, not exist', among many others. Further investigation is needed to identify the contexts that brought about this shift.

One explanation for the observed directionality of this analogical change involves Hock's (1991, 212) reformulation of Kuryłowicz's (1945) first law of analogy in which "forms which are more 'clearly' or 'overtly' marked tend to be preferred in analogical change." Specifically, as a result of vowel assimilation, the plural forms of the inflectional future became suppletive and thus less overtly marked for plural (e.g., *-ii-a 3.FUT-PL > *-oo FUT.3PL). By adopting the plural *-lu that originally occurred with the habitual into the third-person future, the plural becomes more transparently marked (i.e., *-ii-lu 3.FUT-PL).

The alternating pattern *-ii/*-iilu on the third-person forms of the inflectional future was then extended to the first- and second-person forms as shown in Stage VI. The proportional analogies for this development are illustrated in (93). It was around this time that the inclusive-exclusive distinction, which is not reconstructible to Proto-Siouan (Rankin, 1996b), likely emerged. As shown in (93a), I suggest that the development of the form *-biilu arose with a first-person plural exclusive meaning.

(93) a. *-ii FUT.3SG : *-iilu FUT.3PL :: *-bii FUT.1SG : X, X = *-biilu FUT.1PL.EXCL
b. *-ii FUT.3SG : *-iilu FUT.3PL :: *-dii FUT.2SG : X, X = *-diilu FUT.2PL

When the plural suffix *-lu spread to the first person for some speakers, it created two variants: the older variant *-boo and the newer variant *-biilu. As illustrated in (94), it is likely that this new variant, which was used as a first-person exclusive, provided the impetus for the older variant to shift its referent from 1PL to 1PL.INCL:

(94) Stage V: *-b-oo FUT.1PL
Stage VI: *-b-oo FUT.1PL.INCL *-b-iilu FUT.1PL.EXCL

In fact, this diachronic pathway has also been reported for Chamacoco, Q'anjob'al, Chuj, Akatek, and Ilocano, where the emergence of 1PL.EXCL motivated a shift from 1PL to 1PL.INCL (Ciucci, 2021; Bates, 2021). Such referent shifts vis-à-vis clusivity has been discussed by Bates (2021). Specifically, Bates suggests that the entailments and implicatures that arise when a form with a more specific meaning (i.e., 1PL.EXCL) is created were factors that led to this shift (i.e., 1PL to 1PL.INCL), thereby creating a contrast between the two forms.

Finally, in Stage VII, the third-person singular and plural forms *-ii and *-oo were replaced by the suppletive forms *-iimmaachi and *-oommaachi, respectively, as observed in present-day Crow through a process referred to as incursion, where forms from one lexeme are brought into another lexeme (Juge, 1999). It has generally been acknowledged that semantic overlap constitutes a precursor to suppletion (Maiden, 2004; Juge, 1999, 2013; Fertig, 1998; Juge, 2019; Börjars and Vincent, 2011). Thus, a possible explanation for the replacement of forms involves semantic overlap between the third-person singular *-ii and *-iimmaachi. As I will discuss in Section 5.4, *-iimmaachi first emerged as a necessity modal before developing future meaning. By Stage VII, both *-ii and *-iimmaachi were able to convey claims of necessity as well as futurity. Because *-ii, which expressed futurity and circumstantial

necessity, had a more specific meaning relative to *-iimmaachi, which expressed futurity and a variety of different modal bases including a circumstantial one, *-ii was replaced.[18]

However, there is still an issue of why only the third-person forms got replaced while the first- and second-person forms remained. Following Aski (1995), I suggest that loss of *h and extension of plural *-lu on the inflectional future, which resulted in the habitual and the third-person inflectional future forms becoming homophonous, led to a decrease in token frequency of *-ii/*-iilu to express future and circumstantial necessity. Consequently, the near-synonyms *-iimmaachi/*-oommaachi came to be more highly favored, and these forms eventually replaced *-ii/*-iilu. Since the habitual does not display agreement with person, the first- and second-person forms were largely unaffected. The sequence of changes (24) is provided below with diachronic stages that refer back to Table 5.5:

(95) a. Stage III: Phonological reduction (*h-deletion)
Outcome: Third-person singular future *-ii becomes homophonous with the singular habitual form.

b. Stage V: Extension of plural *-lu
Outcome: Third-person singular and plural future forms *-ii/*-iilu become homophonous with the singular and plural habitual forms.

c. Stage VI: Development of future meaning on *-iimmaachi
Outcome: The two morphemes *-ii and *-iimmaachi become near-synonyms, resulting in a significant increase in token frequency of *-iimmaachi over future *-ii due to homophony avoidance with the habitual.

d. Stage VII: Replacement of third-person future *-ii
Outcome: The forms *-iimmaachi* and *-oommaachi* have overall high token frequency and are maintained in present-day Crow.

Although the role of homophony avoidance in constraining language change has been highly debated (e.g., Sampson, 2013; Kaplan, 2015), I suggest that ambiguities in meaning between the use of the habitual and the third-person inflectional future in Crow may have been difficult to tease apart at times. Like many of the Siouan languages, declarative statements without any additional marker of tense, aspect, or modality may be interpreted as referring to past or present events. When the habitual is used, only past and present interpretations of habituality are possible since the habitual cannot co-occur with the inflectional future, and attempts to elicit future habitual meaning using the habitual suffix produce illicit sentences, as in (96).[19]

[18]Börjars and Vincent (2011, 259) propose that suppletion arises when there is semantic asymmetry which "predisposes one of the words towards a particular meaning." In particular, they suggest that the lexeme with the more specific meaning will provide the suppletive forms; however, this may be more of a tendency than an absolute rule (see Juge, 2019).

[19]To express future habitual in Crow, any one of the three morphemes that can encode futurity – the inflectional future *-ii*, the necessity modal *-iimmaachi*, and the general desiderative *-bia* – may be used provided that the context for such inferences is available.

(96) *chiláakshilak iichíi(la)-m bu-lutch-íi-k
tomorrow horse-INDEF 1A-get-HAB-DECL
Intended: 'Tomorrow, I will get a horse on a regular basis'
Consultant's comment: "You're saying tomorrow you were getting a horse."
(Felice Big Day; 2018–17.110)

As Tatevosov (2005) remarks, even the present habitual can produce inferences that give rise to predictive future meanings. Hence, it is possible that in earlier stages of Crow, the use of *-ii and *-iilu was ambiguous between past/present habitual interpretations and future interpretations that likely affected their usage; the former presupposes that the habit or disposition has been actualized by the speaker at some past time, as suggested by the speaker's metalinguistic comment in (96), while the latter bears no such presupposition. The shift in usage was especially profound when alternative ways of expressing future meaning (i.e., the necessity modal *-iimmaachi* and desiderative *-bia*) developed over time. Therefore, I suggest that overlap in form and the ensuing ambiguity with the habitual *in combination* with near-synonymy with *-iimmaachi* provide a more adequate explanation of why only the third-person future forms were replaced than either of the two accounts alone.

## 5.4 The modal auxiliaries *-iimmaachi* 'will, must', *-iih* 'may, might', and *-iishdaachi* 'should'

The three modal auxiliaries *-iimmaachi*, *-iih*, and *-iishdaachi* convey different forces of modality. The necessity modal *-iimmaachi* is used to convey claims of both root and epistemic necessity (e.g., *must* and *have to* in English) as well as future meaning, whereas *-iih* and *-iishdaachi* are used to express epistemic possibility (e.g., *may* and *might* in English) and weak necessity (e.g., English *should*), respectively; attested variants of *-iimmaachi* are *-iihmaachi* and *-iimmaa* which, according to my consultants and confirmed via semantic elicitation, are interchangeable. The agreement morphemes that co-occur with these three modal auxiliaries are shown in Table 5.6.

Table 5.6: Paradigms of modal auxiliaries *-iimmaachi*, *-iih*, and *-iishdaachi*

| | *-iimmaachi* 'will, must' | | *-iih* 'may, might' | | *-iishdaachi* 'should' | |
|---|---|---|---|---|---|---|
| **Pers.** | **Singular** | **Plural** | **Singular** | **Plural** | **Singular** | **Plural** |
| 1 | *-b-iimmaachi* | *-b-oommaachi* | *-b-iih* | *-b-ooh* | *-b-iishdaachi* | *-b-ii-lu-shdaachi* |
| 2 | *-d-iimmaachi* | *-d-oommaachi* | *-d-iih* | *-d-ooh* | *-d-iishdaachi* | *-d-ii-lu-shdaachi* |
| 3 | *-iimmaachi* | *-oommaachi* | *-iih* | *-ooh* | *-iishdaachi* | *-ii-lu-shdaachi* |

There are several similarities and differences in the forms and morphosyntactic behaviors between the inflectional future and the three modal auxiliaries that are particularly striking.

First, like the first-person inclusive form of the inflectional future *-boo*, the initial *ii* segments of *-iimmaachi* and *-iih* are realized as *oo* when pluralized, such as in the third-person plural forms *-oommaachi* and *-ooh*. Second, like the first-person exclusive and second-person plural of the inflectional future, *-biilu* and *-diilu*, respectively, the plural marker *lu* occurs in the plural forms of *-iishdaachi*, as in the third-person plural *-ii**lu**shdaachi*. Finally, the inflectional future and the three modals occur within the same slot in the morphological template – that is, directly preceding speech-act markers, as in (87a), (87b), and (87d), or word-finally, as in (87c) – and cannot co-occur with one another.

In what follows, I suggest that the characteristics shared between the inflectional future and the three modals are not coincidental; rather, these three modals are formed by combining the future morpheme with some other morpheme(s), thereby retaining the person marking that occurred on the inflectional future. The main proposal is given in (97).

(97) a. *-ii 'will, must' + *-h- 'punctual' + *-baachi 'emphatic imperative' → *-iihmaachi* ∼ *-iimmaachi* ∼ *-iimmaa* 'must' > 'will, must'

b. *-ii 'will, must' + *-h 'simple imperative' → *-iih* 'may, might'

c. *-ii 'will, must' + *-shdaachi 'strong assertion' → *-iishdaachi* 'should'

In (97a), the modal *-iimmaachi*, with variants *-iihmaachi* and *-iimmaa*, is a combination of the inflectional future, punctual infix, and emphatic imperative. Note that when the segment *h* is followed by *b*, either the geminate *mm* or sequence *hm* surfaces, which gives rise to the two attested variants *-iimmaachi* and *-iihmaachi*; the third variant *-iimmaa* is likely due to apocope. Moreover, at the initial stage of its development, I suggest that *-iimmaachi was only able to convey claims of necessity before developing future meaning (Bybee et al., 1994, 258–266):

(98) NECESSITY > FUTURE

In (97b), the modal *-iih* is comprised of the future *-ii and the simple imperative. Crucially, (97a) and (97b) both involve compounding of the inflectional future when it occurred as *-oo in the plural. Finally, in (97c), *-iishdaachi* is a compound comprised of future *-ii and a marker of strong assertion. The combination between these forms took place after proportional analogy with the habitual which extended the plural marker *-lu to the inflectional future.

As there are no attested Crow texts from before the 19th century, any account of how the modals acquired their meanings will necessarily be somewhat speculative. The strongest case that compounding did indeed take place involves the weak necessity modal *-iishdaachi*, which I claim originates from future *-ii and *-shdaachi, a marker of 'strong assertion'. Remnants of *-shdaachi can still be found in present-day Hidatsa and Crow. In Hidatsa, the suffix may appear as *-s*, *-sd*, or *-sdaa* 'definitive' (Park, 2012, 231).[20] In Crow, the suffix appears as *-sht* which is used to claim that "the statement is true beyond a doubt" (Graczyk, 2007,

[20]Park (2012, 20) represents [ʃ] orthographically as ⟨s⟩.

394). By combining the future-oriented modal with a marker of strong assertion, we obtain a meaning in which an activity is projected into the future and provides a sense of obligation for the agent to fulfill the tasks associated with the activity.

The necessity modal -*iimmaachi* can be viewed as the combination of the future suffix, the punctual, and the emphatic imperative *-baachi. I speculate the latter is reflected in Hidatsa today as -*wa* 'exclamative' (Park 2012:229) and in Crow as -*bah*, which, according to Graczyk (2007:153), is used to add "a note of insistence". Recall that the necessity modal has the variants -*iimmaachi* and -*iihmaachi*. In Crow, forms with geminate *mm* come about in at least two phonological contexts: the lateral *l* followed by the voiced plosive *b*, or *h* also followed by *b*. I surmise that the so-called 'punctual' infix -*h*- which can be used to add "a note of urgency or emphasis" may also be involved (Graczyk 2007:110), giving rise to the two attested variants, -*iimmaachi* and -*iihmaachi*. The development of (strong) obligation can then be plausibly explained through the combination of the future marker with the punctual infix and emphatic imperative. Specifically, the combination of the three produces interpretations that eventually led to it being used as a root necessity modal, that is, obligations in light of a set of circumstances or rules. When used in present or past contexts, -*iimmaachi* may indicate inferred certainty in such a way that it comes to express epistemic necessity modality as well.

Finally, the development of -*iih*, which expresses epistemic possibility, plausibly arises by combining the future *-ii with the simple imperative *-h, which is still commonly used as the singular imperative form in Crow as -*h* and in Hidatsa as -*∅*. By combining the future *-ii with the imperative marker *-h, the semantics that arises is naturally future-projecting and unlike its emphatic counterpart, the simple imperative may indicate a suggestion or a mild directive. Whether the addressee will carry out the directive is not certain but may be ascertained, opening up a path to epistemic possibility.

In the remainder of this section, I outline the diachronic stages that account for the differences in plural marking across the three modals: for -*iimmaachi* and -*iih*, the morpheme-initial vowels *ii* become *oo* in the plural, whereas for -*iishdaachi*, the plural marker *lu* is used instead and we obtain the form -*iilushdaachi*. The first stage represents the emergence of the two modals *-iimmaachi and *-iih. During this period, the inflectional future and the two modals are formed with *oo in the plural, as shown in Table 5.7. Note that if *-iishdaachi emerged during this stage, we would also expect its plural forms to co-occur with the segments *oo. Since this is not the case, *-iishdaachi likely arose during a different time period.

Table 5.7: Stage 1: The development of *-iimmaachi* and *-iih*

| | *-ii 'will, must' | | *-iimmaachi 'must' | | *-iih 'may, might' | |
|---|---|---|---|---|---|---|
| **Person** | **Singular** | **Plural** | **Singular** | **Plural** | **Singular** | **Plural** |
| 1 | *-b-ii | *-b-oo | *-b-ii-mmaachi | *-b-oo-mmaachi | *-b-ii-h | *-b-oo-h |
| 2 | *-d-ii | *-d-oo | *-d-ii-mmaachi | *-d-oo-mmaachi | *-d-ii-h | *-d-oo-h |
| 3 | *-ii | *-oo | *-ii-mmaachi | *-oo-mmaachi | *-ii-h | *-oo-h |

The second stage features two main developments. First is the change in the plural form of the inflectional future from *-oo to *-iilu, as shown in Table 5.8. The second and subsequent development involved the combination of the future with the marker of strong assertion. As a result of combining with the inflectional future at this stage, the plural forms of *-iishdaachi occurs with the plural marker *lu.

Table 5.8: Stage 2: Proportional analogy and the development of *-iishdaachi*

| | *-ii* 'will, must' | | *-iishdaachi* 'should' | |
|---|---|---|---|---|
| **Person** | **Singular** | **Plural** | **Singular** | **Plural** |
| 1 | *-b-ii | *-b-oo → *-b-ii-lu | *-b-ii-shdaachi | *-b-ii-lu-shdaachi |
| 2 | *-d-ii | *-d-oo → *-d-ii-lu | *-d-ii-shdaachi | *-d-ii-lu-shdaachi |
| 3 | *-ii | *-oo → *-ii-lu | *-ii-shdaachi | *-ii-lu-shdaachi |

The final stage involves replacement of the third-person forms of *-ii with *-iimmaachi which likely took place after the emergence of *-iishdaachi and after the necessity modal *-iimmaachi acquired future meaning, a particularly well-documented grammaticalization pathway (Bybee et al., 1994; Heine and Kuteva, 2002). As mentioned above, the replacement of the forms was due to semantic overlap between *-ii and *-iimmaachi as well as ambiguity with the habitual.

Table 5.9: Stage 3: Replacement of the third-person future forms

| **Person** | **Singular** | **Plural** |
|---|---|---|
| 1 | *-b-ii | *-b-oo (INCL.)<br>*-b-ii-lu (EXCL.) |
| 2 | *-d-ii | *-d-ii-lu |
| 3 | *-ii → -iimmaachi | *-ii-lu → *-oommaachi |

Now, consider the alternative scenario in which the development of *-iishdaachi* took place before the emergence of *-iimmaachi* and *-iih*, as shown in Table 5.10. In other words, the inflectional future first occurred with the third-person plural form *-iilu and later became

*-oo. However, if *-iilu can be traced back to PCH, then we now need to explain how the third-person plural form changed from *-iilu to *-oo in Crow and presumably from *-hiruu to *-hia in Hidatsa. It is possible that the regular plural markers, *-uu* in Crow and *-a* in Hidatsa, were extended to the inflectional future in both languages. However, this account raises the question why extension in these two languages targeted the future and not the plural habitual forms, which remain as *iilu* and *-ʔiiruu*, respectively. Other issues involve the development of the inclusive-exclusive distinction that took place in Crow but not in Hidatsa as well as the replacement of the third-person future with -*iimmaachi. I know of no such account that would adequately explain all of these issues.

