

# Topic and focus in Mandan<sup>\*</sup>

Ryan M. Kasak

*University of Oklahoma*

**Abstract:** This paper investigates how topics and focus is marked in Mandan, specifically the interface between morphology, syntax, and prosody. Mandan has an enclitic =*na* that has variously been described as a topic marker, a topicalization marker, and a focus marker, and this paper demonstrates that this marker is used by speakers to shift the listener's attention to a new topic or an already established topic, most often a grammatical subject. Topicalization also occurs without =*na* with particular intonation, indicating that there are multiple strategies for marking topics in the discourse structure of Mandan.

**Keywords:** Mandan, topicalization, focus, prosody, information structure

## 1. Introduction

The bulk of Siouanist linguistics over the past century has focused on the morphological and syntactic properties of Siouan languages. The earliest attempts at looking at the grammar of Siouan languages were often done through the lens of how segments, formatives, and words interacted with each other, while ignoring matters of the suprasegmental: i.e., phrasal pitch accent, intonation patterns, and sometimes even ignoring stress itself. Early works that delve into aspects of the grammars of Siouan languages are geared towards enabling readers to parse through a collection of transcribed narratives, such as Boas & Deloria's (1941) *Dakota Grammar*, or to add context to why certain lexemes appear in a dictionary, such as in Dorsey & Swanton's (1912) *Dictionary of the Biloxi and Ofo Languages*. Whether intentionally or unintentionally, these grammars and grammars like them are designed to accommodate the understanding of their languages through a writing-centric point of view. This approach has not paid attention to suprasegmental phenomena, which is regrettable, as these languages all have traditionally placed great emphasis on the oral transmission of culture and writing has only been introduced in recent generations. There is rarely any discussion on the topic of prosody, and that lack of discussion causes a deficit in our understanding of the information structure of the language uttered by L1 speakers.

Hirst & Di Cristo (1998:1) remark that intonation systems are "one of the most language specific features of human language." This claim is supported by psycholinguistic studies conducted on neonates, who demonstrate sensitivities to the prosody of their parents' language(s) that are likely due to passive exposure *in utero* (Ramus 2002, May et al. 2011, *inter alios*). One phenomenon that is often associated with intonation systems is that of topic-marking and focus-marking. Mandan possesses an enclitic =*na* that has been variously described as a topic marker, topicalizing marker, or a focus marker in existing descriptions of the language. Previous attempts

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to categorize the function of this enclitic have relied on textual corpora, rather than audio data that might help disambiguate what the distribution of =*na* is when factoring in the contextual prosody of utterances where it appears. As such, there is a need to identify and understand what the role of =*na* is and what kinds of intonational cues might coincide with its appearance on a constituent. With =*na* being a marker of information structure and with topic and focus often being associated with particular intonational tunes, this element is a prime entryway into the overall topic of how prosodic elements in Mandan interact with how information is packaged in an utterance.

This paper serves as a preliminary investigation into the interface between information structure and prosody in Mandan. The research herein has the following three goals:

- (1) Goals dealing with the information structure–prosody interface in Mandan
  - a. To examine previous literature on topic- and focus-marking in Mandan;
  - b. To compare and contrast previous literature with audio recordings and their transcriptions;
  - c. To provide insight into a subject that can potentially be of use towards Mandan language instruction.

To these ends, I investigated, transcribed, and labeled the first five-minutes of a recording of Mr. Edwin Benson (1931–2016) recounting the narrative “Blackwolf,” also called “The Gambler,” plus excerpts from Mrs. Mattie Grinnell (1867–1975) recounting the traditional narrative “No Tongue.”<sup>1</sup> Utterances were tokenized and labeled in Praat, Version 6.1.27 (Boersma & Weenink 2020). Praat pictures to display the pitch (F0) track of each utterance were created using a Praat script by Elvira-García (2017) that I slightly modified.

The work herein initially explores what is meant by “topic” and “focus” in §2, as both these terms occur frequently in grammars of Siouan languages—and of other language families as well—without explicitly stating the role of the constituent designated as such. In §3, I explore the structural manifestations of topic and focus, namely the role that a constituent bearing the enclitic =*na* plays within the utterance. Prosodic manifestations of topic and focus are discussed in §4, wherein we can observe the behavior of pitch on topicalized and focused element. I discuss the morpho-syntactic and prosodic manifestations of topic and focus in Mandan and how they interact in §5, and then conclude with some generalizations about topic marking and focus in Mandan, along with some avenues for future research in §6.

## 2. Topic and focus

Various terms relating to some kind of prominence within the information structure of an utterance are used in many Siouan languages, typically without any explanation by the describer for employing one term over another. In §2.1, I address some of the formatives and terms employed in other Siouan languages relating to this prominence in the information structure that is morphologically marked, and I then provide theoretical context behind terms like topic and focus in

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<sup>1</sup>The recording of “Blackwolf” was done by Dr. Sarah Trechter along with Mr. Corey Spotted Bear between 2007 and 2010 in Twin Buttes, North Dakota. The recording of “No Tongue” was conducted by the late Dr. Robert Hollow in Twin Buttes, North Dakota, sometime during his doctoral fieldwork between 1966 and 1968.