Table 5.10: Alternative chronology in the development of the modal auxiliaries

| **Stage 1′** | **Stage 2′** |
|---|---|
| *-ii/*-iilu | *-ii/*-iilu → *-ii/*-oo |
| Emergence of *-iishdaachi | Emergence of *-iimmaachi and *-iih |

A further advantage of the historical account that I am advocating for is that the plural form of the inflectional future *-oo is a natural result of the known sound changes in Crow. As several scholars have noted (e.g., Graczyk, 2007; Martin, 1989), Hidatsa tends to be more conservative than Crow, preserving more of the properties from PCH. It therefore seems reasonable to reconstruct the original inflectional future in PCH with the general plural suffix *-a rather than the more idiosyncratic suffix *-ruu.

## 5.5 The involuntary desiderative *-isshi* ‘feel like’

Although the desiderative suffix *-isshi* has been variously glossed as ‘want to’, ‘be ready to’, ‘feel like’, ‘be anxious to’, ‘wish to’ and ‘need to’, it is a purely bouletic modal, expressing possibility or necessity in light of a person’s wants and desires, and indicates an involuntary state of desire. As such, I refer to *-isshi* as an (involuntary) desiderative and gloss it as ‘feel like’, even though consultants often translate constructions with *-isshi* as ‘need to’. Table 5.11 displays the agreement morphemes that co-occur with *-isshi*. Unlike the other modal auxiliary suffixes, the plural forms of *-isshi* employ the general plural *-uu*. (Synchronically, the geminate *ssh* [ss] is in complementary distribution with its alveolar counterpart *ss*, occurring as *ssh* preceding a high, front vowel, and *ss* elsewhere.)

Table 5.11: Paradigm of modal auxiliary *-isshi* 'feel like'

| Person | Singular | Plural |
|---|---|---|
| 1 | *-b-isshi* | *-b-iss-uu* |
| 2 | *-d-isshi* | *-d-iss-uu* |
| 3 | *-isshi* | *-iss-uu* |

Like the other modal auxiliaries, when *-isshi* occurs with active verbs, as in (87e), there are two instances of A-set agreement, one preceding the main verb and the other preceding the desiderative suffix. Where the desiderative differs is its position within the word. Whereas the future and the other modals must directly precede the speech-act markers, which are always in word-final position, or occur word-finally, the desiderative can occur before other morphemes, such as the negative suffix *-ssaa*, as in (99).

(99) baa-lée-w-**isshi-ssaa**-k
1A-go-1A-DESID-NEG-DECL
'I am not ready to leave' (Bilingual Materials Development Center, 1980a, 7, adapted)

Although the Crow desiderative *-isshi* triggers multiple exponence of A-set marking, the involuntary desiderative *-hti* in Hidatsa, which is cognate with *-isshi*, does not co-occur with any additional person agreement, as in (100).[21] In fact, absence of multiple exponence is also a feature of the cognates found in the other Siouan languages.

(100) Hidatsa

ma-eexí-**hti**-hisa-aci-c
1A-urinate-DESID-SIM-COMPR-DECL

'I kind of have to pee' (Park, 2012, 196, ex. 256, adapted)

There are at least four possible accounts of how the involuntary desiderative *-isshi* came to exhibit ME, whereas cognates in other Siouan languages do not. The first proposal is that the Proto-Siouan form, which was a suffix, exhibited multiple exponence but was subsequently lost in all other Siouan languages. This proposal can be ruled out since cognates in several Siouan languages occur as enclitics and not suffixes; cases of degrammaticalization do exist but are exceptionally rare (Norde, 2009). This account is also not particularly interesting because it does not provide an explanation for how multiple exponence originated in the

[21] The segment *h* preceding the obstruent *t*, which indicates preaspiration, has been a topic of debate. While past scholars have analyzed preaspirated obstruents in Hidatsa as phonemic, Boyle (2020) argues that these obstruents are not preaspirated but geminates. In this paper, I follow Boyle in analyzing *ht* segments in Hidatsa (and PCH) as geminates. The overall analysis of multiple exponence in Crow does not hinge on this decision.

first place. The second possibility is that the Proto-Siouan word was an active verb that grammaticalized as a desiderative in Crow and retained its agreement. The difficulty of this account is explaining why only Crow maintained person agreement while other languages, such as Hidatsa, lost it. The third possible account, which is similar to the development of some of the other modals, is that the ability to display multiple exponence on *-isshi* was an independent innovation in Crow that involved compounding of the inflectional future *-ii and desiderative *-sshi. The final possible explanation, which I will advocate, is that the emergence of multiple exponence across the set of modals planted the seeds for extension of multiple exponence to *-isshi*. In what follows, I discuss the fourth account before turning to the possibility that *-isshi* was a more recent Crow innovation comprised of the inflectional future and desiderative *-sshi.

The Siouan cognates of *-isshi*, according to Rankin et al. (2015), are given in (101) and the morpheme is reconstructed in Proto-Siouan (henceforth abbreviated as PS) as *ktE.

(101) Proto-Siouan *ktE

a. Crow: *-isshi* 'want to, ready to'
b. Hidatsa: *-htE* 'inclined to, about to: indirect desiderative'
c. Mandan: *-kt* 'future'
d. Lakota: *ktA* 'future, potential'
e. Dakota: *ktA* 'future'
f. Chiwere: *-hñe* 'will, shall, going to, about to'
g. Hoocak: *-kje* 'intentive'
h. Omaha: *-tte* 'future, potential, optative'
i. Kanza: *-tte* 'future, potential, optative'
j. Osage: *-the* 'future, potential, optative'
k. Quapaw: *-tte* 'future, potential, optative'
l. Biloxi: *tE 'a sign of desire'
m. Tutelo: *ta* 'future' (Rankin et al., 2015)

Based on this reconstruction, PS *kt clusters became *ht in PCH, which is maintained in present-day Hidatsa. However, in Crow, PCH *ht changed to *ssh* unconditionally and then to *ss* preceding *a* (e.g., Crow *-ssaa* 'towards' < Pre-Crow *-sshaa* < PCH *htaa < PS *-ktaa).[22] In addition, the desiderative in Crow has an initial *i* not found in the other Siouan language which is likely a result of affix secretion (Haspelmath, 1995), where a part of the stem is reanalyzed as part of the suffix. In particular, I suggest that verbal stems with final *i*, which account for a large number of verbs in Crow, provided the base for reanalysis. An example of affix secretion is given in (102) using the verb *eeláxi* 'urinate' as an illustration and the symbol '⇒' to indicate the resulting morpheme after reanalysis.

[22]According to Wolff (1950b, 115), in Crow, PCH *t became *sh* before *e* and *i*, and *s* before all other vowels. However, this sound change rule does not account for forms where *t in PCH became *sh* before *o*, such as PCH *toopá > *shoopá* 'four', *tóho > *shúa* 'blue', and *tóosha > *shóota* 'how'.

(102) *eeláxi-sshi → *eeláx-isshi 'need to urinate' ⇒ *-isshi* 'feel like'

The PS segment *E represents an ablauting vowel that participated in an *e/*a alternation when directly preceded by a certain set of morphemes. Although reflexes of *ktE continued to display an alternating pattern in Hidatsa and in other Siouan languages, the alternation is no longer found on *-isshi* in Crow. In Hidatsa, the alternating pattern on *-htE* manifests as *i/a*, which likely descended from the PS *e/*a alternation (Jones, n.d.); that is, when the desiderative is followed by a morpheme that triggers ablaut, the final segment changes from *i* to *a*. While this ablaut pattern is still found on many verbs in Hidatsa and their cognates in other Siouan languages, only a few verbs in Crow retain this ablaut pattern (e.g., *dútch**i**/dútt**a*** 'take', where *ch* surfaces as *t* when followed by *a*; see Graczyk 2007, 27).[23] Therefore, the earlier *e/*a alternation likely shifted to an *i/*a pattern in PCH before becoming somewhat marginal in Crow.

The next step in the development of *-isshi* is the co-occurrence of A-set agreement morphology. I suggest that the occurrence of person marking across the set of modal auxiliaries that express hypothetical scenarios provided the necessary precursor for *-isshi* to be accompanied by its own set of A-set person marking via analogical extension. In other words, the alternating pattern of the four other modals extended to *-isshi*, which had a non-alternating paradigm, yielding cross-paradigmatic consistency in the set of modal auxiliaries, as in Table 5.2 which is reproduced below.

Table 5.12: Extension of multiple exponence to *-isshi*

| | 'will, must' | 'may, might' | 'will, must' | 'should' | 'feel like' |
|---|---|---|---|---|---|
| 1SG | *-b-ii* | *-b-iih* | *-b-iimmaachi* | *-b-iishdaachi* | ***-isshi* → *-b-isshi*** |
| 2SG | *-d-ii* | *-d-iih* | *-d-iimmaachi* | *-d-iishdaachi* | ***-isshi* → *-d-isshi*** |
| 3SG | *-iimmaachi* | *-iih* | *-iimmaachi* | *-iishdaachi* | *-isshi* |

The alternative proposal that I consider is that *-isshi* originated through compounding of the future *-ii and the desiderative *-sshi. In this way, the occurrence of multiple exponence triggered by *-isshi* arose through the carrier morpheme *-ii which co-occurred with person agreement marking. This proposal is therefore parallel to the development of multiple exponence exhibited by *-iimmaachi* 'will, must', *-iiishdaachi* 'should', and *-iih* 'may, might'. However, there are several reasons why this cannot be the case. First, unlike *-iimmaachi*, *-iiishdaachi*, and *-iih*, which have idiosyncratic plural forms as a result of combining with the future suffix, the general marker *-uu* is used for *-isshi*. Second, the future suffix must always precede word-final speech-act markers. As (103) shows, *-isshi* precedes the negation

[23] According to Graczyk (2007, 27), "[s]tem-final *ch* and *t* are in complementary distribution, with *t* occurring before *a*-initial suffixes and plural *uu*, and *ch* elsewhere [...] *tt* and *ss* occur before *a*-initial suffixes and *uu*, and *tch* and *ssh* are found elsewhere." As a reviewer points out, it is cross-linguistically more common for /t/ to surface as /tʃ/ before /i/ rather than the reverse to happen before /a/. Further investigation is needed to assess Graczyk's claims.

marker. In contrast, the future suffix as well as the three modals follow negation, as in (104); although data with both negative *-ssaa* and modal *-iih* occurring in the same word is not provided, *-iih* is always found word-finally.

(103) Desiderative *-isshi*

baa-waláx-b-**isshi-ssaa**-k
1A-sing-1A-DESID-NEG-DECL

'I do not feel like singing' (Cyle Old Elk; 2018–17.084.002:28)

(104) Modals *-ii*, *-iimmaachi*, *-iishdaachi*

a. baa-waláxi-**ssaa**-w-**ii**-k [cf. *baa-waláx-b-**ii-ssaa**-k]
1A-go-NEG-1A-FUT-DECL
'I will not sing'

b. baa-waláxi-**ssaa**-w-**iimmaa** [cf. *baa-waláx-b-**iimmaa(chi)-ssaa**-k]
1A-go-NEG-1A-MOD
'I will not sing'

c. baa-waláxi-**ssaa**-w-**iishdaachi**-k [cf. *baa-waláx-b-**iishdaachi-ssaa**-k]
1A-go-NEG-1A-MOD-DECL
'I should not sing' (Cyle Old Elk; 2018–17.084.002:29)

Finally, *-isshi* in Crow appears to share the same meaning with the Hidatsa cognate *-hti*, which Park (2012, 194) describes as expressing "a sense of uncontrollable urge or need." While I suggest that the inflectional future contributed to the meaning of the modals *-iimmaachi*, *-iiishdaachi*, and *-iih*, compounding of *-ii* and *-sshi* without shifting the original meaning of the desiderative in any way seems less likely. For these reasons, I suggest that the most likely historical account for the occurence of multiple exponence on *-isshi* is through analogical extension.

## 5.6 Discussion

By exhibiting redundancy in morphological marking, multiple exponence is generally regarded as a typologically uncommon and "unnatural" phenomenon. Redundancies of this nature appear to violate principles of economy, iconicity, and biuniqueness, the latter of which assumes that one form is associated with a single meaning. As we have seen, grammaticalizaion, compounding and extension can all lead to periodic multiple exponence in Crow, and when modal auxiliaries attach to active verbs, for example, we find A-set agreement occurring on both the verbal stem as well as on the modal auxiliary. Moreover, wherever multiple exponence occurs, it is not optional in Crow and the multiple realizations of A-set agreement to reference the same argument generally do not occur next to each other. While Harris (2017, 139–142) shows that compounding of two lexical verbs can result in periodic

multiple exponence such as in Camling, a Kiranti language, compounding here focuses on the incorporation of two or more suffixes, one of which acts as a carrier morpheme (i.e., the inflectional future) that co-occurs with A-set morphology. Combining these suffixes results in yet another suffix that also behaves as a carrier morpheme and demonstrates how the degree of periodic multiple exponence can increase in a language.

The second mechanism through which periodic multiple exponence can proliferate in a language involves analogical extension. In Crow, modal auxiliaries are used to express hypothetical situations, and the set of modal auxiliaries today behave as carrier morphemes that trigger multiple exponence. As a result of extension, the involuntary desiderative, which did not originally exhibit ME, was recruited by the other members in its semantic class to also display multiple exponence and to do so only with verbs that employ A-set marking. In this case, extension involved the spread of periodic multiple exponence rather than the development of reinforcement multiple exponence. In other words, extension creates regularity through the expansion of periodic ME, and I suggest that extension of alternating multiple exponence to create additional instances of alternating multiple exponence is also a possibility. Thus, the drive towards cross-paradigmatic consistency involves categories that share similar usage and meaning. In the case of the modal auxiliaries, cross-paradigmatic consistency manifests as consistency in morphological marking and points to the link between form and function.

What is particularly striking about Crow is that not only does the language have a large number of multiple exponence triggers, but that only A-set and not B-set markers participate in displaying multiple exponence, as shown in (105). Example (105a) consists of an active verb *iichiweé* 'tell stories' and the modal auxiliary *-iimmaachi*, and A-set marking occurs on both the main verb and the carrier morpheme. In contrast, (105b) shows the stative verb *háchka* 'be tall' occurring with *-iimmaachi*, but here only a single B-set marker is realized on the main verb.

(105) a. b-iichiweé-w-iimmaachi-k
1A-tell.stories-1A-MOD-DECL
'I'll tell stories' (Walking Bear 1985, 2, as cited in Graczyk 2007, 236, ex.83)

b. bii=háchk-iimmaachi-k
1B=be.tall-MOD-DECL
'I will be tall' (Cyle Old Elk; 2018–17.084.003:14)

With the exception of the modal auxiliaries, all of the multiple exponence triggers discussed in this paper descended from active verbs, and I am not aware of any suffixes that descended from active verbs yet do not exhibit multiple exponence. On the other hand, there exists a handful of stative verbs that grammaticalized as suffixes and do not exhibit multiple exponence at all. For example, consider the two suffixes *-bishi* and *-chichee* that descended from the stative intransitive verb *bishí* 'be born', as in (106), and stative transitive verb *chichée* 'resemble', as in (107). In its use as a perfect aspect marker, *-bishi* does

not co-occur with person marking, as in (106b).[24] Because its aspectual semantics likely came from the use of *-bishi* 'exist' which often expresses possession and appears only with third-person subjects with zero marking, the clearest example that shows a lack of multiple exponence is (107b), with *-chichee* 'seem' on the active verb *disshí* 'dance'. Recall that *d* and *b* occur as *l* and *w* in intervocalic positions, respectively.

(106) a. Pre-Crow *bishí 'be born' > *-bishi* 'exist' > 'perfect aspect'

b. dáa-lisshi(*-laa/lii)-wishi-k
2A-dance(*-2A/2B)-PERF-DECL
'you have danced' (Felice Big Day; 2018–17.110)

(107) a. Pre-Crow *chichée 'resemble' > *-chichee* 'seem'

b. dáa-lisshi(*-laa/lii)-chichee-k
2A-dance(*-2A/2B)-seem-DECL
'you seemed to be dancing' (Felice Big Day; 2018–17.110)

It is clear that the active-stative distinction is an important factor in determining which morphemes may act as multiple exponence triggers. This distinction manifests morphologically with A-set and B-set markers being used to index subjects of active and stative verbs, respectively. In fact, the morphological status of these markers is especially relevant here. Whereas A-set markers are affixes, B-set markers are clitics. A-set markers display a high degree of allomorphy, occurring as prefixes, infixes, and suffixes, while B-set markers are generally invariant and occur as proclitics. Given these divergent properties, it is likely that when active verbs grammaticalized as suffixes, the A-set agreement markers that are associated with them became 'trapped' inside the word. In contrast, when stative verbs grammaticalized as suffixes, the B-set markers did not remain word-internally; rather, as proclitics, they occurred on the left edge of the word and eventually disappeared. This point is important because it explains why B-set markers are never found within a word – and thus, never found to co-occur with any grammatical suffixes to exhibit multiple exponence.

But if multiple exponence triggers came from active verbs that retained their A-set marking, then why do we typically find the co-varying A-set agreement with active verbs and not with stative verbs? As the examples in (108) show, the presence of A-set marking on the carrier morphemes *-dahku* 'iterative', *-bia* 'going to, want to', and *-iimmaachi* 'will, must' is considered ill-formed when they occur with stative verbs.[25]

[24]Rankin et al. (2015) posit 'exist' > 'be born'. However, the fact that *bishí* 'be born' still exists in Crow as an independent verb whereas *-bishi* 'exist' occurs as a suffix suggests the direction of change is actually the inverse. Moreover, at least in Indo-European, the direction of change 'be born' > 'become' > 'be, exist' is attested (Buck, 1949, 635–637), whereas 'be, exist', 'become' > 'be born' are not. Furthermore, Heine and Kuteva (2002) report that 'exist' may grammaticalize first as a possessive predicate and then as a perfect aspectual marker.

[25]The forms of *-dahku* 'iterative' are suppletive, occurring as *-kahku* when the subject is first or second person (for the full paradigm, see Graczyk 2007, 139; for more information about the semantics of the aspectuals *-dahku* 'iterative' and *-daachi* 'continuative', see Ko and Laparle 2022).

(108) a. *bii=ámmit-waa-kahku-k (cf. bii=ámmit-dahku-k)
1B=fall-1A-ITER-DECL
Intended: 'I kept on falling' (Felice Big Day; 2018–17.129)

b. *bii=háchka-wia-waa-k (cf. bii=háchka-wia-k)
1B=be.tall-going.to-1A-DECL
Intended: 'I will be tall' (Felice Big Day; 2018–17.129)

c. *bii=háchk(a)-b-iimmaa (cf. bii=háchk-iimmaa)
1B=be.tall-1A-MOD
Intended: 'I will be tall' (Charles Yarlott and Jack Real Bird; 2018–17.011)

Given that the inflectional future in Hidatsa co-occurs with person marking for both active and stative verbs, as in (90a) and (90b), it is quite likely that when active verbs grammaticalize as multiple exponence triggers in Crow, A-set marking was retained on both types of verbs before becoming restricted to mainly active verbs. That is, in Crow, A-set agreement morphology generally remained on the carrier morpheme if the verb also employs A-set agreement, but if the verb employs B-set agreement, then the carrier morpheme does not co-occur with any agreement markers at all.

However, there is one exception: unlike other multiple exponence triggers, the benefactive applicative *-ku* maintains A-set agreement with both active and stative verbs. Example (109a) provides the stative verb *bíisshi* 'tell a lie' inflected for first-person singular; despite its meaning, it behaves like other stative verbs. When the benefactive combines with stative verbs, A-set marking is maintained on the benefactive to reference the subject, as in (109b). Crucially, the presence of an A-set marker precludes the occurrence of a B-set marker to reference the same argument; the B-set marker that appears instead refers to the object introduced by the benefactive. This contrasts with active verbs where the A-set marker on the verb remains even when the benefactive is added. What is more is that when a multiple exponence trigger is added to stative verbs with the benefactive, as in (109c), we obtain two instances of A-set marking.

(109) a. bii=wíisshi-k
1B=tell.lie-DECL
'I lied'

b. dii=wíissa-Ø-**wa**-ku-k
2B=tell.lie-JUNCT-1A-BEN-DECL
'I lied for you'

c. dii=wíissa-Ø-**wa**-k(u)-bia-**waa**-k
2B=tell.lie-JUNCT-1A-BEN-going.to-1A-DECL
'I'm going to lie for you' (Riley Singer; 2018–17.029.001:56–57)

These examples illustrate how A-set and B-set marking do not typically share the same referent. With the benefactive, the A-set marker takes precedence over the B-set marker

to reference the subject, but with the other multiple exponence triggers, the B-set marker is the one that remains. I hypothesize that this contrast is due in part to the fact that the benefactive is a valence-increasing operation that derives quasi-active verbs from stative verbs (Ko, 2021); all other multiple exponence triggers encode information about aspect, modality, and motion. In fact, other valence-increasing processes, such as the direct causative *-ee* and indirect causative *-hche*, lead to similar patterns. Consider the stative intransitive verb *awélichi* 'fall down' given in (110a). When the causative attaches to this verb, the subject – the causer – is marked by an A-set marker, as in (110b). The presence of A-set agreement on the verbal stem allows for multiple exponence to occur, and so attaching a multiple exponence trigger such as *-bia* 'going to, want to', as illustrated in (110c), results in multiple realizations of A-set marking.

(110) a. dii=awélichi-k
2B-fall-DECL
'you fell'

b. dii=awélit-**ba**-hche-k
2B=fall-1A-CAUS-DECL
'I made you fall'

c. dii=awélit-**ba**-hche-wia-**waa**-k
2B=fall-1A-CAUS-DESID-1A-DECL
'I want to make you fall' (Felice Big Day; 2018–17.129)

While most carrier morphemes lose their A-set morphology when they occur on plain stative verbs, redundant A-set marking may surface if these same verbs acquired A-set markers to reference their subjects, such as via the benefactive or the indirect causative. The occurrence of multiple exponence of A-set person marking is therefore conditioned on the presence of A-set occurring on the verbal stem. In such cases, morphological marking is maximally redundant, since even if A-set and B-set markers encode the same information in terms of person, they indicate different classes of verbs that tend to exhibit different morphosyntactic and semantic properties. Overall, Crow shows a strong affinity for the morphemes that have multiple exponence to be identical in form and function, leading to the emergence of the observed multiple exponence patterns in Crow and to greater morphosyntactic and semantic transparency in its morphology.

## 5.7 Conclusion

In this paper, I have argued that the emergence of the inflectional future in Crow grammaticalized from the verb *híi 'arrive there' which set in motion the spread of multiple exponence in Crow. The first proliferation event involved the development of three modals *-iimmaachi* 'will, must', *-iih* 'may, might', and *-iishdaachi* 'should' through compounding

of the inflectional future with several other morphemes, such as those that are used to indicate a particular speech-act. The development of these modals then set the stage for the next event: analogical extension of multiple exponence to the desiderative *-isshi* based on the presence of multiple exponence on other members within the same semantic category. This diachronic pathway illustrates how, despite findings that show it does not appear to provide any functional advantage (Harris and Samuel, 2011), multiple exponence can and does spread.

Further, I have provided an explanation of why only A-set agreement participates in exhibiting multiple exponence, relying in part on the distinction between affixes and clitics. When active verbs grammaticalized as suffixes, A-set affixes remained, but when stative verbs grammaticalized as suffixes, the B-set proclitics were drawn towards the left edge of the word and were eventually lost. Over time, the A-set markers that remained on multiple exponence triggers occurred mainly with active verbs; the only exception is the benefactive applicative which displays A-set agreement to reference the subject at the expense of the B-set marker. I have suggested that there is a strong proclivity in Crow for formal and functional identity in the redundant morphological marking. This then placed pressure for the development of the pattern of multiple exponence in Crow in which only A-set but not B-set markers may have multiple exponence, thereby demonstrating greater transparency in its morphological marking.

# Chapter 6

# Conclusion

In this dissertation, I explored three main topics within Crow linguistics. One substantive chapter is about methodology—specifically, semantic fieldwork methodology. In this co-authored chapter with Schuyler Laparle, I considered how co-speech gestures might contribute to unraveling the semantic grammar of the Crow language. Previous research suggests that gesture is aligned with speech in concretizing such grammatical notions as aspect and transitivity. As a case study, I analyzed Crow aspectual morphemes -*dahku*, which expresses iterativity, and -*daachi*, which is employed as a continuative. I suggested that iterative aspect occurs with kinesically complex gestures that involve repeated movements, continuative aspect may be associated with simpler, uni-directional gestures, produced slowly and with greater control. My hope is that this work produces several outcomes. For example, I wish to encourage fieldworkers to further consider co-speech gestures in their linguistic descriptions of spoken languages. In an era where technological hindrances have been attenuated in recent years, video documentation is becoming more and more accessible and straightforward in terms of production and storage. Thus, I urge fieldworkers to produce video documentation in addition to audio documentation where appropriate as the former adds valuable contextual information about the participants, place, and among others. Producing a more complete documentation of a language allows for other scholars, especially gesture researchers, to examine the use of gestures by speakers from a wider range of backgrounds.

Next, I investigated patterns of multiple exponence (or multiple-person marking) and how they might lead to a better understanding of the theoretical tools underlying one of the most impactful areas of generative grammar: control and raising. In this investigation, I suggested that morphemes that trigger multiple-person marking can be subdivided into two groups: one that may be taken as control predicates and the other as raising predicates. However, due to the polysynthetic nature of Crow, it is difficult to determine the causal structure; that is, does a single word consist of just one clause or perhaps two or more clauses? Diagnosing the structure of clauses has been at the forefront of distinguishing raising from control, but in the context of Crow, it was unclear how to address this issue. Despite this, I considered the exponence of person agreement as an indication of multiple spell-out that is associated with control and raising. An important outcome of this work is to expand the typology of

control and raising phenomena to include a diverse range of languages.

The final chapter examined the history of the Crow language, a language without any known written documentation before the 18th century. Therefore, it represents an exercise of tracing the development of morphosyntax of a language with a long oral tradition but without a long written tradition. This chapter focused on the origin of multiple exponence in Crow. I suggested that while many of the origins of morphemes that trigger multiple exponence can be traced from the grammaticalization of independent verbs to dependent morphemes, grammaticalization alone is unable to explain the occurrence of multiple exponence across the set of modal auxiliaries. Compounding and then analogy are important processes in the development of multiple exponence observed on several of the modal auxiliaries. This work thus adds to our knowledge about the diachronic typology of multiple exponence.

Overall, future research on the Crow language may wish to focus more on the language's semantics and phonology as there remain many outstanding issues. It would also be interesting to continue investigating the contributions of gestures given the history of sign language used as a lingua franca throughout the region. Many historical documents also show great promise in the historical and comparative information about the Crow language that they may yield through philological examination. As research on other Siouan languages continues, there is also a possibility for Siouan databases to be compiled and undergo continual perfectibility which may be a useful resource for future historical and comparative linguistic work. A particularly exciting recent development is the use of computational phylogenetics, adapted from the biological sciences, to infer the histories of language families. However, as fewer and fewer people speak Crow, there is an even greater urgency today to document and revitalize the language.

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# Appendix A

# Robert Rankin Papers (NAA.2014-16): A Finding Aid

## A.1 Background

This finding aid serves as a guide to the Robert Rankin papers which are housed at the National Anthropological Archives (NAA); extensive provenance details about the Robert Rankin papers, scope and contents, and the official finding aid can be found by clicking this link: sova.si.edu/record/NAA.2014-16?s=0&n=10&t=C&q=robert+rankin&i=0. Funding for the archival research was generously provided by a National Science Foundation Doctoral Dissertation Improvement Grant under Grant No. BCS 2215488.

## A.2 Finding aid

## Box 1

### Quapaw 1

▷ ***Part I–II***: Quapaw field notes consisting mostly of vocabulary and some sentences and phrases.

- Pages 1–23: Odestine McWatters on June 5, 1973 and June 12, 1973 [SR 070 Side 1, part 1: undated]
- Pages 24–32: Bill Supernaw on July 12, 1973 [SR 070 Side 1, part 2: undated; beginning at 8:45]
- Pages 44–55: Quapaw as spoken by Maude Supernaw and Charles Supernaw come from a tape recording of an earlier session [SR 069 Side 2: 1974; beginning at 30:28]

- Pages 55–68: Bill Supernaw, undated and unordered [SR 070 Side 2: undated]
- Pages 69–74: Mary Redeagle on January 17, 1974 [SR 069 Side 1: 1974] and [SR 069 Side 2: 1974]

▷ **Note**: The linked recordings and their time stamps and associated pages may not be entirely correct. Each side of the tapes may contain multiple different sessions and it is sometimes difficult to identify the participants and date of these sessions since the Quapaw that is spoken does not always follow the transcriptions that occur in the field notes. It is likely that Bill Supernaw was reading from a list of words and phrases that is different from the elicited material found in the field notes.

### Notebook Quapaw 2

▷ Quapaw field notes consisting mostly of vocabulary and some sentences and phrases. Includes notes from an elicitation session with Bill Supernaw on July 1977 where many of the words and phrases were re-elicited from their earlier session in 1973. Notes of Quapaw as spoken by Anna Beaver, Maude Supernaw, Louis Quapaw, and Fannie Richards come from a tape recording of an earlier session. Also includes a chart of Quapaw alphabet.

### Quapaw as a Dhega language grammar

▷ An undated paper entitled "Quapaw and the languages of the Southeast" by Robert Rankin. Includes information about contact in the Southeast. There is also a handout entitled "Quapaw as a historically Dhegiha language: Grammar" of a thumbnail Quapaw grammatical sketch that was presented on May 24, 1985.

### Quapaw sibilants paper AAA

▷ Paper and handout of the talk "Quapaw sibilant phonetics reconstructed from four 19th century sources" given by Robert Rankin on December 2, 1977.

## Box 2

### Kansa 1

▷ ***Parts I–II***: Field notes of Kansa.

### Kansa 2 (1 of 2)

▷ ***Parts I–II***: Field notes of Kansa.

### Kansa 2 (2 of 2)

▷ Field notes of Kansa.

### Kansa 3

▷ Field notes of Kansa.

### Material from Kansa Dictionary tape recordings not yet entered on file slips

▷ ***Parts I–II***: Field notes of Kansa.

### Quapaw positionals

▷ Handout and paper of a talk "Quapaw positions" presented by Robert Rankin. Also includes a list of Quapaw words exhibiting *-*pe* > -*we*.

### Quapaw texts NAA (with notes)

▷ Quapaw texts "Fire-coal and sinew" and "The rabbit and the opossum" told by Buffalo Calf on January 1894 with annotations made by Robert Rankin.

## Box 3

### Kansa

▷ Two tree diagrams of differing placement of Mandan relative to the Ohio Valley branch and distributional information of select vowels in Kansa.

### Kansa denasalization

▷ Handout on "Dhegiha denasalization patterns" from February 4, 1987.

### Kansa Ralph Pepper Tulsa OK Grammar notes

▷ An elicitation plan that includes English sentences and Osage words. Analyses of Kansa phonemes with some (near) minimal pairs, phonotactics, and other random observations on Kansa phonology. Kansa verb paradigms and pronominal forms are provided. Class handouts on Dhegiha Siouan pronouns. Additional notes on instrumental and locative prefixes, aspect, and demonstratives.

# Box 4

## Kaw prehistory H.O.

▷ Handout of a talk "The Kaw Nation in prehistory: What the Kaw language and place names tell us" given by Robert Rankin on May 5, 2001.

## Kaw nation in pre-history

▷ Paper of a talk "The Kaw Nation in prehistory: What the Kaw language and place names tell us" given by Robert Rankin on May 5, 2001.

## Robert Rankin interview about his fieldwork with Kaw speakers

▷ An interview with Robert Rankin by Linda Cumberland on December 1, 2011 about his fieldwork in the 1970s with the last known fluent speakers of Kaw (Kanza).

# Box 5

## Correspondence for PS initial Koontz

▷ ***Part I***: This folder contains the following handouts by John Koontz:

- "Correspondences for PS initial $*r/*w$, $*R/*W$, and $*p/*t/*k$" (September 23, 1986)
- "The typology of Mississippi Valley Siouan pronouns" (December 7, 1985)
- "Dhegiha (and early Siouan) conjugation types: $W$-stems" (undated)
- "Non-nasal $*w$-stems in Dakota" (November 11, 1986)
- "An internal reconstruction of some Kansa irregular verbs" (undated)
- "Siouan verbs 'to say'" (November 14, 1986)
- "Omaha-Ponca *ą* constructions" (November 9, 1986)
- "Siouan causatives" (November 14, 1986)
- "Osage /éwǫ/ 'to blame'" (November 9, 1986)
- "Proto-Siouan dental stops and sonorants" (July 25, 1984)
- "Mississippi Valley Siouan positional verbs" (June 3, 1984)
- "The state of the art: Proto-Siouan phonology" (1984)

▷ ***Part II***: This folder contains the following items:

- "Problem vowels" (John Koontz; July 22, 1984)
- "Problem aspirates (pre & post)" (John Koontz; July 22, 1984)
- "Proto-Siouan grammar" (John Koontz; July 19, 1984)
- "Age of -*pe* plural in Osage" (John Koontz; November 9, 1986)
- Siouan correspondence sets
- "The Northern Plains as a linguistic area" (D. H. Pentland; February 23, 1986)
- Correspondence with Douglas Parks about Pawnee-Omaha borrowing

  "Diagnostically conservative structural features" (Johanna Nichols; undated)

## Early tribal distributions of Plains tribes RLR/JEK

▻ A handout entitled "Dakota village band names in LeSueur and related sources" by John Koontz on November 30, 1988. Also includes maps with locations of Siouan tribes at earliest contact by Robert Rankin and John Koontz, and correspondence with Kenneth W. Whistler about these maps.

## Koontz clustering analysis of Grimms Siouan cognate percentages

▷ A draft of a paper entitled "A clustering analysis of Grimm's Siouan cognate percentages" by John Koontz on August 4, 1985.

## Koontz Reanalysis of the Biloxi causative

▷ A draft of a paper entitled "A reanalysis of the Biloxi causative" by John Koontz on February 2, 1986.

## Koontziana (items from John Koontz)

▷ Correspondences between John Koontz and Robert Rankin and between Koontz and Douglas Parks. Also includes a handout "Plurality and agency in Omaha-Ponca, or, how is a definitive subject like Duchamp's Nude Descending a Staircase?" presented on November 2, 1987. There is a handout containing Plains tribal names in Omaha-Ponca.

## Koontziana 1 of 2

▷ ***Part I***: Mainly correspondences about Dhegiha linguistics, the *Comparative Siouan Dictionary*, with some notes on Muskogean similarities.

▷ ***Part II***: The Lord's prayer in Omaha translated by Elmer L. Blackbird in 1985 and correspondences about the *Comparative Siouan Dictionary.* Also includes a handout

entitled "An unusual phonological correspondence in Central Siouan" from April 9, 1987.