§2.2. With these delineations between what is a topic versus what is a focused element, I examine whether either of these pragmatic notions have a specific morphological manifestation, or if syntactic structures and/or prosody play a major role in indicating these emphasized elements in the information structure in §2.3.

## 2.1. Information structure marking in Siouan

In other Siouan languages, there are morphological elements that mark emphasis, focus, topic, or topicalization. Rankin et al. (2015) posit several reconstructions for elements that are associated with topics or focus in Proto-Siouan: e.g., \*-ya ‘emphatic topic,’ \*-ri ‘focus,’ and \*-šV ‘emphatic, contrastive.’ We can see reflexes of these elements in the data below in bold.

### (2) Examples of topic, focus, and emphasis marking in Siouan languages

#### a. Nakoda<sup>2</sup>

*zítkána žé nína jústina-**h̄tiya***  
bird DEM very small-INT

‘this bird is the smallest’ (Collette 2019:81)

#### b. Lakota

*Missionta mníŋ kteló. Níš?*  
Mission-ta w-yA ktA-lo ni-š  
Mission-LOC 1A-go POT-IND.M 2S-**EMPH**

‘I am going to Mission. What about you?’ (Ingham 2003:51)

#### c. Tutelo

*hąksí-k-ya wí-ki:tó*  
stick-DEF-**EMPH** 1SG.DAT-belong

‘my stick’ [lit. ‘the stick belongs to me’] (Oliverio 1996:130)

#### d. Hidatsa<sup>3</sup>

*nuxbáaga iháhdaari wiiguxdáabag*  
ruxbaaga ihaa-hdaa-ri wii-guxdi-aaba-g  
people different-GOAL-**TOP** 1s-help-PL.COLL-SS

‘the people from the other clans helped all of us’ (Boyle 2007:70)

#### e. Biloxi

*qtatka-ya khu-ni ɔni e-tu xa*  
child-**TOP** give-NEG PST say-PL HAB

‘she did not give him the child, they say’ (Kaufman 2008:155)

<sup>2</sup>The so-called intensive marker in Nakoda (a.k.a. Assiniboine) appears to be a combination of the pan-Siouan augmentative marker \*xTE and the emphatic topic \*ya. Nasalization of the topic element looks to be progressive nasal harmony stemming from the preceding syllable. This is an expected process in Lakota, as mentioned in Kasak & Lundquist (2019:103ff). If the nasality on the second syllable of the intensifier here is allophonic rather than phonemic, then it is possible that progressive nasal harmony is a feature in Nakoda as well.

<sup>3</sup>This datum comes from Boyle’s (2007) dissertation, but the orthographic representation here has been altered to reflect my personal interpretation of the phonological representation of these words.

f. Hoocak<sup>4</sup>

*Náqni,*      *njži*      *tojkewehige*      *waa'ų*      *hakiriną*  
*naąni*      *nji-ži*      *too-hj-kewehi-ge*      *wa-ha-'ų*      *ha-kiri-na*  
 mother.VOC 1SG.PRO-FOC PV-1S-hungry-CAUS UNSP-1A-be 1A-return-DECL

‘Mother, it is I, returning, extremely hungry’ (Helmbrecht & Lehmann 2006:74)

The data above all display some reflex of the aforementioned Proto-Siouan formatives that have some connection to topic, focus, and emphasis. We likewise see an overlap between how these different elements are treated by scholars. For example, the suffix *-ya* in Tutelo is considered to be an emphasis marker in (2c), but it is cognate with the topic marker in Biloxi in (2e). There are additional instances of semantic differences, the emphasis marker *-š* in Lakota that we see in (2b) has a cognate in Hoocak *-ži* that is typically referred to as a focus marker in (2f).

The goal of the present work is not to uncover the topic- or focus-marking elements in Proto-Siouan, but to investigate the synchronic systems for doing so in one Siouan language: Mandan. Mandan possesses one formative that is referred to throughout Kasak (2019) as a topic marker, the enclitic *=na* (underlyingly */=ra/*). We can see examples of this element in the data below.

(3) Examples of *=na* marking in Mandan

a. *máahsi*      *máakahe ráteena*      *káherekto'sh,*  
*waąh#si*      *waąkahe r'-at=s=ee=ra*      *ka'#hrE=kt=o'sh*  
 arrow#feather these 2POSS-father=DEF=DEM.DIST=TOP possess#CAUS=POT=IND.M  
*ínuma'ktaa*  
*i-ruwą'k=taa*  
 PV.DIR-man=LOC

‘these feathers, your father gave them away, to the men’ (Hollow 1973a:226)

b. *ínuupshashkana*      *húpe*      *ké'ka'rak*      *kú'kerek*  
*i-ruųp-sha-shka=ra*      *hųp=E*      *ke'#ka'=ak*      *kų'=krE=ak*  
 PV.ORD-two-COLL-INTS.COLL=TOP shoe=SV keep#have=DS give=3PL=DS