### Koontziana 2 of 2

- ***Part I***: Correspondences about the *Comparative Siouan Dictionary*, observations about changes in Siouan, a handout entitled "Central Siouan positional cognate sets" from June 2, 1987, notes on possession of pets, and other miscellaneous comments.
- ***Part II***: Comparative notes on inflectional paradigms of select instrumentals and verbs, causatives, instrumental, correspondences about Dhehiga archeology, and other miscellaneous comments. Also includes a handout entitled "Old articles and stem allomorphy in Mississippi Valley Siouan nouns" from March 6, 1985.
- ***Part III***:

  Correspondences about the *Comparative Siouan Dictionary*, Dhegiha linguistics, and comparative Siouan. Also includes handouts entitled "A syncopating conjugation *$k$-stem in Lakota" and "Taylor's proposed Proto-Siouan *$rh$ cluster" – the former is undated and the latter is from May 24, 1985. There is also part of a draft entitled ''On the existence of the Mississippi Valley subgroup in the Siouan language family'' from July 14, 1985 – however, only the title and first page is found.

### Omaha-Ponca 2nd dative (Koontz)

- A handout for a talk entitled "Notes on the Omaha-Ponca second dative" by John Koontz presented on February 19, 1987.

## Box 6

### JEK Oneota handout

- A handout "Some speculations about Oneota and language" distributed at the 1997 Oneota conference.

### JEK Siouan notes

- ***Part I***: Notes on Proto-Mississippi Valley Siouan, correspondence about Algonquian loans in Mobilian, comments on "Omaha sketch", "Ponca sketch", "Ponca synonymy", "Kansa synonymy", "Osage synonymy", and "Quapaw synonymy". There is also handouts with information on Proto-Mississippi Valley Siouan aspirates, Dhegiha clan names.

▷ ***Part II***: Correspondences about loanwords between Siouan and Algonquian, Dhegiha linguistics, and other topics.

### Koontz and miscellaneous Siouan

▷ A draft entitled "The contributions of Francis LaFlesche to Dhegiha linguistics" from December 1, 1992 and the following handouts:

- "Mississippi Valley *stop stem reflexive possessives" (John Koontz; November 19, 1993)
- "Tone patterns in Crow" (Randolph Graczyk; November 19, 1993)
- "The vowels of Chiwere-Winnebago pronominals" (John Koontz; November 30, 1994)
- "'Suddenly' in Mississippi Valley Siouan" (John Koontz; November 23, 1991)
- "Discourse Markers in Chiwere" (Jill D. Hopkins and Louanne Furbee; November 23, 1991)
- "Relative clauses in Omaha-Ponca" (Catherine Rudin; 1991)

### Koontz Dorsey text

▷ James O. Dorsey text "Battle between the Dakotas and Omahas in 1847" by Kaxe No$^{n}$ba (Lewis Morris) with annotations by John Koontz.

### Omaha grammar (Koontz) 2 of 2

▷ Correspondence on May 9, 1989 between Robert Rankin and John Koontz about proximate and obviative, potentially from Algonquian.

### Osage plants JEK (Koontz)

▷ Notes about Francis LaFlesche's 1932 Osage dictionary and issues with working with the LaFlesche orthography.

## Box 8

### Siouan archeological papers Articles and correspondence 2 of 3

▷ ***Part I***: Correspondences Mississippi Valley Siouan linguistics with some notes about language contact, and lenghty discussions and conjectures about Siouan ancient history. Also includes a retranscription of "The story of the two world travellers".

- ▷ ***Part II***: Correspondences mostly between John Koontz and Robert Rankin when John Koontz was doing fieldwork on Omaha, about archeology, Dhegiha linguistics, and other miscellaneous comments. Also includes maps of locations of proto-tribes and the paper entitled "A reassessment of southeastern languages and archeology" (1980) by James W. Springer and Stanley R. Witkowski.
- ▷ ***Part III***: Correspondences about archaeology, Proto-Mississippi Valley, and other miscellaneous comments.

### Siouan history and classifcation (includes correspondences)

- ▷ ***Parts I–II***: Handout with overview of Siouan classification with phonemic inventories of the Siouan languages. There are also maps and notes about ancient historic migrations and proposed homelands. Also includes a Siouan bibliography by David Rood on various topics and studies involving Siouan languages. There are also correspondences between Robert Rankin and anthropologist Patrick Munson as well as an abstract for talk entitled "Dhegiha Siouan, Algonkian, and the languages of the Southeast: Some phonological convergences".

### University of Colorado Siouan word lists

- ▷ Correspondences between Robert Rankin and David Rood about the *Siouan Archives Project* and between Robert Rankin and Allan Taylor about Siouan motion verbs. Also includes short word lists in several Siouan languages, especially the Dhegihan languages and some other Mississippi Valley languages.

## Box 9

### Miscellaneous Siouan

- ▷ ***Part I***: Notes on negation in Osage, an excerpt from "The Osage First Book" (1834), descriptions of the phonemic inventories across the Siouan languages, and the following SSILA handouts:
  - "The emergence of the marked: Root-domain markedness in Lakhota" (Adam Albright; January 10, 2004)
  - "A morphological reanalysis in Hidatsa" (John Boyle; 2004)
  - "Aksionsart, transitivity and the function of *wa-* in Omaha" (Ardis Eschenberg; 2004)
- ▷ ***Part II***: The schedule for the 1998 Siouan and Caddoan Languages Conference and the following handouts from various conferences:

- "Gender morphology in Siouan" (Sara Trechter; July 5, 1997)
- "Cliticization versus inflection: Another look at the Hidatsa mood markers" (John Boyle; 2001)
- "The quotative *ama* in Omaha narrative" (Ardis Eschenberg; undated)
- "The Jesuit Crow language materials: 1880–1900" (Randolph Graczyk; January 11, 1998)

## More random Siouan notes (and correspondence)

▷ ***Part I***: Class handouts on reduplication, an undated handout by Wesley Jones with the title "[Hidatsa] nominal suffixes-derviational", a draft by Heriberto Dixon entitled "The Saponis in New York state, and beyond" (2000), correspondences on various topics, and a SSILA handout by Johannes Helmbrecht on July 6–8, 2001, "Are there adjectives in Hocank (Winnebago)?".

▷ ***Part II***: A draft entitled "Nouns in Tutelo" likely written by Guilia Oliverio.

## Siouan archeological papers Articles and correspondence 3 of 3

▷ Answers to a typology questionnaire by John Koontz on Omaha-Ponca from June 24, 1986 and titles of papers on archeology.

## Siouan elicitation

▷ List of elicitation tasks crafted specifically for Siouan languages and various correspondences.

## Siouan statives 2 of 2

▷ ***Parts I–II***: Various correspondences on topics relating to active/stative alignment across the Siouan languages (e.g. stative transitives, statives with certain prefixes, etc.).

## Tense in 3 Siouan texts

▷ An undated oral paper by Robert Rankin entitled "Time reference and continuity in three Siouan texts".

### Useful Siouan notes

▷ Notes on Hidatsa and Mandan words showing reflexes of 'funny R', classifiers and valency in Osage, Proto-Siouan 'autonomous' glottal stops, a published paper by David Rood entitled "If Macro-Siouan is real, how will you explain this?", and a list of Ponca sentences elicited by Kathy Shea for Robert Rankin.

## Box 10

### Siouan maps trees

▷ Maps and trees relating to his paper "On Siouan chronology" that involves tracing the history of terms such as 'corn' and 'squash' across the Siouan languages.

### Siouan Rood

▷ A draft of a paper entitled "A look at the past five centuries in the history of Siouan linguistics" written by Thomas C. Sorci.

## Box 12

### Boas, Franz, "Notes on Ponka Grammar" and related notes

▷ ***Part I***: This file contains the following items:

- A published paper entitled "Notes of the Ponka grammar" by (Franz Boas; 1906)
- Class handout on aspects of Kansa grammar (Robert Rankin; 1988)
- "The state of the art: Omaha-Ponka" (John Koontz; 1984)
- Hand-drawn figures showing hierarchical structure of noun classification in Ponca and Quapaw
- A list of reconstructed Proto-Dhegiha forms
- "An association of agency and plurality in Omaha-Ponka" (John Koontz; 1984)
- Quapaw verb paradigms
- Class handouts of Kansa verb paradigms
- "Omaha-Ponka verb prefixes" (John Koontz; 1984)
- "Some remarks on Ofo verb prefixes" (Willem de Reuse; 1984)
- "Biloxi verb prefixes" (John Koontz; 1984)

▷ ***Part II***: *Umo$^{n}$ho$^{n}$ iye Wagtha' bąçe: Omaha Language Workbook of Elizabeth Stabler* compiled by Carol Marshall (undated)

### Catawba(n)

▷ This folder contains a handout by P. Nichols of a talk entitled "Language contact & shift in early S[outh] C[arolina]" presented in 1993. Also included are correspondences between Robert Rankin and Frank Siebert about Quapaw and Catawba, syntactic observations of short Catawba texts, a handout "Notes of Catawba syntax" by Paul Voorhis (1984), comparative Catawba wordlist from various linguists, and lists of words, phrases, and sentences in Catawba.

### Voorhis Catawba

▷ An unpublished and undated manuscript entitled "Catawba" by Paul Voorhis that includes a grammatical sketch of Catawba.

### Chiwere template

▷ Handouts of talks entitled "The Chiwere verb word" by Louanna Furbee and Jill Hopkins (1991), "Lack of accommodation in a dying language" by David Rogles, Lori Stanley, and Louanna Furbee (1989), and "Deixis in Chiwere" by Jill Hopkins (1989).

## Box 13

### File Chiwere Ioway-Otoe

▷ Handwritten notes by Robert Rankin on the phonology of Ioway-Oto.

## Box 14

### Observations on Dhegiha Phonetics and Phonology

▷ Handwritten notes on (Proto-)Dhegiha phonology and a paper entitled "Observations on Dhegiha (Siouan) phonetics and phonology" given by Robert Rankin on November 22, 1974. Handout by Dale Nicholas [sic; Nicklas] on select Siouan phonological developments, and handout by Robert Rankin for a talk "Dhegiha Siouan stop consonant correspondences and their sources" given in June 1981.

# Box 15

## Dhegiha correspondence

▷ Correspondences between Robert Rankin and Ives Goddard about "Dhegiha miscellany" (i.e. a brief description of the Dhegihan language subgroup and a list of words).

# Box 16

## Grimm Siouan-Catawba glottochronology

▷ An undated and unpublished paper entitled "A comparison of Catawba with Biloxi, Mandan, and Dakota" by Thaddeus Grimm, the program for the Fifth Annual Siouan and Caddoan Languages Conference, and two papers entitled "Boundaries and Lakhota orthography" possibly by Allan Taylor? (1985) and "Time-depth analysis of fifteen Siouan languages" by Thaddeus Grimm (1985).

## Terry Kaufman Siouan MS

▷ A manuscript of the Siouan languages and reconstructed Proto-Siouan phonemes and clusters by Terrence Kaufman from February 1965. No cognate sets are provided to substantiate the sound correspondences.

# Box 17

## Allan, Taylor: Lakhota clitics (handout)

▷ A handout for a talk entitled "Some traits of the Dakota language revisited: Lakhóta clause final enclitics" presented by Allan Taylor in 1974.

## Kennard Mandan Grammar 1 of 2

▷ A brief note about possible contact effects involving the unexpected Mandan 1st plural marker *nu-*.

## Lakhota subordination

▷ Notes on Lakhota morphosyntax involving subordinate clauses. Also included is Willem de Reuse's class handout entitled "Lakhóta subordinate adverbial clauses" from November 6, 1979, Kenneth Miner's handout on "Winnebago subordinate clauses" (undated), and Willem de Reuse's handout on "Relative clauses in Lakhota" (undated).

### Lakota structure

▷ This folder contains the following items:

- A comparison of the phonemic inventories of Lak'ota and Dhegiha. Notes on various topics in Dak'ota including nouns, possession, 'gender', article, pronouns, among others (undated)
- A handout entitled "The semantics of indirect objects in Lakhota" (Robert Van Valin, Jr.; undated)
- A class handout entitled "Dhegiha Siouan pronouns" (Robert Rankin; November 10, 1975)
- An note about modals in Lakota (anon.; undated)
- A paper entitled "Velar palatalization in Dakota" (Richard Lungstrum; April, 1984)
- A handout for a talk entitled "Accounting for Lakota stem allomorphy with fused deictic particles" (John Koontz; November 17, 1984)
- A handout for a talk entitled "~~Specificity and~~ the Lakhota articles: Lakhota *kʔų̨*" (David Rood; 1984)

## Box 19

### John Lawson Woccon word list from Lawsons History of N Carolina (annotated)

▷ Excerpts from *Lawson's History of North Carolina* (1714) and *A New Voyage to Carolina* (1967) by John Lawson containing a list of Woccon vocabulary. There is also a draft of Richard T. Carter's paper entitled "The Woccon language of North Carolina: Its genetic affiliation and historical significance".

### Mandan long vowels

▷ A list of Mandan words containing long vowels.

### Matthews Hidatsa Dictionary

▷ A copy of the *Hidatsa (Minnetaree) English Dictionary* (1874) by Washington Matthews.

### Miscellaneous (file after return)

▷ A handout (undated) entitled "Variation and change in Mississippi Valley Siouan" by Richard T. Carter. There is also a list of "short, unanalyzable forms from Hidatsa".

# Box 20

## T. Dale Nicklas Biloxi

▷ The third draft of Dale Nicklas's paper entitled "The pronominal inflection of the simple Biloxi verb" (undated) with annotations by Robert Rankin. Also includes a brief correspondence from Dale Nicklas to Robert Rankin.

# Box 22

## Omaha papers

▷ ***Part I***: This file contains the following items:

- "Two kinds of 'when' in Omaha-Ponca" (Ardis Eschenberg; undated)
- "Articles and the structure of NP in Omaha" (Catherine Rudin; 1992)
- "A perspective analysis of obviation markers in Omaha-Ponca" (Ardis Eschenberg; 1999)
- Draft of a paper entited "Obviation in Omaha-Ponca" (Ardis Eschenberg; 1999)

▷ ***Part II***: A handout for a talk entitled "Verbal morphology and storyworld status in Omaha" by Ardis Eschenberg (undated) and an untitled and undated Omaha text glossed by Ardis Eschenberg.

## Omaha and Ponca (dictionary)

▷ This file contains a handout by T. Dale Nicklas entitled "Marking the beneficiary in Muskogean, Siouan, and Yuchi' from September 14, 1994.

## Osage (i)

▷ This file includes Robert Rankin's comments on John Koontz's paper entitled "A comparative analysis of four classes of Siouan verbs beginning in */r/". Also includes an undated, brief description of Osage phonology (author unknown).

## Osage (ii)

▷ Correspondences between Robert Rankin and Douglas Parks about the *Handbook of North American Indians, Volume 13, Plains* (?) chapter on Osage. Rankin provides a description of sound changes among the Dhegiha languages. There are also notes from an Osage language class and historical information about the Osage.

### Osage-NEH

▷ This file includes comments and feedback by Robert Rankin to a draft of a National Endowment for the Humanities grant application by Carolyn Quintero and Robert Bristow. There is also an undated handout entitled "Critique of La Flesche's 1932 dictionary of the Osage language" (author unknown).

### OVS alignment

▷ Brief observations about (a) "vocalization" of Proto-Siouan *$\check{s}$ reflexes in Biloxi (and possibly Tutelo) to *i-*, likely due to analogy, and (b) unexpected stem-initial *ra-* and *ya-* on motion verbs in at least Hidatsa, Crow, and Tutelo.

### Plains archeology

▷ A review of *An Introduction to Kansas Archeology* (Wedel 1959) by Caryle Smith (1961) and notes by Robert Rankin.

### Pustet Lakota

▷ A published paper by Regina Pustet (1995) entitled "The Lakota article" in *Language and Culture in Native North America: Studies in honor of Heinz-Jürgen Pinnow* edited by Michael Dürr, Egon Renner, and Wolfgang Oleschinski.

## Box 23

### Red Thunder Cloud: Voegelin_correspondence, etc.

▷ Correspondence between George 'Hu' Matthews and Carl Voegelin about Red Thunder Cloud. There is also an excerpt from the *Bulletin of the Massachusetts Archeological Society* that includes Frank Siebert's critical remarks of anthropologists calling tribes "extinct, lost or barren" and the condescending way in which people have often referred to Indigenous people.

### Rudes: Catawba/Siouan (correspondence/writings)

▷ ***Part I***: A draft of Blair Rude's (1998) paper entitled "Catawba phonemes". There are also comments provided by Blair Rude about Robert Rankin's paper about the possible genetic affiliation across Siouan, Catawban, and Yuchi.

▷ ***Part II***: Photocopies of Raven McDavid's Catawba field notes which include verbal paradigms and which have been phonemicized by Blair Rudes.

▷ ***Part III***: A draft of an undated paper by Blair Rudes entitled "Morphosyntactic evidence for the relationship of Yuchi to the Catawban and Siouan languages".

### Siebert correspondence

▷ Correspondences between Robert Rankin and Frank Siebert about such topics as the state of Catawba linguistics and outstanding issues, Red Thunder Cloud, Robert Rankin's 'ethnohistorical' work, among others. **Note**: Some people may find Siebert's views and often critical comments unsettling.

## Box 24

### Thompson and Blackbird: "The Omaha-Ponca Language in Writing"

▷ A paper entitled "The Omaha-Ponca Language in Writing: Suggestions for a practical orthography" by James D. Thompson and Elmer Blackbird from December 1974. The appendecies include a glossary, James O. Dorsey's list of sounds, and lexicon of words that occur in the sample text.

### Trechter

▷ Included in this file are a handout entitled "Gender morphology in Siouan" presented on July 5, 1997, and a (class) paper entitled "The anatomy of a failure: a report on final enclitics in Siouan languages" from December 18, 1990; the author of both works is Sara Trechter.

### Tutelo revisited: The Sapir Transcriptions

▷ Two published articles "A Tutelo vocabulary" (Edward Sapir; 1913) and "Contributions to a Tutelo vocabulary" (Leo J. Frachtenberg; 1913), and two handouts for talks entitled "The last Tutelo: One hundred years later" (Marianne Mithun; undated) and "The classification of Tutelo" (Richard Carter; undated).

### Typologies (numeral, phonological)

▷ Maps with isoglosses pertaining to a few areal traits (i.e. counting system, *k/q* phonemic distinction, etc.), and phonemic inventories of several languages including Kiowa (Kiowa-Tanoan), Toas (Kiowa-Tanoan), Zuni (Penution), Papago (Uto-Aztecan), etc.

### Verb reduplication in Dakota

▷ The *Newsletter of Siouan and Caddoan Linguistics* of April 1979 which includes three notes by Jack Chambers, "A syntactic argument for negative transportation in Santee", "Welsh and Mandan", and "Dakota islands?", one by Jimm Good Tracks, "Iowa-Otoe-Missouria subgrouping", and another by Kenneth Miner entitled "An unusual natural class in Mississippi Valley Siouan". There is also a list of work in progress, recent publications, upcoming events, and roster of Siouan and Caddoan linguists. This file also includes a paper by Marcia Steyaert (1976) entitled "Verb reduplication in Dakota".

### *wą́·k-* notes

▷ This folder contains various notes on the first-person plural *wą́·k-* prefix and a handout for a talk entitled "Researching and describing Tutelo, or how to study an extinct language" given by Guilia Oliverio on November 27, 1995.

### Watkins, Laurel: Classificatory verbs

▷ Handout for a talk entitled "Shape vs. position: classificatory verbs in North America" presented by Laurel Watkins on December 29, 1976. There is also a draft of a paper with the tentative title "(Classificatory verbs)" written by Laurel Watkins dating from 1972. There is also a handout on posture verbs across languages of the Southeast, undated and without author attribution.

## Box 25

### Miner, Winnebago

▷ There are an undated Swadesh 100 word list completed for Wisconsin Winnebago by Kenneth Miner, undated examples of "language mixing" between Hocank and English, and source materials on Hocank compiled in July 1984 for the Comparative Siouan workshop.

### Templates - VB (Hidatsa suffixes and prefixes A. W. Jones)

▷ Undated handouts containing lists of Hidatsa suffixes and prefixes provided by Wesley Jones for the Comparative Siouan workshop.

# Box 26

## 2nd Siouan conference handouts

▷ ***Catawba***: General information about the Second Siouan Languages Conference and comparisons of Catawba transcriptions by different linguists and ethnographers including Sibert, Swadesh, Speck, and Gatschet.

▷ ***Comparative Assiniboine Vocabulary***: Comparisons of Assiniboine transcriptions by different linguists and ethnographers including Umfreville, Thompson, Henry, and 'modern'.

▷ ***Rude, Carter, Miner, James, de Reuse***: This file contains the following handouts and papers:

- "Ablaut in the Central Siouan languages" (David Rood; 1982)
- "Some very tentative observations of root-final ?C clusters in Mandan" (Richard Carter; 1982)
- An investigation of Hocank (Winnebago) CVVCV́ correspondences in several other Siouan languages (Kenneth Miner; 1982)
- "Pervasive nasality in Lakhota" (Eli James; 1982)
- "Remarks on the Lakhota enclitics" (Willem de Reuse; 1982)

## 3rd Siouan conference

▷ ***Voorhis Carter Carter-Pentland Rankin***: An announcement for the Third Annual Siouan Linguistics Conference and the following handouts:

- "Catawba verb morphology in the texts of Frank Speck and of Matthews & Red Thunder Cloud" (Paul Voorhis, 1983)
- "Some Macro-Siouan cognate sets" (Richard Carter; undated)
- "The bipartite negative construction: Two cases of morphological borrowing?" (Richard Carter and David Pentland; undated)
- An excerpt of the vocabulary list from the Winnebago Lexicon Project by Josie White Eagle
- "Further observations on Biloxi phonology and morphology" (Robert Rankin; 1984)

▷ ***Rankin-Eight Hocank-Rabbit Snares the Sun***: A handout entitled "On some Ohio Valley Siouan and Algonquian words for EIGHT" by Robert Rankin presented in 1983 and an undated translation of a Hocank text entitled "Hare snares the sun".

▷ ***Unaspirated Stops and Sonorants in PMVS***: A handout for the talk entitled "Unaspirated stops and sonorants in Proto-Mississippi Valley Siouan: A morphological reassessment" given by John Koontz in May 1983.

## 6th Siouan conference handouts

▷ ***6th Siouan conference handouts*** This file contains the following handouts:

- "Crow-Hidatsa sound correspondences" (Randolph Graczyk; 1986)
- "A reanalysis of the Biloxi causative" (John Koontz; 1986)
- "Some questions on questions in Winnebago" (Ken Hale and Josie White Eagle; 1986)
- "The Kansa word list of Maximilian, Prince of Wied (1833)" (Robert Rankin; 1986)

There is also a list of participants at the Sixth Annual Siouan-Caddoan Linguistics Conference.

▷ ***Hocank vocabulary***: A list of Hocank vocabulary with example sentences by Josie White Eagle.

## 7th Siouan conference

▷ ***Parts I–II***: This folder contains the following handouts and papers:

- "Ponca, Biloxi and Hidatsa glottal stop and Quapaw gemination as historically related accentual phenomena" (Robert Rankin; 1987)
- "Old loanwords in Mississippi Valley Siouan" (John Koontz; 1986)
- "Isoglosses in Proto-Mississippi Valley Siouan" (John Koontz; 1987)
- "Dative, benefactive, and possessive prefixes in Lakota" (Willem de Reuse; 1987)
- "An autosegmental analysis of ablaut" (Patricia Shaw; 1987)
- "The importance of Siouan and other head-marking languages for linguistic theory" (Robert Van Valin; 1987)
- "Omaha-Ponca positionals" (John Koontz; 1987)

▷ ***Hall 1985 Medicine Wheel***: A published article (1985) entitled "Medicine wheel, sun circles, and the magic of world center shrines" by Robert Hall.

## 11th [sic] Siouan conference Morley

▷ This folder contains the schedule for the 9th Annual Conference on Siouan and Caddoan Languages in 1989 and the following handouts:

- "Postpositional phrase incorporation in Crow" (Randolph Graczyk; 1989)
- "Proximate/Obviative in Omaha-Ponca" (John Koontz; 1989)
- "Some unexpected instances of t$^{?}$ in Chiwere-Winnebago" (Robert Rankin; 1989)

## Chafe The Caddo Defocused Prefixes

▷ A handout by Wallace Chafe for his 1987 talk entitled "The Caddo defocused prefixes".

## SCLC (17th Siouan and Caddoan Languages Conference)

▷ ***Hocank, Boyle, Galloway, Tretcher***: This file contains the following handouts:

- "Ho-chunk pictionary demonstration" (Clara Mojica-Diaz, Helene Lincoln, Marti Harrison, and Elaine Rice; 1997)
- "A preliminary examination of switch reference in the traditional Hidatsa texts collected by Robert H. Lowie" (John Boyle; 1997)
- "Some observations on allophones and phonemes in Canadian Assiniboine" (Brent Galloway; 1997)
- "Plurals and the problem of scope in Lakhota" (Sara Tretcher; 1997)

▷ ***Koontz, Kill-Smallls, Graczyk***: The schedule for the 17th Annual Siouan and Caddoan Languages Conference held in 1997 and the following handouts and papers:

- "Omaha-Ponca WH-forms (rough morphology only)" (John Koontz; 1997)
- "A study of personal pronoun affixes and other bound morphemes in Lakota, a Siouan dialect" (Jerome Kills-Small; 1997)
- "Subordinate clauses in Crow" (Randolph Graczyk; 1997) – there is a typo on the handout indicating the talk was given in 1996

▷ ***Mixco, Kelty, West***: This file contains the following handouts and papers:

- "The morphosyntax of the Mandan simultaneous aspectual suffix(es)" (Mauricio Mixco; 1997)
- "Mandan stress' (Daniel Kelty; 1997)
- "Modals, relative clauses, and verbal processes in Nakota" (Shannon West; 1997)

## SCLC (Siouan and Caddoan Languages Conference)

▷ ***Parts I–II***: These files contain the following handouts and papers:

- "Omaha-Ponca verbs of motion" (John Koontz; 2001)
- "The *n*-phoneme in Siouan languages" (Thaddeus Grimm; 2001)
- "The historical significance of John Buck's 'Tutelo' vocabulary" (Blair Rudes; 2001)
- "Morphological ordering in Lakhota adverbials" (Paul Kroeber; 2001)
- "Chiwere word classes" (Hartwell Francis and Armik Mirzayan; 2001)
- "The Crow and Hidatsa lexicons: A comparison" (Randolph Graczyk; 2001)

## SCLC 22

▷ ***Boyle, Quintero, Rudin***: The program, including abstracts of the talks, for the 22nd Siouan and Caddoan Linguistics Conference held in 2002. This file also contains the following handouts:

- "A formal grammar of Hidatsa relative(s) (clauses)" (John Boyle; 2002)
- "Positional/configurational considerations in Osage" (Carolyn Quintero; 2002)
- "Conjunction...or not?" (Catherine Rudin; 2002)

▷ ***Ingham, Cumberland***: This file contains the follow two papers and handouts:

- "*ki/k'uŋ* in Lakota; topic marker or deinite article" (Bruce Ingham; 2002)
- "Sound symbolism and semantic reference in Assiniboine verbs of coming and going" (Linda Cumberland; 2002)

## SCLC (i)

▷ A handout for a talk entitled "Ablaut in Tutelo" given by Guilia Oliverio in July 1995.

## SCLC (ii)

▷ ***Grimm, Zeps*** Two handouts for talks given by Thaddeus Grimm (undated) on "Dhegiha tribal names" and by Valdis Zeps (1993) on "Winnebago orthography and lexicon".

▷ ***Harrington, Sistrunk, Rudin, Koontz*** This file contains the following items:

- An article about John P. Harrington's work in the Plains and in the Siouan language family – unclear book and date.

- "Men say 'yele'; women say 'yelo': what the exceptions show" Sara Siestrunk 1993
- "Omaha-English code switching" (Catherine Rudin; undated)
- "Mississippi Valley Siouan *stop stem datives" (John Koontz; 1993)

▷ ***Siouan aspiration, cognate sets, Quintero, Patterson***: This file contains the following items:

- A paper and handout for a talk entitled "Some notes on Siouan aspiration: A progress report" by Robert Rankin presented in1993)
- A list of select cognate sets
- A handout by about verbal morphology in Osage and a short Osage text, "The tortoise and the hare" (Carolyn Quintero; 1993)
- A handout for a talk "Syllabic structure constraints in Lak$^{h}$ota morphology" (Trudi Patterson; 1993)

## SCLC (iii)

▷ This folder contains the following items from the 1995 Siouan and Caddoan Langauges Conference:

- Program of the 1995 Siouan and Caddoan Langauges Conference
- "Michigamea as a Siouan language" (John Koontz; 1995)
- "Lakota syllable structure reconsidered" Trudi Patterson; 1995)
- "Ablaut in Tutelo" (Guilia Oliverio; 1995)
- "On Quapaw (and Siouan) 'Ablaut'" (Robert Rankin; 1995)

## SCLC (iv)

▷ ***Francis, Boyle, Curl, Rudin, Galloway***: This file contains the following handouts:

- "Does Lakhota have a subject?" (Hartwell Francis; 1998)
- "Is there a proximate/obviative system at work in Hidatsa narratives?" (John Boyle; 1998)
- "*ki*, *k?u*, and reference tracking in *Double-Face Tricks the Girl*" (Traci Curl; 1998)
- "Postverbal constituents in Omaha-Ponca" (Catherine Rudin; 1998)
- "Osage subordinators" (Carolyn Quintero; 1998)

- "The story of Ikdomi creating the land/world" (Brent Galloway; 1998)

▷ ***Rudin, Grimm, Mixco, Rankin***:

- "Clauses and other DPs in Omaha-Ponca" (Catherine Rudin; 1998)
- "Proto Siouan /s/ and /š/ in Iowa-Otoe" (Thaddeus Grimm; 1998)
- "The morphosyntax of the Mandan nominalizations" (Mauricio Mixco; 1998)
- "More on the Siouan-Catawban and Yuchi relationship with a note on Caddoan" (Robert Rankin; 1998)

## Siouan and Caddoan Linguistics-newsletter

▷ ***Newsletters-1978***: The *Newsletter of Siouan and Caddoan Linguistics* of August 1978 that includes an assessment of the state of Siouan linguistics – with discussion of the importance of 'action linguistics', a list of linguistic work in progress, recent publications, upcoming events, and names on the mailing list.

▷ ***Newsletters-1980***: The newsletter, now named *Siouan and Caddoan Linguistics*, from March 1980 which includes commentaries by Ken Miner on "Positionals outside Siouan" and Jean Charney on "Style in Winnebago narratives", a book review by Allan Taylor, a list of linguistic research in progress, a progress report of the *Sioux Dialect Survey*, recent publications, and a list of linguists with interests in Siouan and Caddoan languages.

▷ ***Newsletters-1981***: The fourth *Siouan and Caddoan Linguistics* newsletter from June 1981. The newsletter includes notes by Francisco Queixalós entitled "More on positionals outside Siouan", Ken Miner entitled "Comment on Charney's 'Style in Winnebago narratives'", Jean Charney entitled "A proposed etymology for the Winnebago declarative suffix", Willem de Reuse entitled "Grassman's Law in Ofo", Allan Taylor entitled "Variation in Canadian Assiniboine". There is also a book review by Allan Taylor, a list of recent publications and work in progress, and a roster of linguists with interests in Siouan and Caddoan languages.

## Siouan conference

▷ Two handouts of talks given by John Koontz (1988) entitled "Accent in Omaha-Ponca" and by an anonymous linguist (Janis Williamson?; 1988) entitled "Extraction constraints in a language without extraction: The 'problem' of WH-questions in Lakhota".

## Siouan conference (conference on Siouan and Caddoan languages)

▷ ***Cook, Graczyk, Dakotan, Galloway***: This file contains the program for the *19th Annual Conference on Siouan and Caddoan Languages* and the following handouts and papers:

- "Problems in Morley Stoney phonemic inventory & practical orthography" (Eung-Do Cook; 1999)
- "Switch reference in Siouan" (Randolph Graczyk; 1999)
- "Working with the contemporary Nakota language: Lower forty eight" (Ronn Moccasin; 1999)
- "Some semantic roles in Canadian Assiniboine/Nakota" (Brent Galloway; 1999)
- "Nominal or verbal status in Lakhota (Siouan): a lexicographical study" (Bruce Ingham; 1999)

▷ ***Grimm, Koontz***: Handouts for talks given in 1998 by Thaddeus Grimm entitled "A proposed solution to the Mandan paradox" and by John Koontz entitled "'Suddenly and repeatedly' in Mississippi Valley Siouan".

▷ ***Rankin***: A handout and paper for the talk given by Robert Rankin in 1998 entitled "A diachronic perspective of active/stative alignment in Siouan".

## Siouan conference and MALC

▷ This folder contains the follow handouts of talks presented in 1990:

- "Central Siouan syncopating stems" (John Koontz; 1990)
- "Observations on WH-questions in Omaha" (Catherine Rudin; 1990)
- "Nasalization in Lakhota" (David Rood, Eli James, and John Koontz; 1990)
- "Winnebago accent: The rest of the data) (Kenneth Miner; 1990)
- "Phonological nasality in Lakhota" (Trudi Patterson; 1990)
- "Maximilian's Ruptare Vocabulary: Philological evidence and Mandan phonology" (Richard Carter; 1990)
- "Relative clauses in Crow" (Randolph Graczyk; 1990)
- "The case of root extensions in proto-Siouan" (A. Wesley Jones; 1990)
- "The pronominal inflection of the Biloxi verb" (T. Dale Nicklas; 1990)

### Siouan conference handouts

▷ A list of vocabulary in Ioway-Otoe by Jimm Good Tracks (undated), an untitled handout given by Richard Lungstrum with Lakota (?) verbal stems (undated), and a handout entitled "The Winnebago verb as a lexical entry" by Josephine White Eagle (1985).

### Siouan/Caddoan conference

▷ Undated handouts entitled "A mostly Wichita text" by David Rood, "Biloxi *-di*" by Richard Carter, and "Report on the Siouan Comparative Dictionary project" by Robert Rankin.

## Box 27

### "More on the Siouan Languages of the East" AAA handout and presentation[?]

▷ Handout and paper of a talk entitled "More on the Siouan languages of the East" given by Robert Rankin on December 7, 1980.

### 2004 24th SCLC (Siouan and Caddoan Languages Conference)

▷ This folder contains the following handouts:

- "A comparative look at *aru-/ala-* and *aku-/ak-* in Missouri Valley Siouan" (John Boyle; 2004)
- "Wichita word formation" (David Rood; 2004)
- "Aspect marking in Lakota" (Regina Pustet; 2004)
- "Specificity and definiteness in Assiniboine" (Linda Cumberland; 2004)

### Comparative Linguistics workshop University of Michigan (i)

▷ The schedule for the *11th Spring Workshop on Theory and Method in Linguistic Reconstruction*. Handout and paper for a talk entitled "Active/Stative case alignment in Ohio Valley Siouan" by Robert Rankin presented in April 2006.