‘both of them kept shoes for him’ (Hollow 1973b:109)

c. *óo*      *úųpana nurúsanaahini*      *nuhúuro'sh*  
*oo*      *ųpa=ra*      *ru-ru-sraąh=rj*      *ru-huu=o'sh*  
 DEM.MID elk=TOP 1A.PL-INS.HAND-leave.behind=SS 1A.PL-come.here=IND.M

‘we left an elk here and came’ (Hollow 1973a:180)

We can see *=na* on nominal elements in (3) above, though not all of them are necessarily the first constituent within their respective utterances. Not appearing first suggests that there may not be a syntactically privileged position for elements bearing topic marking in Mandan: i.e., topics with *=na* are not inherently the leftmost element within the domain of a clause. Therefore, I argue that elements bearing *=na* represent morphological manifestations of information structure that are not inherently conveyed by their presence in a particular position within the syntax. That

<sup>4</sup>My thanks to Sarah Lundquist for helping me find and analyze this Hoocak datum.

is to say, the =*na* is not obligatory for any particular element, as we see =*na* on both subjects, like in (3a) and (3b), as well as direct objects, like in (3c). The distribution of =*na* will be discussed in greater detail in §3.

## 2.2. Theoretical notions of topic and focus

The morphological elements discussed above in §2.1 are used by authors to indicate that there is some kind of prominence placed upon the words to which said elements adjoin. To consider which, if any, of the terms invoked above apply to Mandan =*na*, we should establish a baseline for evaluation. To this end, we must define what is meant by terms like “topic” or “focus” so that we do not perpetuate the use of *ad hoc* labels for this formative in Mandan. Adherence to some theoretical notion of what constitutes a topic, a focused element, or a topicalized element is important not only to the greater typology of how these elements manifest in human language, but it has a practical value to revitalization efforts.

### 2.2.1. Topic

A topic is sometimes referred to as a “theme” in discourse analysis, and it stands in opposition to what is being said about the topic, also called the “rheme” (Baker & Ellice 2011:151). Topics are some central piece of information within a selected stretch of discourse, meaning there may be topics that are clause-level topics or discourse-level topics. In (4) below, I have provided paraphrased translation of Mrs. Annie Eagle talking to Dr. Robert Hollow in Mandan about her garden. The topic at the discourse level below is “the garden” (Hollow 1973b:55f). The rheme is, ergo, what follows the theme throughout the rest of the discourse below.

- (4) I want to tell you about **the garden** I have. When it is spring, I am not able to do it every spring, but I always manage to have myself a garden. Now, this summer, there was no one to plow it for me, though barely a month now, the one that just past, they did plow out there for me.

For those authors who argue for a systematic correlation between discourse roles and formal properties of topics, topics occupy a specific position within an utterance. Rizzi (1997, 2001) proposes that topics are uniquely positioned in the left periphery of a clause. In Frascarelli & Hinterhölzl (2007) and Frascarelli (2007, 2012), the authors connect the formal properties of topics to differing types of information conveyed by said topic. We can break these topics down into three types of topics. An aboutness-shift topic references Reinhart’s (1981) notion of *aboutness*, where the topic is newly introduced, reintroduced, or something to which the theme of an utterance is changed. Contrastive topics mark some alternative entity in the discourse that is not the focus and serves as a counterpoint to other topics. A familiar topic is one that conveys some given information within the context of the discourse that has already been established or is a resumption of background information.

We can see in the example situation below where three different topics can be present at once in the underlined portion.

- (5) This is the situation: I asked two of my professors, my Phonology professor and my Syntax professor, to spread the word about a Linguistics Club meeting this Friday afternoon to the

students in both of my classes. My Phonology professor told everyone about it at the top of the class, but the meeting, my Syntax professor TO OUR CLASS did not bring up at all.

This hypothetical speaker is a student who is talking about requesting that their two professors mention an upcoming Linguistics Club meeting that week. The student then relates how the Phonology professor followed through with that promise to let the students in that class know about the meeting, while the Syntax professor did not, much to the frustration of the student narrator. In the underlined portion, we see an aboutness-change topic in bold (**the meeting**), as the speaker is reintroducing what the utterance is about. This aboutness-change topic also happens to be the direct object of this proposition. In italics, we see the subject of the proposition as a contrast topic (*my Syntax professor*), indicating that the speaker is juxtaposing this topic with a counterpoint: the Phonology professor. The familiar topic is displayed in small caps (TO OUR CLASS), which marks the indirect object as background information that was mentioned earlier in the text. The underlined element is certainly not the default configuration for an English sentence and may initially seem to be quite arcane, but it is an acceptable one when delivered with the appropriate intonation and when given sufficient narrative context leading up to this series of topics presented sequentially.

### 2.2.2. Topicalization

Another related term that is discussed in Siouanist literature related to the markers found in (2) and (3) is topicalization. Ross (1967, 1986) introduces the term topicalization to refer to a constituent that has moved to the left periphery of a clause. This constituent is then coindexed with an empty category left behind within the clause. Topicalized elements below are shown in bold.

- (6) Example of topicalization with empty categories

**Mushrooms**, I love        on pizza, but **anchovies**, I hate       .

Much of the discussion of topicalization in linguistic literature assumes an analysis that is consistent with the systemic correlation between discourse roles and formal properties of topics as outlined in §2.2.1 above. The primary assumption in much of the literature is that topicalization is a process whereby a topic is moved to the left periphery of an utterance.

Far less attention has been paid to matters of the right periphery. Growing research in recent years suggests a certain degree of overlap between the functions of topicalization and right dislocation (Beeching & Detges 2014; Fant, Bartning & Österberg 2021). However, pragmatic differences are purported to exist. Beeching & Detges (2014:11) suggest a functional asymmetry between the left periphery and right periphery of a clause. The left periphery is strongly associated with serving as a landing spot for the grammaticalization of phenomena related to information structure or arguments structure. This periphery tends towards expressing subjectivity in the sense of Lyons (1982:102), where the speaker is expressing their own attitudes and beliefs. The right periphery, by contrast, is associated with modal or polarity phenomena. This periphery tends towards expressing intersubjectivity as defined by Traugott & Dasher (2002:11): the speaker's attention to the needs and self-image of the addressee.

For the purposes of the present work, we can assume an intersection between the notion topic as laid out in the systematic correlative sense in §2.2.1 and the movement of some topic to

the left periphery as topicalization. Furthermore, phenomena involving the right periphery will also be lumped under the term topicalization for the time being in order to investigate what kind of overlap might exist between the classical notion of topicalization and elements that have been right dislocated.

### 2.2.3. Focus

The notions of topic and focus in Siouanist literature can sometimes not seem to be very distinct ones. An element that is described as a topic marker by one scholar is described as a focus marker by another. It is not uncommon for there to be little to no explanation about why a scholar has elected to use one description of a morphological marker over another, and there has been virtually no discussion about any prosody associated with these formatives. Topics and topicalization have been addressed in §2.2.1 and §2.2.2, respectively, but this subsection addresses what is meant by focus within the confines of this paper.

Lee (2015:1) questions what is meant by focus by presenting the reader with a brief dialog, repeated below:

(7) Example of focus in English

- a. *What does John drink?*
- b. *John drinks beer.*

A question is posed in (7a), and an answer is provided in (7b). We can decompose (7b) further by noting that *John drinks* is now old information, given the fact that this information is simply repackaged from the original question. The new information, *beer*, is the true answer to the question. Within the information structure of this exchange, there is an informative part (*beer*) that acts as the focus, and there is an accompanying prosodic prominence to this element. Focus in this sense indicates a discourse function where a constituent informational item is emphasized (Ladd 1984, 2008; Xu, Xu & Sun 2005, *inter alios*).

There are multiple competing notions throughout the literature regarding the nature of focus, but for the purposes of this paper, I adhere to notion of focus as described above: i.e., there is a prosodic realization of emphasis that is grounded in the pragmatics or discourse structure. Xu, Xu & Sun (2005:81) remark that the consensus on focus is largely that it is expressed through variations in the fundamental frequency ( $F_0$ ), though amplitude and duration can also play a role in focus marking. Focus is not inherently expressed structurally in the same way that topicalization is: i.e., through the movement of a constituent to some periphery.

Much like topics, focus is not a singular monolithic category. Lee (2015:2ff) outlines a typology of three classes of focus: discourse-new focus, contrastive focus, and corrective focus. Discourse-new focus involves information that is only just being introduced into the discourse and has no possible retrievability from prior context. Contrastive focus indicates some exhaustive choice from among some set of spoken or unspoken alternatives. Corrective focus is one that corrects information deemed false by the speaker. We can see examples of these foci below in (8) with each focus represented in brackets.

In (8a), we see that one person is posing a question to another about the price of a cup of coffee. The answer, *two dollars*, is novel information, making it discourse-new. Likewise, in (8b), the questioner provides two options for the responder, and the responder utilizes contrastive

focus in their answer, *turkey*, to highlight which kind of sandwich they prefer. Lastly, a questioner in (8c) inquires as to whether they have Jenny's phone number right, but they seem to be slightly off. The responder employs corrective focus on the one digit that the questioner had wrong, 9, to ensure that the questioner understood which particular number was incorrect. All three of these foci can be omitted and these examples would still be grammatically correct, but there would be something slightly pragmatically deficient about the responses to the questions below.

(8) Examples of focus types

a. Discourse-new focus

i. *How much did that coffee cost?*

ii. *It cost [two dollars]<sub>F</sub>.*

b. Contrastive focus

i. *Between bologna and turkey, what kind of sandwich do you prefer?*

ii. *I [prefer [turkey]<sub>F</sub>] <sub>VP</sub>.*

c. Corrective focus

i. *Jenny's phone number is 867-5308, right?*

ii. *No, Jenny's phone number is 867-530[9]<sub>F</sub>.*

The examples in (8) above all involve foci that appear *in situ*: i.e., there is no change to the ordering of words within each clause. Rizzi (1997, 2001) notes that focus can also be present in a kind of topicalization within the left periphery. This analysis synthesizes the prosodic and pragmatic nature of focus with the syntactic structure of a clause. Under this proposal, there exists a specific functional projection in the left periphery of the clause above the tense phrase (TP) layer. A single focus may appear between two topics, but this analysis holds that each clause can contain a maximum of one focus.