### Comparative Linguistics workshop University of Michigan (ii)

▷ ***Siouan enclitics handout***: A handout for the talk "The Siouan enclitics: A beginning" presented by Robert Rankin in April 2010.

▷ ***Siouan enclitics talk***: The paper for the talk "The Siouan enclitics: A beginning" presented by Robert Rankin in April 2010.

## Douglas Parks "North Caddoan verb" AAA

▷ A handout for Douglas Parks's talk entitled "The North Caddoan verb" given in 1975.

## SCLC (includes "An Ofo Grammar Sketch")

▷ ***Koontz, Marino, Grimm***: This folder contains the following handouts and papers:

- "Accent in Proto-Mississippi Valley Siouan" (John Koontz; 2002)
- "'The Sacred Red Road of the Isanti Dakota Sioux': selected vocabulary" (Mary Marino; 2002)
- "The $x$-phoneme in Siouan languages and its relationship to other Siouan fricatives" (Thaddeus Grimm; 2002)

▷ ***Quintero***: This folder contains the Carolyn Quintero's paper entitled "Positional/Configurational considerations in Osage" presented in 2002.

## Siouan conference

▷ ***Rudin, Boyle, Koontz, Eclectic Chair***: This folder contains the following handouts and papers:

- "Change and continuity: Two versions of an Omaha text" (Catherine Rudin; 2003)
- "Attrition and innovation in Hidatsa clause structure" (John Boyle; 2003)
- "A focus marker in Omaha-Ponca [Dhegiha Siouan]" (John Koontz; 2003)
- "The eclectic chair" (Robert Rankin with Carolyn Quintero, Rory Larson, Louis Garcia, and John Koontz; 2003)

▷ ***Ingham, Graczyk***: Handouts entitled "Noun modification in Lakota" by Bruce Ingham and "Deixis in Crow" by Randolph Graczyk both presented in 2003.

▷ ***Omaha, Mirzayan***: The schedule for the 23rd Annual Siouan-Caddoan Conference held in August 2003. Also contains a list of Omaha-Ponca vocabulary organized by semantic domain and an Omaha text collected by James O. Dorsey as told by Pathi$^{n}$-No$^{n}$p$^{h}$azhi entitled "Sithemak$^{h}$o$^{n}$'s adventure as a deer". There is also a handout of a talk entitled "Some aspects of self-repair initiation in Wichita conversation" by Armik Mirzayan on August 8, 2003.

### Siouan-Caddoan Languages Conference

▷ ***Dhegiha, Quintero, Boyle***: This file contains a paper by Robert Rankin (2005) of his talk entitled "Interpreting the transcriptions of James Owen Dorsey (consonantism)" and Carolyn Quintero's (2005) handout of her talk "Osage positionals revisited: Subject markers and auxiliaries *akxa* and *apa*". There is also the schedule and abstracts for the 2005 Siouan and Caddoan Linguistics Conference, and a handout of John Boyle's (2005) talk entitled "Configurationality, VP and the syntactic status of the pronominal prefixes in Hidatsa".

▷ ***Ingham, Graczyk, Altshuler*** This file contains the following handouts:

- "Adverbial function in Lakota" (Bruce Ingham; 2005))
- "The Hayden materials: A mid-ninteenth century Crow sketch and vocabulary" (Randolph Graczyk; 2005)
- "Pitch accent on Osage verbs" (Daniel Altshuler; 2005)

▷ ***Noun stem, Koontz*** A paper of John Koontz's (2005) talk entitled "Noun stem morphology in Teton Dakota".

▷ ***Rankin, Quintero***: Handouts for Robert Rankin's talk entitled "Interpreting the transcriptions of James Owen Dorsey in Omaha, Ponca, Kansa, Osage, Quapaw and Biloxi" and Carolyn Quinter's talk "James Owen Dorsey, the Raccoons and the Crawfish, told by Qüȼa- ṯawi$^{n}$" presented in 2005.

▷ ***Siouan Athabascan de Reuse***: Handout for Willem de Reuse's talk entitled "An intriguing morphophonemic similarity between Siouan and Athabascan".

### Taylor Variation in Canadian Assiniboine (AAA)

▷ Paper and handout of a talk entitled "Variation in Canadian Assiniboine" presented by Allan Taylor in 1980.

## Box 28

### De Soto Arkansas (Proceedings of the DeSoto Symposia) 1 of 2

▷ ***Part I***: A preprint of a paper published by Robert Rankin entitled "Language affiliations of some de Soto place names in Arkansas". Also includes a review of *Tunica Archeology* by Marvin D. Jeter and a commentary entitled "The place of Spiro in Southeastern prehistory: Is it Caddoan or Mississippian?" by Frank Schambach.

- ▷ ***Part II***: A paper entitled "A reinterpretation of the place of the Spiro site and the northern Caddoan area in the southeastern prehistory" presented by Frank Schambach on March 23, 1991.
- ▷ ***Part III***: An oral paper, "DeSoto's *Capaha/Pacaha*: Siouan or Tunican?", by Robert Rankin presented at the 20th Siouan and Caddoan Languages Conference. Also includes a paper entitled "Historic contact sites near Little Rock, Arkansas" by Marvin D. Jeter and James P. Harcourt presented on October 2, 1988 and a handout by Robert Rankin with the title "Quapaw as a historically Dhegiha language: Grammar" presented on May 24, 1985.

## De Soto Arkansas (Proceedings of the DeSoto Symposia) 2 of 2

- ▷ ***Part I***: "An examination of the evidence for the Tunica people on the Arkansas River" by Michael P. Hoffman on September 25, 1987. "A comparison of Terminal Mississippi period cermaics of the Lower Arkansas Valley with those of Northeastern Arkansas" by Michael P. Hoffman in 1988.
- ▷ ***Part II***: A paper entitled "Tunicans west of the Mississippi: A summary of early historic and archeological evidence" by Marvin D. Jeter published in 1986. There is also a paper "Who the Native peoples of Arkansas might have been in the De Soto era from a linguistics standpoint" presented by Robert Rankin in 1988 at the De Soto Symposium.
- ▷ ***Part III***: The schedule for the meeting "The De Soto era in Arkansas".

## Linguistic Society of America meeting

- ▷ Handouts from SSILA in 2002 of Catherine Rudin's talk, "Functional heads, directionality, and the identity of Omaha-Ponca constituents" and of Mary S. Linn's talk, "Lexical affixation in Euchee".

## LSA useful

- ▷ A report on the 33rd Algonquian conference and other announcements in Algonquian and Iroquoian linguistics.

## SELC at OSU (Oklahoma)

- ▷ ***Bolen and Furbee, Catches and de Garcia, Graczyk, Hopkins and Furbee***: This file contains the following handouts and papers:
  - "Plains sign language gestures accompanying the English speech of Otoe-Missouri Indians" (Anne Bolen and Louanna Furbee; 1991)

- "Avoiding the wrath of the Thunder Beings" (Violet Catches and Jule Gómez de García; 1991)
- "The surprise marker in Crow: An indexical verb" (Randolp Graczyk; 1991)
- "Discourse markers in Chiwere" (Jill Hopkins and Louanna Furbee; 1991)

▷ ***Koontz, Patterson, Rood, deReuse, Sistrunk***: This file contains the schedule for the 11th Siouan and Caddoan Linguistics Conference held in 1991 and the following handouts and papers:

- "Winnebago vowel length in diachronic perspective" (John Koontz; 1991)
- "The Bracket Erasure Convention and Lakhota phonology" (Trudi Patterson; 1991)
- "Lessons from the Lakhota dictionary" (David Rood and Eli James; 1991)
- "Noun incorporation in Lakhota revisited" (Willem de Reuse; 1991) – there is a typo on the handout indicating the talk was given in 1990
- "Gender clitics in Siouan languages" (Sarah Sistrunk; 1991)

## Siouan syntax workshop

▷ ***Boyle, Rankin, West***: This file contains the following handouts and papers:

- "A brief sketch of Hidatsa" (John Boyle; 2001)
- "A few salient features of Biloxi syntax and grammar" (Robert Rankin; 2001)
- "A sketchy sketch of Canadian Assiniboine syntax" (Shannon West; 2001))

▷ ***Koontz, Graczyk***: This file contains the following handouts and papers:

- "Omaha-Ponca syntax" (John Koontz; 2001)
- "Siouan syntax: Crow" (Randolph Graczyk; 2001)

▷ ***Quintero, Eschenberg, Graczyk***: This file contains the following handouts and papers:

- "Subject markers (a.k.a. articles)" (Carolyn Quintero; 2001)
- "The article system of Omaha" (Ardis Eschenberg; 2001)
- "Complex clauses I: Serial verbs and verbs of saying, continuative constructions, switch-reference, and coordiantion" (Randolph Graczyk; 2001)

▷ ***Rood, Rudes, Kroeber, West, Rudin***: This file contains the following handouts and papers:

- "Outline of Lakhota structure from a syntactician's perspective" (David Rood; 2001)
- "Some data on Lakhota relative clauses" (Paul Kroeber; 2001)
- "Assiniboine and the Pronominal Argument Hypothesis" (Shannon West; 2001)
- "The NP: structure, case, nominalizations, incorporation, and relative clauses [in] Omaha-Ponca" (Catherine Rudin; 2001)

▷ ***Rudin, West, Kroeber, Boyle***: This file contains the following handouts and papers:

- "Word order, headedness, and directionality" (Catherine Rudin; 2001)
- "Some subject and object asymmetries in Assiniboine" (Shannon West; 2001)
- "Notes on Lakhota coordination" (Paul Kroeber; 2001)
- "Hidatsa: Complex clauses I" (John Boyle; 2001)
- "Hidatsa: Complex clauses II" (John Boyle; 2001)

# Box 29

## Fricative ablaut Choctaw/Siouan

▷ Notes on fricative ablaut from 1975.

## Word International workshop 1 of 3

▷ ***Part I***: Correspondences about multiple inflection (or exponence), templatic morphology, and other issues of wordhood.

▷ ***Part II***: Information and schedule for the workshop on word and additional correspondences on wordhood.

## Word International workshop 2 of 3

- ***Word in Siouan***: A draft (?) of a paper entitled "A synchronic and diachronic perspective on 'word' in Siouan" co-authored by Robert Rankin, John Boyle, Randolph Graczyk, and John Koontz.

▷ ***Word workshop discussion***: Several discussion points on the notion of word.

### Word International workshop 3 of 3

- ▷ ***Siouan morpholohy correspondences***: Correspondences about issues of affixes and clitics, placement of accent, and wordhood.
- ▷ ***Evidentials Koontz***: A paper presented by John Koontz on evidentials at the Siouan conference in 2000.

## Box 30

### Biloxi aspiration paper

- ▷ ***Part I***: Paper and handout of the talk entitled "Evidence for two stop series in Biloxi" given by Robert Rankin on December 5, 1982. There is also a handout for a talk entitled "A philological analysis of phonemic aspiration in Ohio Valley Siouan" presented on February 23, 1982 and a handout for the talk "Tutelo phonology revisited: The Sapir transcriptions".
- ▷ ***Part II***: Notes relating to Robert Rankin's talk 'Evidence for two stop series in Biloxi".

### Ofo "FH"

- ▷ A paper presented at the Siouan conference in June 1988 entitled "FH" by Robert Rankin.

### Ofo "FH" paper

- ▷ A number of cognate sets indicating an *C$s$ > *fh* change in Ofo.

### Ofo and Biloxi

- ▷ An article by John R. Swanton entitled "A New Siouan Dialect" published in 1909 about Ofo. Also included is an article by James O. Dorsey published in 1893 entitled "The Biloxi Indians of Louisiana". There is a draft and notes of de Reuse's paper "Grassman's Law in Ofo" as well as Rankin's comments of Haas' IJAL paper "Last words of Biloxi".

### Ofo s > θ > f paper

- ▷ ***Part I***: A draft of a paper by Robert Rankin entitled "Linguistic evidence for the earlier location of the Ofo". Also includes cognate sets of various terms across the Siouan family.

▷ ***Part II***: Notes about changes involving /s/. Includes handwritten paper and a printed handout of Robert Rankin's talk "Linguistic evidence for the earlier location of the Ofo" given on December 1, 1979.

### Rankin "Some unpublicized areal features of the Southeast"

▷ A handout for Robert Rankin's (1978) talk "Some unpublicized areal features of the Southeast".

### Siouan classificatory verb paper

▷ ***Parts I–III***: Various notes, drafts, and comments relating to Robert Rankin's paper "From Verb to Auxiliary to Noun Classifier and Definite Artcile: Grammaticalization of the Siouan Verbs 'sit', 'stand', 'lie'.

### The unmarking of Quapaw phonology

▷ Class handout and notes on "the hierarchy of sound types as determined from a study of language death". Also includes phonemic inventories of the Dhegiha languages.

### Unpublicized areal features of the Southeast Musk conference paper

▷ Includes materials from two conference papers presented by Robert Rankin: "On the origin of the classificatory verbs in Muskogean" (1978) and "Some unpublicized areal features of the Southeast" (1978).

## Box 31

### "Further observations on Biloxi phonology and morphology"

▷ Paper entitled "Further observations on Biloxi phonology and morphology" presented on July 6, 1984. Includes a handwritten handout, notes about imperatives in Biloxi, and a handout for a talk (1982) entitiled "On the establishment of two series of stop consonants in Ofo, Biloxi and Tutelo: Philological evidence".

### Dhegiha variability paper Koontz and Rankin

▷ ***Part I***: A paper about Dhegiha variability on topics such as agent pronominals, plural marking, and male/female speech markers.

▷ ***Part II***: Notes on "Omaha Language Obsolescence" by John Koontz on December 2, 1985. A draft entitled "Dhegiha Siouan: Variation in dying languages".

### Pardo stuff

▷ A paper written by Karen M. Booker in April, 1987 entitled "The Languages of the Southeast".

## Box 32

### Comps I dictionary project

▷ A list of reconstructed forms exhibiting "funny R", a list of participants of the Comparative Siouan Workshop in 1984, correspondence sets of various obstruents, notes on abbreviations of languages, abbreviations for glosses, list of semantic categories used for the entries, conventions for reconstruction and editing existing reconstructions, plans for the coming year, comments about entries, and a note about external comparisons.

### CSD file

▷ Brief description of work remaining and plan for completion of the Comparative Siouan Dictionary project in August 1995. Notes on Crow and Hidatsa orthographies, and sound changes (with impressionistic counts of correspondence sets). A handout on "History of Algonquian Number Words" by Richard Rhodes presented on July 9, 1995, comments for Mississippi Valley Siouan terms for 'tobacco', and other miscellaneous comments. Also contains The Siouan Languages Archives which includes an (incompletely) annotated bibliography.

### CSD stuff

▷ Proposed sound changes in Crow and Hidatsa. Interim and final reports for the Comparative Siouan Dictionary project. Conventions for file slips (i.e. orthography, citing, etc.), notes on the forms (i.e. surface or underlying) and orthography used for each language in the project, and abbreviations for the glosses.

### NEH Siouan proposal

▷ Draft of the National Endowment for the Humanities grant proposal for the Comparative Siouan Dictionary.

# Box 33

## Comparative Siouan Dictionary slip files 1 of 4

▷ File slips with comparative Siouan from 'ache' to 'bird'.

## Comparative Siouan Dictionary slip files 2 of 4

▷ File slips with comparative Siouan from 'dog' to 'mother'.

## Comparative Siouan Dictionary slip files 3 of 4

▷ File slips with comparative Siouan from 'one' to 'sweat'.

## Comparative Siouan Dictionary slip files 4 of 4

▷ File slips with comparative Siouan from 'sweet' to 'you'. Also includes file slips from 'mound' to 'old'.

# Box 34

## "Robes of Splendor" paper

▷ Correspondence with Morris S. Arnold and an excerpt from Patricia Galloway's article with a different interpretation of the inscription on the Three Villages Robe.

## "Robes of Splendor" photos

▷ Correspondence with Marvin D. Jeter, and articles about the Three Villages Robe.

## Qupaw Robes of Splendor paper

▷ ***On Quapaw and Quapwa Language Origins and the Town Names on the Robe***: A draft of a paper and handout entitled "On Quapaw (and Quapaw Language) Origins and the Town Names on the Robe" by Robert Rankin to be presented on January 20, 1995.

▷ ***Selected correspondences***: Correspondences between Robert Rankin and Morris S. Arnold about the inscriptions found on the Three Villages Robe.

## Pacaha II paper

▷ Correspondences between Robert Rankin and archeologist James R. Atkinson, and Dale (R. Henning?). Also contains Rankin's paper and handout entitled "Pacaha and the Quapaws: More Evidence" presented on September 21, 1991.

## RLR and Peter Denny "Siouan languages of the Plains"

▷ Paper by Robert Rankin entitled "The Siouan Languages of the Plains"; this is perhaps an earlier version of the paper co-authored with Douglas Parks that appears in the Handbook of North American Indians, vol. 13: Plains, edited by Raymond J. DeMallie.

## RLR Oneata + Ling

▷ ***1997 Oneota Conference***: Schedule and announcements for the 1997 Oneota Conference.

▷ ***Oneota and linguistics***: A paper given by Robert Rankin entitled "Oneota and linguistics".

▷ ***Siouan chronology***: A paper by Robert Rankin that is similar to the one entitled "Oneota and linguistics" but with some differences – perhaps an earlier version.