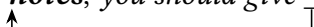
#### 2.2.4. Summary

There exists a whole swath of literature beyond that of Rizzi (1997, 2001) on the notion of topicalization versus focus, as well as how topics are marked in a language. We can see instances of both topicalization and focus in the example below. In (9a), the use of topicalization implies that the notes should be given to Parker as opposed to Parker receiving something else. We can contrast this usage with what we see in (9b), where focus on the direct object implies that the listener should give Parker their own notes as opposed to someone else's notes.

(9) Left-dislocation and information structure in English

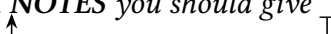
a. Topicalization

***Your notes**, you should give <sub>T</sub> to Parker (but not anything else).*



b. Focus fronting

***YOUR NOTES** you should give <sub>T</sub> to Parker (but not mine).*



The word order for both topicalized and focused elements above can appear in similar positions within a sentence, but the pragmatic motivation for using one versus the other necessitates some



distinction between them. Speakers do not freely interchange topicalization with focus fronting because there are different motivations for doing one over the other.

Most discussions of the notion of “topic” in Siouanist literature have referenced the particular class of topics that equates some entity that is salient to the discourse with a syntactically prominent position in the left periphery as we saw in (5) and (6). Namely, the use of the term “topic” has been conflated with topicalized elements. Likewise, items designated as focus markers are typically found on nominals that are in the left periphery of a clause, rather than on focused elements appear in *in situ* along the lines of those seen in (8). Therefore, the locus of investigation should center around the notions of topic and focus as outlined above, where some constituent is moved to the left periphery for the purposes of conveying emphasis. Likewise, the work herein will delineate the differences between topic and focus in Mandan moving forward.

### 2.3. Towards an analysis for Mandan

The question of how topic and focus are realized in Mandan is not as straightforward than it seems at face value. All languages have intonation patterns, even those with lexical tone or pitch accent (Yang 2016). It is therefore a foregone conclusion that Mandan possesses a system of intonation that conveys attitudinal information or discourse functions. The question is, however, whether we are able to make meaningful analyses of intonation patterns in Mandan as they relate to topicalization and focus marking in the absence of L1 speakers who can provide judgments. One research goal of this paper is to establish that examining prosody and pragmatics on languages that no longer have speakers can be a meaningful topic of inquiry. Subsequent sections of this paper outline ways in which we can infer certain aspects of the interface between morpho-syntax and pragmatics, plus the prosodic system of Mandan.

## 3. Structural manifestations of topic and focus

The most obvious place to start in our discussion of the structural manifestations of topic and focus in Mandan is the enclitic =*na*. There is no unambiguously direct analog of =*na* in Proto-Siouan per the Comparative Siouan Dictionary, but we do see nasalized reflexes of the so-called emphatic topic marker \**ya* in other Siouan languages Rankin et al. (2015). Kaufman (2008:150) describes =*yq* as familiar topic clitic. This formative appears to be a cognate with Mandan =*na*, given that P*Si* \**y* merged with \**r* in Pre-Mandan, and /*r*/ becomes [n] before nasal vowels in the synchronic grammar of Mandan (Kasak 2019:130). As such, one possibility is that Proto-Siouan had competing forms for this formative, \**ya*~\**ȳa*. Another possibility is that nasality on \**ya* could originate from the loss of some other morphological material bearing an underlying nasal that has since been lost except for the nasality assimilated onto the vowel in \**ya*.

### 3.1. Previous analyses of =*na*

Different authors have provided alternative analyses of the role of this enclitic within Mandan discourse structure. The first documented explanation for what this element is can be found in Kennard’s (1936:26) *Mandan grammar*, wherein he states that “if the speaker wishes to designate either the subject or the object as the important element of a sentence, the suffix -*na* is used.” This

formative is described as an emphasis marker and there is no further elaboration as to when one might expect to use it versus when one would never use it. One addendum to this description is that Kennard notes that this element frequently occurs with the demonstrative *ée*. He provides several examples of this formative:

(10) Examples of emphatic =*na* from (Kennard 1936:26)<sup>5</sup>

- a. *sísohsiina*  
 si#soh#sii=rą  
 feather#be.rounded.point#be.yellow=TOP  
 ‘a yellow hawk’
- b. *súkeena*                      *éena*  
 suk=ee=rą                      ee=rą  
 child=DEM.DIST=TOP DEM.DIST=TOP  
 ‘that boy’
- c. *kíishekaseena*  
 kV-i-sek=ka=s=ee=rą  
 AGT-PV.INS-make=HAB=DEF=DEM.DIST=TOP  
 ‘the maker’

In all the examples in (10) above, we can see that this =*na* is not overtly changing the semantics of the nominal upon which it is found. Of particular note is the use of =*na* with the unbound version of the distal demonstrative *ée*, while the overt nominal *súk* features the bound version of the same demonstrative in (10b). This behavior or =*na* doubling will be discussed further in §3.2.