## RLR publications and manuscripts

▷ ***Algonquian-Muskogean-Siouan Counting System Convergences***: Paper entitled "Algonquian-Muskogean-Siouan Counting System Convergences" given by Robert Rankin on February 23, 1979.

▷ ***Dhegia Siouan Algonkian and the languages of the Southeast***: Paper entitled "Dhegiha Siouan, Algonkian, and the languages of the Southeast: Some phonological convergences" given by Robert Rankin on July 25, 1975.

▷ ***Fricative Ablaut in Choctaw and Siouan***: Paper entitled "Fricative Ablaut in Choctaw and Siouan" given by Robert Rankin in 1987 at the Kentucky Foregin Languages Conference.

▷ ***Notes on the Kansa word list of Maximilian***: Paper entitled "Notes on the Kansa word list of Maximilian" by Robert Rankin (1994) published in the Kansas Working Papers in Linguistics.

▷ ***Oneota Historical Linguistics And The Ioway***: Draft of a paper entitled "Oneota, historical linguistics, and the Ioway, Oto-Missouria, and Winnebago peoples" - this is likely a version of the paper presented at the Oneota conference.

- ▷ ***Some Unexpected Instances of t? in Chiwere-Winnebago***: Paper entitled "Some unexpected instances of *t?* in Chiwere-Winnebago" presented by Robert Rankin in 1989.

### The Siouan Languages

- ▷ Paper entitled "The Siouan Languages" by Robert Rankin written on October 4, 1990; this is an earlier version of the paper co-authored with Douglas Parks that appears in the Handbook of North American Indians, vol. 13: Plains, edited by Raymond J. DeMallie.

### Comparative Siouan Dictionary slip files 1 of 4

### Comparative Siouan Dictionary slip files 2 of 4

### Comparative Siouan Dictionary slip files 3 of 4

### Comparative Siouan Dictionary slip files 4 of 4

- ▷ These undated file slips mostly contain cognates from the Ohio Valley Siouan languages and do not appear to be organized in any particular order. Comments are rather minimal compared with the other file slips.

## Box 35

### Tutelo classification

- ▷ Correspondences and draft of the co-authored paper "On the Sub-grouping of the Virginia Siouan languages" by Guilia Oliverio and Robert Rankin (2003) in the Festschrift in Memory of Frank Siebert, edited by David Costa and Blair Rudes.

### Tutelo aspiration

- ▷ A paper presented by Robert Rankin at the AAA Meeting on December 5, 1981 in LA. The paper was entitled "Tutelo phonology revisited: The Sapir transcriptions" where he shows that aspiration was phonemic across stops/affricate in Tutelo.

# Box 36

## "Notes Anthro 518 Prehis of Kansas to 1850-70

- ▷ ***Part I***: Class materials for "Prehistory of Kansa" for the fall semester of 1991. Includes the syllabus and handwritten lecture notes.
- ▷ ***Part II***: Class materials for "Prehistory of Kansa" for the fall semester of 1991. Includes contact information of archeologists potentially interested in Siouan historical linguistics and additional handwritten lecture notes.

## Courses handouts copy masters 1 or 2

- ▷ A Siouan language family tree. Notably, Mandan is placed as part of the so-called "Central" Siouan clade.

# Box 37

## 747

- ▷ An article entitled "Southeastern Languages" by Mary R. Haas (1979) in The Languages of Native America: Historical and Comparative Assessment, edited by Lyle Campbell and Marianne Mithun.

## 747 handouts

- ▷ A Siouan bibliography compilded by Pamela Munro, dated September 1988.

## Linguistics 447/747 materials

- ▷ Handouts (for a class? workshop?) with information about the Siouan phonemic inventories, fricative ablaut, Siouan word order typology, incorporation, active-stative alignment, introduction to Quapaw grammar, causative constructions in Siouan, instrumental prefixes, valency-changing operations, continuative auxiliaries, among others. Includes Kansa, Lakota, and Omaha texts.

## Linguistics course materials 3 of 4

- ▷ Class handouts with information about speech act types in Lakota, Biloxi, and Mandan.

# Box 38

## Peopling of the New World (course) 1 of 2

▷ Bibliography used for the anthropology class entitled "Peopling of the New World".

## SE seminar (dups and extras)

▷ Class handouts with information about positional/posture verbs in a handful of Siouan languages irregular infletional paradigms, and fricative ablaut.

## SE seminar 1 of 2

▷ Undated handout by James M. Crawford with proposed sound correspondences and cognate sets across Biloxi, Ofo, and Yuchi.

## SE seminar 2 of 2

▷ Class handout of the classification of the Siouan by C. F. Voeglin (1941) with comments.

## Siouan affix sets

▷ Class handouts with information about instrumental prefixes across the Siouan languages, pronominal and possessive prefixes, instrumental applicative constructions in Lakota, derivational and inflectional suffixes, Tutelo TAM markers.

# Box 39

## "In interview with Robert Rankin" Oral History project

▷ An interview with Robert Rankin by Jewel Willhite on March 30, 2006 in Lawrence, Kansas.

## Siouan (Kansas) handout

▷ Class handouts by Rankin with information about velar palatalization in Dakotan, Siouan ablaut, Dakotan phonemes, fricative ablaut, Quapaw phoneme inventory, phonological description of Kansa, and a typological description of morphology of the Dhegihan languages.

## Siouan language family handouts

▷ A handout for a ethnobotany lecture given on February 22, 2006 on "Cultivated plants in the Siouan language family: Implications for chronology and archaeology". Also contains maps with locations of American Indian tribal nations.

## Siouan languages handout

▷ A map with information about possible ancient Algonquian and Iroquoian influence, and some notes about cultigens, common persimmon, Texas persimmon, post oak, and baldcypress.

## Siouan reconstruction 107 lecture

▷ Undated class handouts on reconstruction as exemplified by the Siouan language family. Text is similar to that which occurs in his 2003 chapter on the comparative method in The Historical Linguistics Handbook edited by Brian Joseph and Richard Janda.

## Tutelo archeo

▷ Class handouts on conflict between linguists and archeologists regarding the classification of Tutelo as a Siouan or an Algonquian language.

## Comparative linguistics data sheets (Proto-glosses cognates) 1 of 7

▷ These series of file slips are from around July–August 1989 and contain cognates from across the Siouan-Catawban langauges. There are notes from the various editors, Richard Carter, Robert Rankin, and Wesley Jones, as well as John Koontz. In general, the file slips are organized alphabetically but some are out of order.

▷ ***Part I***: File slips with comparative Siouan from 'above, over, on top II' to 'back, returned'.

▷ ***Part II***: File slips with comparative Siouan from 'arrow, flint' to 'bison II, buffalo bull, reddish yellow buffalo'.

▷ ***Part III***: File slips with comparative Siouan from 'bite' to 'brave I, strong'.

## Comparative linguistics data sheets (Proto-glosses cognates) 2 of 7

▷ ***Part I***: File slips with comparative Siouan from 'to botch, fail miss' to 'consume, drink up'.

▷ ***Part II***: File slips with comparative Siouan from 'consume, drink up' to 'dog'.

▷ ***Part III***: File slips with comparative Siouan from 'dog' to 'dry I'.

### Comparative linguistics data sheets (Proto-glosses cognates) 3 of 7

▷ ***Part I***: File slips with comparative Siouan from 'dry, dried II' to 'fat, tallow'.

▷ ***Part II***: File slips with comparative Siouan from 'fat, stout' to 'four'.

▷ ***Part III***: File slips with comparative Siouan from 'four' to 'gourd II, rattle'.

### Comparative linguistics data sheets (Proto-glosses cognates) 4 of 7

▷ ***Part I***: File slips with comparative Siouan from 'gourd III' to 'heron, crane'.

▷ ***Part II***: File slips with comparative Siouan from 'heron, crane' to 'know, recognize'.

▷ ***Part III***: File slips with comparative Siouan from 'lace, lace up' to 'maple'.

### Comparative linguistics data sheets (Proto-glosses cognates) 5 of 7

▷ ***Part I***: File slips with comparative Siouan from 'point at' to 'nephew, sister's son I'.

▷ ***Part II***: File slips with comparative Siouan from 'neck II, side of neck?' to 'raccoon'.

▷ ***Part III***: File slips with comparative Siouan from 'raccoon' to 'round II'.

## Box 40

### Comparative linguistics data sheets (Proto-glosses cognates) 6 of 7

▷ ***Part I***: File slips with comparative Siouan from 'run I (of an animal)' to 'side'.

▷ ***Part II***: File slips with comparative Siouan from 'side' to 'south wind'.

▷ ***Part III***: File slips with comparative Siouan from 'speak, talk' to 'strawberry'.

▷ ***Part IV***: File slips with comparative Siouan from 'strawberry' to 'sun cf. moon'

### Comparative linguistics data sheets (Proto-glosses cognates) 7 of 7

▷ ***Part I***: File slips with comparative Siouan from 'sweet I' to 'turtle I'.

▷ ***Part II***: File slips with comparative Siouan from 'turtle I' to 'wind II'.

▷ ***Part III***: File slips with comparative Siouan from 'wind II' to '1st sg. disjunctive'.

# Appendix B

# Blair Rudes Papers (NAA.2009-16): A Finding Aid

## B.1 Background

This finding aid serves as a guide to the Siouan-Catawan materials in the Blair Rudes papers which are housed at the National Anthropological Archives (NAA); extensive provenance details about the Blair Rudes papers, scope and contents, and the official finding aid can be found by clicking this link. Funding for the archival research was generously provided by a National Science Foundation Doctoral Dissertation Improvement Grant under Grant No. BCS 2215488.

## B.2 Finding aid

## Box 1

### Correspondence - B

- ▷ Correspondence between Blair Rudes and Karen Booker on August 14, 2001 about the Booker, Hudson & Rankin (1992) paper entitled "Place name identification and multilingualism in the sixteenth-century Southeast".

### Correspondence - Catawba and Cofitachequi

- ▷ ***Part I***: Correspondences about Catawban archeology in regards to the chapter by Blair Rudes, Thomas Blumer, and Alan May entitled "Catawba and neighboring groups" from 2001 to 2002. Some correspondences in 2001 are about the Frank Siebert Festschrift.

- ***Part II***: Correspondences from 2001 about Catawban ancient history, Muskogean loans, and relationship between Catawba and Woccon. Included in these correspondences are drafts of Thomas Blumer's essays entitled "Diaspora" and "The Catawba Indian Nation", both about history of the Catawba people, and a Catawban bibliography.

## Correspondence - Catawba Class Refs

- Correspondence between Blair Rudes and Thomas Blumer on October 18, 1999 about Catawban references for Rudes's syllabus.

## Correspondence - Catawba Creation Myth

- Correspondence between Blair Rudes and Thomas Blumer on October 28, 1999 about Catawban creation stories.

## Correspondence - Hamp, Eric

- Correspondence between Blair Rudes and Eric Hamp on December 15, 1985 about Rudes's paper on the Siouan-Yuchi connection.

## Correspondence - Iroquoianists

- Responses from an anonymous reviewer and editor David Rood on July 2, 1987 to Blair Rudes's paper attempt to show distant genetic affiliation between Siouan, Catawban, and Yuchi; this paper had methodological issues and was never published. Also included are Blair Rudes's responses to Michael Foster on January 22, 1987 which include how Siouanists view proposed distant relationships (i.e. Catawban and Yuchi) and the Macro-Siouan homeland.

## Correspondence - K

- Correspondence between William Koon and William Sturtevant on December 13, 2004 about Blair Rudes's (2004) paper entitled "Place names of Cofitachequi".

## Correspondence - Koontz, John

- Correspondences between Blair Rudes and John Koontz between 1983 and 1986. Most correspondences involve comments by Koontz on Rudes's papers.

# Box 2

## Correspondence - Professional

▷ A correspondence between Blair Rudes and Allan (Taylor?) on March 10, 1993 about the loanword for 'swine' in Tuscarora possibly from Tutelo or Catawba.

## Correspondence - S

▷ Correspondence between Blair Rudes and Stephen on the etymology of *Woccon* and *Waccamaw*.

## Correspondence - Siebert, Frank

▷ Correspondence between Blair Rudes and Frank Siebert with regards to the passing of Red Thunder Cloud.

# Box 3

## Catawba - Catawba words listed as Muskhogean loan words

▷ Comparisons of words in Saraw, Cheraw, and possibly Catawba recorded by various linguists and ethnographers, with a brief note on a loanword from Creek.

## Catawba - Notes (1/2)

▷ Notes on Muskogean loans and a list of words in Island Carib.

## Catawba - The Bad Woman who stole a Boy and became a comet

▷ Stories from Speck's (1934) *Catawba texts* including:

- "The Bad Woman Who Stole a Boy and Became a Comet"
- "The eagle kidnapper, the pileated woodpecker. Úkni· the comet, and the sky rope"
- "The Eagle Kidnapper. Variant"
- "The Origin of the Red Winged Blackbird and Dove"
- "How Pileated Woodpecker Got his Red Crest and Robin his Red Breast"
- "How Yellow Hammer Got Her White Inner Wings"
- "How the Wolf was Frightened and Became Wild"

- "How Opossum Lost his Bushy Tail"
- "How Tree Frog Taught Toad to Cry"
- "How Chipmunk Got his Stripes"
- "Rabbit Steals the Fire from the Buzzards"
- "Rabbit Steals Fire from the Buzzards"
- "Rabbit Steal Water from the Snapping Turtle"

# Box 4

## Catawba - Notes (2/2)

▷ A list of words of some language with lookalikes in other languages; it is likely that the language is not Catawba since I am unable to locate the words in Shea's (1984) *Catawba Lexicon*.

## Catawba - Research Notes (Catawba) Vocabulary Phonetics Customs

▷ Notes from a visit to the American Philosophical Society on March 30, 2006 on Catawba vocabulary.

## Catawba - Texts

▷ ***Parts I–II***: Catawba and Esaw texts recorded from Sally Gordon by Raven McDavid edited and analyzed by Blair Rudes (2000). There are multiple versions and drafts of the following texts:

- "Why the Rivers Flow"
- "Comet"
- "Barred Owl"
- "Opossum Outwits the Deer and the Wolf"

▷ Also included are handouts entitled "Catawba Sentence Conjoining" and "Overview of Catawba [Saraw] Syntax" given at the Siouan Syntax Workshop in 2001.

# Box 5a

## Raven McDavid Catawba Notebook (II?)

▷ ***Parts I–II***: Although the folder is labelled as Catawba Notebook (II?), its contents are identical to Notebook I. Notebook II does not appear in Box 5a.

## Raven McDavid Catawba Notebook I

▷ ***Parts I–II***: This folder contains Catawba Notebook I which consists primarily of verbal and possessive paradigms.

## Raven McDavid Catawba Notebook III (1/2)

▷ This folder contains Catawba Notebook VIII which consists primarily of texts in Catawba.

## Raven McDavid Catawba Notebook III (2/2)

▷ ***Parts I–II***: Catawba Notebook III consists primarily of verbal paradigms, some involve transitive verbs.

▷ ***Parts III–IV***: Catawba Notebook IV consists primarily of verbal and possessive paradigms.

## Raven McDavid Catawba Notebook VI

▷ ***Parts I–III***: Catawba Notebook VI consists primarily of verbal paradigms with a brief list of words and genealogical information.

## Raven McDavid Catawba Notebook V

▷ ***Parts I–II***: Catawba Notebook V consists primarily of verbal paradigms, some involve transitive verbs.

# Box 7

## Catawba bibliography

▷ A bibliography of linguistic work on Catawba.

## Catawba I

▷ ***Parts I–II***: Drafts, reviewer comments, and correspondences regarding the chapter entitled "Catawba and Neighboring Groups" in the *Handbook of North American Indians, V. 12, Plateau* by Blair Rudes, Thomas Blumer, and Alan May.

## Catawba-English/English-Catawba Dictionary Draft

▷ An annotated draft of Blair Rudes's Catawba dictionary from April 13, 2003.

## Catawba-English/English-Catawba Dictionary Draft (1 of 2)

▷ ***Part I***: A draft of Blair Rudes's Catawba dictionary (Winter 2005–2006) from A to I̜.

▷ ***Part II***: A draft of Blair Rudes's Catawba dictionary (Winter 2005–2006) from I̜ to P.

## Catawba-English/English-Catawba Dictionary Draft (2 of 2)

▷ A draft of Blair Rudes's Catawba dictionary (Winter 2005–2006) from P to W.

▷ A draft of Blair Rudes's Catawba dictionary (Winter 2005–2006) from W to ʔ.

## Catawba Grammar and Texts Drafts (1 of 3)

▷ ***Part I***: An annotated draft of Chapter 1 (Introduction) and Chapter 2 (Philology, Phonetics, and Phonology) of *Catawba Grammar and Texts*. Also includes the table of contents.

▷ ***Part II***: An annotated draft of Chapter 3 (Morphology) of *Catawba Grammar and Texts*.

▷ ***Part III***: An annotated draft that includes the first five pages of Chapter 4 (Syntax, Discourse, and Pragmatics). Also includes reviewer comments.

## Catawba Grammar and Texts Drafts (2 of 3)

▷ ***Part I***: An annotated draft that includes pages 63–92 of Chapter 6 (Texts) of *Catawba Grammar and Texts*. Also includes the bibliography.

▷ ***Part I***: An annotated draft of the appendix entitled "Catawba Language Data from Red Thunder Cloud: [A]n Initial Assessment" of *Catawba Grammar and Texts*.

### Catawba Grammar and Texts Drafts (3 of 3)

- ***Part I***: An annotated draft that includes the remaining part of Chapter 4 (Syntax, Discourse, and Pragmatics) of *Catawba Grammar and Texts* beginning from page six.
- ***Part II***: An annotated draft of Chapter 5 (Broader Relations) of *Catawba Grammar and Texts*.
- ***Part III***: An annotated draft that includes pages 1–62 of Chapter 6 (Texts) of *Catawba Grammar and Texts*.

### Catawba Grammar Chapters 2, 3, 6 with edits

- ***Part I***: An annotated draft that includes pages 6–22 Chapter 2 (Philology, Phonetics, and Phonology) of *Catawba Grammar and Texts*.
- ***Part II***: An annotated draft of *Catawba Grammar and Texts* that includes the first five pages of Chapter 3 (Phonology) from a previous draft. Includes pages from Chapter 3 (Texts) of a subsequent version of the monograph.
- ***Part III***: An annotated draft of Chapter 6 (Syntax, Discourse, and Pragmatics) of *Catawba Grammar and Texts*.

### Catawba Grammar - Chapter III fragment

- An annotated draft that includes pages 32–39 Chapter 3 (Morphology) of *Catawba Grammar and Texts*.

## Box 8

### Catawba Grammar Chapter 7 Syntax

- An annotated draft that includes pages 1–26 Chapter 7 (Syntax) of *Catawba Grammar and Texts*.

### Catawba Grammar - with reviewer comments

- ***Parts I–III***: A draft of *Catawba Grammar and Texts* with comments from an anonymous reviewer. It is likely that only pages with reviewer comments were included in the folder.

### Catawba Grammar and Texts Reviewer reports

▷ Blair Rudes's responses to reviewer reports for *Catawba Grammar and Texts*. Also includes reports from two reviewers – both reviewers are generally positive about the book but note some revisions are needed before publication.

### A Comparison of the Catawban, Siouan, and Yuchi Languages

▷ ***Parts I–III***: This paper attempts to provide further support for the genetic affiliation of the Catawban, Siouan, and Yuchi Languages by proposing cognate sets and recurrent sound correspondences.

## Box 9

### Morphosyntax of Proto-Macro Siouan

▷ A draft of a paper entitled "Morphosyntactic Evidence for the Relationship of Yuchi to the Catawban and Siouan Languages".

### The Historical Significance of John Buck's "Tutelo" Vocabulary

▷ A handout for a talk entitled "The Historical Significance of John Buck's 'Tutelo' Vocabulary" presented by Blair Rudes in June 2001. Includes possible contact effects between Tutelo and Catawba.

### The Number Vocabulary of Proto-Macro Siouan

▷ A paper for a talk entitled "The Number Vocabulary of Proto-Macro-Siouan" presented by Blair Rudes in 1982.

## Box 13

### Carpenter - Red Thunder Cloud

▷ A short bibliography of Red Thunder Cloud written by Edmund Carpenter.

## Box 14

### Koontz - Proto-Siouan Pronouns

▷ A 119-page paper entitled "The Proto-Siouan and Siouan Personal Pronouns" by John Koontz for a seminar in the *Diachronic Linguistics of the Siouan Languages* taught

by David Rood. The paper attempts to trace the development of personal pronouns across Siouan and Catawban languages and subgroups.

## Koontz - Remarks on "Sound Changes Separating Siouan-Yuchi from Iroquois-Caddoan"

▷ A brief paper with corrections on the Siouan data in Blair Rudes's paper "Sound changes separating Siouan-Yuchi from Iroquois-Caddoan" that is published in *International Journal of American Linguistics*.

# Appendix C

# Siouan-Catawban Language Materials at the American Philosophical Society: A Finding Aid

## C.1 Background

This finding aid serves as a guide to most of the Siouan-Catawban materials housed at the American Philosophical Society (APS). Funding for the archival research was generously provided by the APS Daythal L. Kendall Fellowship in Native American Studies and a National Science Foundation Doctoral Dissertation Improvement Grant under Grant No. BCS 2215488.

## C.2 Finding aid

### American Council of Learned Societies (ACLS) Collection

#### 497.2 B24

▷ **Barker, Anna E.: Around 500 words in the Mountain Stoney dialect...:** Approximately 500 words in the Mountain Stoney (Morley) dialect.

#### 497.3 AM4

▷ **#116:** A formal report provided by Allen Taylor on his field work at the Stoney Reserve at Morley, Alberta. Includes handwritten transcriptions of tape-recorded texts by Majorie Two Young Men.

## 497.3 B63c

- ▷ **2 Various authors - Abstracts of Cree tales:** Bibliography of (Plains) Cree oral traditions.
- ▷ **71 Ahenakew Edward - The creation of a new tribe:** A creation story supposedly of the "Assiniboine (Stoney)" people told to Edward Ahenakew's former mission superintendent Rev. John Hines who may not have been of Stoney descent. The story may have been told in Cree to Rev. John Hines. The letter is postmarked May 21, 1949.
- ▷ **X 1.23 Swadesh Morris - Catawba Field Notes 1937 (Part I–II):** The field notebook has two pages of "Alaskan Eskimo" followed by a word list of Catawba. The last page contains some minimal pairs of Catawba.
- ▷ **X3b.1 Lowie Robert Crow affixes:** File slips of affixes in Crow.
- ▷ **X6.1 Kennard, Edward:** Selected unpublished(?) Mandan oral traditions collected by Edward Kennard during the summers of 1933 and 1934: "The Origin" (told by Edna Face) and "Mandan Woman and Hidatsa Boy". The original field notebooks are currently (October 26, 2022) at the University of Colorado, Boulder.
- ▷ **X81.17 Deloria, Ella:** Dakota migration story from the Minnesota manuscripts.

## 497.5 K15

- ▷ From the APS finding aid: "This item is Dorothea V. Kaschube's typescript manuscript published in 1978 by the University of Chicago Press based on Crow texts elicited in 1953-1954 from Henrietta Pretty On Top, a native Crow speaker from Lodgegrass, Montana, "who at that time was a young woman, a mother, in her early twenties." Kaschube was a graduate assistant for a Field Methods and Techniques course conducted by Carl F. Voegelin and Henry Lee Smith in Bloomington, Indiana. She spent considerable time with Pretty On Top, one of the language consultants for the course, and includes both linguistic materials and ethnographic observations in this manuscript. The audio tapes of the texts are deposited in the Language Archives of the World at Indiana University."

## X8d.1

- ▷ From the APS finding aid: "Deloria's "Notes on the Assiniboine (Belknap or Watopahnatu dialect)" (item X8d.1) contains a sketch of Assiniboine grammar, compared with that of Dakota, and includes an Assiniboine text, with literal and free translation and notes, and a letter from author to Franz Boas, Jan. 6, 1936, covering the document."

### X4a.2

▷ Iowa language materials. Includes grammatical notes, vocabulary, and texts. Also contains grammatical notes on Winnebago. These materials have been digitized by the APS and can also be viewed online. For more information about the materials, click here.

## C. F. Voegelin Papers

### Hidatsa

▷ Research notes on Robinett's (1955) three articles on Hidatsa published in *IJAL*.

### McDavid, Raven I., Jr. - October 29, 1976

▷ Correspondences with Raven McDavid about fieldwork on Catawba, geneology, and among others.

### Wolff, Hans - 1949

▷ Correspondences with Hans Wolff about his IJAL publications on Proto-Siouan, and other random discussions.

## Frank Siebert Papers

### Box 2

▷ **Correspondence – Crawford, James #1:** Correspondences between James Crawford and Frank Siebert about a forthcoming volume, remote relationships, fieldwork on Yuchi, and among others.

▷ **Correspondence – Crawford, James #2:** Correspondences between James Crawford and Frank Siebert about Einaudi's grammar, Allan Taylor, Red Thunder Cloud, and among others.

### Box 3

▷ **Correspondence – Haas, Mary (Parts I–IV):** Correspondences between Mary Haas and Frank Siebert about Algonquian, tone/pitch accent, Catawba, Biloxi, phonetics, Penobscot, Proto-Siouan, and among others.

## Box 4

- ▷ **Correspondence – Koontz, John:** Correspondences between John Koontz and Frank Siebert about Siouan-Algonquian loanwords, vowel length, Chomsky, Proto-Siouan reconstructions, and among others.
- ▷ **Correspondence – Michelson, Truman:** Correspondences between Truman Michelson and Frank Siebert about changes in Algonquian.

## Box 5

- ▷ **Correspondence – Rankin, Robert:** Correspondences between Robert Rankin and Frank Siebert about Quapaw, Kathy Shea's *A Catawba Lexicon*, Catawba /š/ and vowels, Siouan-Catawba relationship, vowel length, and among others.

## Box 6

- ▷ **Correspondence – Sturtevant, William:** Correspondence between A.L. Pickens and William Sturtevant with transcriptions of Catawba. Also includes correspondence between William Sturtevant and Frank Siebert about Sibert's grant/fellowship application to access Catawba materials.

## Box 8

- ▷ **Catawba Language – Frederick A. Porcher Family Papers:** Copies of undated notes on the Catawba language by Frederick A. Porcher produced around the mid-19th century.
- ▷ **Catawba Language – Oscar Montgomery Lieber Papers:** Copies of Oscar Montgomery Lieber's notes on Catawba in 1856.
- ▷ **Miscellaneous Notes and Maps:** Notes on phonetics and phonology of Catawba, and maps with locations of the Catawba people in the mid-18th century.

## Box 9

- ▷ **Catawba Field Notes #2–9:** verb paradigms, grammatical markers (especially TAM), lexicon, possessive paradigm, and notes on Gatschet and Lieber, affiliation with other languages, and ethnohistory.
- ▷ **Shea – A Catawba Lexicon:** An annotated version of Kathy Shea's *A Catawba Lexicon*.

## Box 10

- ▷ **Letter to William Sturtevant and Linguistic Notes:** Correspondence between Frank Siebert and William Sturtevant with notes about Catawba phonemes, ethnohistory, and among others.
- ▷ **Research Notes:** Ethnohistorical notes.
- ▷ **Research Notes #1:** Notes on ethnohistory, flora and fauna, and grammar.
- ▷ **Research Notes: Vocabulary, Phonetics, Customs #1–2:** Notes about vocabulary, linguistics, flora, verb paradigms, birds, and Catawba grammar.
- ▷ **Speck – The Catawba Nation and its Neighbor:** A published paper entitled "The Catawba Nation and its Neighbor" (1939) written by Frank Speck in *The North Carolina Historical Review*.
- ▷ **Sturtevant – Notes on the History and Bibliography of Catawba Linguistic Studies:** Bibliography of Catawba linguistics and history of Catawba fieldwork by individual scholars, including John R. Swanton, Frank Speck, Frank Siebert, and among others.

## Box 30

- ▷ **File cards, research notes:** Various notes about linguistics, Catawba grammar, and among others.

## Box 33

- ▷ **Quapaw and Cherokee Linguistic Notes:** Quapaw and Cherokee vocabulary items pertaining to flora, fauna, and kinship.

## Box 34

- ▷ **Voegelin, Siouan Notes [Hidatsa Vocabulary]:** Hidatsa vocabulary assembled by C.F. Voegelin.

## Box 49

- ▷ **Brown, Cecil – Spanish Loanwords:** A 1994 draft version of a paper entitled "Spanish loanwords in languages of the U.S. Southeast" by Cecil Brown.

### Box 51

▷ **Preliminary Notes on the Frank Siebert Collection:**: A preliminary report of the Frank Siebert collection by Ives Goddard.

### Box 58

▷ **Swanton, John – A New Siouan Dialect:** A published paper entitled "A New Siouan Dialect" (1909) by John R. Swanton.

### Box 59

▷ **Voorhis, Paul – Analysis of Prephonemic Texts: The Case of Frank Speck:** A paper presentation and handout by Paul Voorhis entitled "Analysis of Prephonemic Texts: The Case of Frank Speck" across a variety of languages including Catawba.

### Box 60

▷ **Weer, Paul – Preliminary Notes on the Siouan Family:** A published paper entitled "Preliminary Notes on the Siouan Family" (1937) by Paul Weer.

### Box 63

▷ **Siouan Languages Conference:** A published paper entitled "Root-final consonant clusters in Mandan" (1982) by Richard Carter.

## Frank Speck Papers

### Box 12

▷ **Catawba bibliography:** A brief Catawba bibliography.

▷ **Catawba field notebook: vocabulary, texts, and songs (Parts I–II):** Notebooks containing vocabulary, texts, and songs.

▷ **Catawba field notebooks: miscellaneous (Parts I–VII):** Notebooks containing texts, verb paradigms, grammatical items, vocabulary, and other notes.

▷ **Catawba tribal history:** A historic sketch on the Catawba.

▷ **Correspondence with other informants:** Correspondences with consultants.

- ▷ **Language and texts (Parts I–III):** Notes containing information about grammatical aspects of Catawba, letter correspondence between Frank Speck and Swadesh Morris, comparison of cognates across Biloxi, Ofo, Tutelo, Dakota, Mandan, Hidatsa, Winnebago, Quapaw, Catawba, and Woccon. Also includes other letter correspondences.

- ▷ **Miscellaneous Notes:** Correspondences between Frank Siebert and (a) John R. Swanton (cultural features in the Gulf region, origins), (b) Joffre Coe (Siouan archaeological sites), and (c) Mary Haas (Muskogeaon loanwords in Catawba).

- ▷ **Red Thunder Cloud, Correspondence with:** Letter correspondences with Red Thunder Cloud.

- ▷ **Travel and Expedition:** Information about Catawba travel and expedition with information from oral traditions about contact with other groups.

### Box 14

- ▷ **Kaw (Kansa) Miscellaneous notes:** Kaw and Choctaw vocabulary and brief ethnographic notes. The note on the folder provided by Robert Rankin reads, "Note: The list containing various pronoun paradigms [...] is Choctaw, not Kansa. The word list + letter dated June 1904 with 'Kansa?' at the top is, in fuck [sic], Kansa."

- ▷ **Omaha Miscellaneous notes:** Santee Dakota and Omaha notes. The note on the folder provided by John Koontz reads, "Evidently fieldnotes. Envelope 'Sioux or Omaha' is Santee Dakota (Sioux) + [wičhašta] for 'man'."

## James Crawford Papers

### Box 2

- ▷ **Catawba-English:** File slips referring to the vocabulary and verbal paradigms found in the Raven McDavid notebooks in Series IV-D.

### Series I

- ▷ **McDavid, Raven:** Correspondence between Raven McDavid and James Crawford about transferring the notebooks from Mary Haas to James Crawford.

### Series IV-D

- ▷ **Catawba:** Research notes on Catawba and some brief notes on Yuchi.

▷ **McDavid, Raven Ioor. Catawba – Notebooks #1–8:** Eight notebooks with information about vocabulary items, verb paradigms, and genealogy.

# Lewis and Clark Journals

## Mss.917.3.L58

▷ **Parts I–II:** William Clark's writing in 1805 about the country and rivers in advance or above the Mandans that appears in *Lewis and Clark Journals: Volume VIII*.

# Mary Haas Papers

## Box 4

▷ **Robert Rankin:** Correspondences between Robert Rankin and Mary Haas mostly about the Muskogean language family.

## Box 8

▷ **Pickens Notes Ethnozoology:** Notes containing various terms for fauna in Catawba provided by Chief Sam Blue.

## Box 23

▷ **Proto Southeastern Siouan Notes:** Notes on Biloxi, Ofo, and other comparative notes about Ohio Valley (or Southeastern) Siouan, such as sound correspondences.

▷ **Proto-Siouan Tree and Vowel Correspondence Chart:** Handouts containing a Siouan language family tree and vowel correspondences across select languages.

## Box 24

▷ **Field Notebook: Kosati, Alabama, Biloxi:** A notebook containing vocabulary items from Kosati, Alabama, and Biloxi. Only pages containing Biloxi vocabulary were copied.

## Box 25

▷ **Field Notebook: Various Languages (Parts I–III):** Word lists of Dakotan dialects, Crow, Comanche, Shoshone, Mono, Miwok, and Kuna (Cuna).

▷ **Ofo and Tutelo NAA Notes:** Research notes of Ofo and Tutelo materials archived at the National Anthropological Archives.

### Box 42

▷ **Spanish Loans in Tunica, Biloxi, and Ofo:** A list of possible Spanish loans in Tunica, Biloxi, and Ofo.

### Box 43

▷ **Tutelo:** A xeroxed copy of Tutelo vocabulary sent to James Owen Dorsey from John Napoleon Brinton.

### Box 100

▷ **Biloxi Lexicon #1–2:** File slips of Biloxi vocabulary.

▷ **Biloxi Ofo Comparisons:** File slips of Biloxi and Ofo cognates.

### Box 155

▷ **Semantic comparisons – Swadesh lists (Parts I–VI):** File slips of Biloxi, Ofo and Tutelo cognates with reconstructed forms.

## Native American Misc Newspapers

▷ **Parts I–IV:** Dakota language newspapers *Iapi Oye* published by the Dakota Mission. For more information about the newspapers, click here.

## Paul Radin Papers

▷ **Winnebago History:** Historical notes on Winnebago from the Wisconsin Historical Collections.

## Philips Native American Grants

▷ **Good Tracks, Jimm Report on Iowa/Otoe Indian Language Dictionary:** A report provided by Jimm Good Tracks regarding his APS grant for compiling a dictionary of Iowa/Otoe language. Includes copies of some dictionary entires on file slips.

▷ **Harbeck, Warren A. – A study in mutual intelligibility and linguistic separation among five Siouan languages:** A manuscript entitled "A study in mutual intelligibility and linguistic separation among five Siouan languages." Includes a 100 word Swadesh list for Lakota, N. Dakota, Manitoba, Assiniboine, and Stoney.