Hollow’s (1970) dictionary of the Mandan language is the first to provide some kind of lexicon for the language that includes a morphological breakdown of lexemes. As such, this dictionary contains a list of morphological items and a brief description of how they are used, but there is no mention of this formative in the dictionary. This is surprising because there are ample instances of =*na* throughout his transcribed narratives, as evidenced by the fact that most examples are drawn from the two boxes of transcribed narratives that are part of the Robert C. Hollow Collection at the North Dakota State Historical Society archives.

Building on Hollow’s (1970) dictionary, Coberly (1979) produces a grammatical sketch of Mandan using narratives originally transcribed by Kennard (1934) that were later re-elicited and transcribed by Hollow (1973a). She continues to call =*na* an emphatic marker per Kennard (1936), though she notes that Kennard’s (1936) description of the so-called emphatic typically is accompanied by a vowel he transcribes as <e>, which he assumes is an indefinite article.<sup>6</sup> Coberly (1979:57) discounts =*na* being associated with indefiniteness as Kennard (1936) does, especially given the fact that there are numerous instances of what are transcribed as <e> plus <na> that occur on stems bearing overt definite marking, as we have seen earlier in (10c).

Wolvengrey (1991:585) likewise observes that many instances of the emphatic marker in Kennard (1934, 1936) may not be single formatives. To examine the nature of this formative, Wolvengrey conducts a corpus study of the distribution of =*na* in the transcribed narrative

<sup>5</sup>I employ glossing conventions for Mandan used in Kasak (2019) for the sake of consistency through the text.

<sup>6</sup>There is no indefinite article in Mandan, though there is a definite article. The nature of this word-final vowel in Mandan is addressed more thoroughly in Kasak (2019:317ff).

in Kennard's (1936) Mandan grammar, as well as three other narratives originally transcribed by Kennard (1934) that were later re-elicited and transcribed by Hollow (1973a). Wolvengrey (1991:588) analyzes this formative as a cleft-focus marker. This description as marking some kind of cleft seems to be consistent with the data. The use of "focus" to describe the motivation for this kind of cleft, however, is inconsistent with the terminology laid out in §2.2.3, where focus is primarily a prosodic phenomenon rather than a syntactic one.

Mixco (1997:41) describes =*na* as a topicalizing enclitic in his grammar. Topics marked by this enclitic may be nominals, including demonstratives that refer to a topic. Mixco identifies the <e> that often co-occurs with =*na* in Kennard (1936) and Coberly (1979) as the distal demonstrative *ée*.<sup>7</sup> This demonstrative can appear as a free word or an enclitic, and the topicalizing enclitic likewise encliticizes onto either a nominal or demonstrative. Mixco (1997) does not include any further discussion of the behavior of this formative beyond what has been stated above.

Kasak (2019) provides a partial grammar of Mandan, but does not discuss =*na* beyond labeling it as a topic marker. This lack of description is due to the fact that this work focuses on verbal morphology rather than nominal morphology. However, there is some discussion of the interaction between =*na* and verbal morphology when discussing unbound manifestations of the unspecified argument marker (Kasak 2019:243). The treatment of =*na* as a topic marker, sometimes referred to as a topicalizer, follows on Mixco's (1997) analysis of =*na*. There is no discussion of the kinds of topics represented by this formative in the senses established in §2.2.1, but mention of the treatment of =*na* in Kasak (2019) is mentioned here only because it represents the most recent description of this enclitic.

### 3.2. Distribution of =*na* in the corpus

One notable contribution by Wolvengrey (1991) is his discussion that =*na* occurs on more than just subjects and direct objects. He examines four transcribed narratives and finds 111 instances of =*na*. Table 1 below is a modified reproduction of the one in Wolvengrey (1991:586), where he lists the number of occurrences of =*na* and what role that element is playing in a clause. He classifies each occurrence of =*na* by what role the nominal it modifies plays: active subject (A. Subj.), stative subject (S. Subj.), direct object (Dir. Obj.), oblique object governed by postpositions (Prep. Obj.), direct reference to quoted speech (Quot.), possessor (Poss.), and adverbial (Adv.).<sup>8</sup> Wolvengrey likewise divides these roles by whether the =*na* occurs on a vowel-final stem (StemV), a stem with the distal demonstrative =*ee* (Stem =*ee*), a definite nominal with the distal demonstrative (Def. =*s=ee*) or alone as an unbound word (*ée=na*).<sup>9</sup>

<sup>7</sup>Previous descriptions of Mandan have irregular marking of long vowels (e.g., Kennard 1936) or deny the existence of long vowels altogether (e.g., Hollow 1970). See Kasak (2019:103ff) for further discussion of this issue in Mandan description.

<sup>8</sup>Wolvengrey (1991:586) refers to oblique objects as postpositional objects and to direct references to quoted speech as object complements. An example of direct reference to quoted speech would be "Now," I said, so that is when I expect it to be ready.'

<sup>9</sup>Wolvengrey (1991:595f) hypothesizes that <-eną> is a single formative that differs from the <-ną>. This analysis comes from working with only textual sources and not from engaging in fieldwork with L1 Mandan speakers who can explain that what is being written as <-eną> is really two different formatives: a distal demonstrative =*ee* and the topic marker =*na*. This morphological structure is first proposed in Mixco (1997) and later confirmed in my own fieldwork with the late Mr. Edwin Benson.

We can see on Table 1 below that active subjects represent the overwhelming majority of instances where =na appears in the set of four narratives. Stative subjects and direct objects also occur with some frequency, but not to the degree of active subjects. Contrary to descriptions by Kennard (1936) or Coberly (1979), nominals that are not subjects or direct objects appear to take =na, though such occurrences are certainly rarer.

Table 1: Frequency and manifestation of =na in Wolvengrey's (1991) study

Role	StemV =na	Stem =ee=na	Def. =s=ee=na	ée=na	Totals
A. Subj.	20	15	39	5	79
S. Subj.	4	4	2	1	11
Dir. Obj.	5	5	1		11
Prep. Obj.	2	2			4
Quot.		1		1	2
Poss.	1		1		2
Adv.	1			1	2
<b>Totals</b>	<b>33</b>	<b>27</b>	<b>43</b>	<b>8</b>	<b>111</b>

For the present study of topic and focus marking in Mandan, Wolvengrey's (1991) most valuable contribution is that he demonstrates that the full range of nominals in Mandan can potentially be marked by =na. Upon further inspection of the corpus, I have identified instances of indirect objects that can take =na marking, expanding the possible grammatical roles that can be marked by =na. There is no mention of indirect objects in Wolvengrey's (1991) study. We can see examples of these diverse set of instances of =na on nominals with differing grammatical roles below along with its corresponding  $\theta$ -role in parentheses.

(11) Examples of =na on nominals with differing roles

a. Active subject (agent)

*kowóorooreena* *máah íseksoomaksjh*  
 ko-wooroo=ee=rą wąąh i-sek=s=oowąk=sjh  
 3POSS.PERS-husband=DEF=DEM.DIST=TOP arrow PV.INS-make=DEF=NARR=INTS

'her husband made an arrow' (Hollow 1973b:86)

b. Stative subject (experiencer)

*súknuma'k shinasheena* *ó'roomako'sh*  
 suk#ruwą'k shi=rąsh=ee=rą o'=oowąk=o'sh  
 child#man be.good=ATT=DEM.DIST=TOP be=NARR=IND.M

'it was a nice young man' (Hollow 1973b:125)

c. Direct object (patient)<sup>10</sup>

*Kóoxą'te Míihs* *tasúkseena* *íratatak*  
 kooxą'tE#wjįh=s ta-suk=ee=rą i-ra-tax=ak  
 corn#woman=DEF AL-child=DEM.DIST=TOP PV.INS-INS.MTH-make.loud.noise=DS

<sup>10</sup>This verb 'weep for' is not a transitive verb in English, but *íratatak* is transitive in Mandan.

‘Corn Woman was crying for her child’ (Hollow 1973b:112)

d. Indirect object (goal/recipient)

<i>Wáaratookaxi'heena</i>		<i>“hiré, rapéhini</i>
waa-ratoo=ka#xi'h=ee=raḡ		hire ra-peh=r̥i
NOM-be.mature=HAB#be.old=DEM.DIST=TOP	now	2A-announce=SS
<i>raréehto'sh, mí'ti nata,"</i>		<i>éheekereroomako'sh</i>
ra-rEEh=t=o'sh w̥i' #ti raṭ=E=∅		ee-hEE=krE=oowaḡk=o'sh
2A-go.there=IND.M stone#house	be.in.middle=SV=CONT	PV-say=3PL=NARR=IND.M

‘they said to the old man, ‘now, you should go announce it while in the middle of the village.’” (Hollow 1973a:208)

e. Oblique object of a postposition (instrument)

<i>Rá'puseena</i>	<i>mí' réxeena</i>	<i>ó'hara pá</i>
ra'-pus=ee=raḡ	w̥i' rex=ee=raḡ	o'hrE=∅ pa
INS.HEAT-be.spotted=DEM.DIST=TOP	stone glisten=DEM.DIST=TOP	with=CONT head
<i>róotkika'ehe</i>		
rootki=ka'ehe		
hit=QUOT		

‘Charred-in-Streaks hit her head with a translucent rock, it is said’ (Kennard 1936:36)

f. Direct reference of a quoted speech

<i>“Manákiniiireena,”</i>	<i>éepeso'sh</i>
wraḡ#kriḡ=ee=raḡ	ee-pe=s=o'sh
water#be.stacked=DEM.DIST=TOP	PV-say.1SG=DEF=IND.M

“‘An embankment,’ I said’ (Kennard 1936:37)

g. Adverbial adjunct (temporal)

<i>Konúuke</i>	<i>túk,</i>	<i>éena</i>	<i>háni tashíxteroomako'sh</i>
ko-ruḡkE	tu=ak	ee=raḡ	ha=r̥i ta-shi-xtE=oowaḡk=o'sh
3POSS.PERS-sister	be.some=DS	DEM.DIST=TOP	see=SS AL-be.good-AUG=NARR=IND.M

‘he had a sister and she saw him then and really liked him’ (Hollow 1973b:134)

The data above in (11) reflect that nominals can play any kind of grammatical role while featuring the =na enclitic. Thus, the distribution of this morphological marking of prominence is not restricted to core arguments like subject or direct objects; all nominals can bear =na. The majority of instances of =na, however, tend to be found on active subjects. One reason for this preponderance of =na marking on active subjects is that direct quotations in Mandan are often introduced by adding =na to whomever said the quotation, followed by the quotation and the verb. We can see examples of this behavior below in (12).

Another common tendency in the corpus is for the one being quoted to be marked with =na followed by the quote, but with an elided verb. We see examples of this use of =na in (12c) and

(12d) below, where the element marked with =*na* is used to indicate the person who is producing the quoted speech.<sup>11</sup>

(12) Use of =*na* in direct quotations

- a. *Kinúma'kshiseena* "ípashahąkt  
 ki-ruwą'k#shi=s=ee=ra i-pasha#hąk=t  
 MID-man#be.good=DEF=DEM.DIST=TOP PV.DIR-north#POS.STND=LOC  
*náaketaa máa'ak íwasehki, ní'shak í'aakahąkt*  
 raąkE=taa waa'ąk i-wa-sek=ki r'~ishak i-aaka#hąk=t  
 be.sitting=LOC land PV.INS-make=COND 2POSS-pro PV.DIR-south#POS.STND=LOC  
*írasekto'sh," éeheka'ehe*  
 i-ra-sek=t=o'sh ee-hE=ka'ehe  
 PV.INS-2A-make=POT=IND.M PV-say=QUOT  
 'It is said that **Royal Chief**<sup>12</sup> said 'if I make land that way to the north, you should make it to the south' (Hollow 1973b:9)
- b. *Karóotiki súknuma'kseena* "húų, waréhto're,"  
 ka=ooti=ki suk#ruwą'k=s=ee=ra hųų wa-rEEh=t=o're  
 PV=EVID=COND child#man=DEF=DEM.DIST=TOP yes 1A-go.there=IND.F  
*éeheeroomako'sh*  
 ee-hEE=oowąk=o'sh  
 PV-say=NARR=IND.M  
 'And then the young man said, "yes, I will go." (Hollow 1973a:234)
- c. *Háktek Kinúma'kshiseena* "súkinite, káare  
 ha=kte=ak ki-ruwą'k#shi=s=ee=ra suk=rįt=E kaare  
 PROV=POT=DS MID-man#be.good=DEF=DEM.DIST=TOP child=2PL=SV IMP.NEG  
*ptáhinista! Kú'hinista! Wáa'ąskaharaxi'sh,*  
 ptEh=rįt=ta ku'h=rįt=ta waa-ąska#hrE=xi=o'sh  
 run=2PL=IMP.M come.back.here=2PL=IMP.M NEG-be.a.certain.way#CAUS=NEG=IND.M  
*kotáwaratoore húuk."*  
 ko-ta-wa-ratoo=E huu=ak  
 3POSS.PERS-AL-UNSP-be.mature=SV come.here=COND  
 'So **Royal Chief** [was like,] "children! Do not run away! Come back! You do not act that way when his uncle comes." (Hollow 1973b:28)

<sup>11</sup>It is the case that more instance of verb elision with direct quotations are present in Hollow's (1973a) elicitation of Kennard's (1934) narratives. One possible reason for this is that certain speakers favored the elision in direct quotations, though it is not clear if there is some stylistic choice of when to preserve the quotative verb and when to elide it. I have glossed the elided instances as having a less formalized way of expressing reported speech, using 'was like' versus 'so and so said' to depict this potential difference in style. It is not possible to say conclusively if this dichotomy is entirely accurate, given the absence of L1 speaker judgments.

<sup>12</sup>This figure's name in English is often rendered as 'Old Man Coyote' or 'Trickster' by non-Native sources like Hollow (1973a,b) and Kennard (1934), but Mrs. Mattie Grinnell would always say his name in English as 'Royal Chief.' For this reason, I use the latter when translating his name into English.

- d. *súkmiihseena* “*waawateerehereki,*  
*suk#wijh=s=ee=rą* waa-wa-tee#re-hrE=ki  
**child#woman=DEF=DEM.DIST=TOP** some-UNSP-be.dead#2A-CAUS=COND  
*ishuyhe* *ímaare* *ąqwe, ishuyhe* *ąqwe*  
i-shuyh=E i-wąą=E ąąwe i-shuyh=E ąąwe  
PV.POSS-sinew=SV PV.POSS-body=SV all PV.POSS-sinew INS.HAND-grasp  
*rushá* *makú'ta*  
ru-shE wą-ku'ta  
1s-give=IMP.M  
‘**The young woman** [was like,] “if you happen to kill some, all the sinew of the carcass, take all the sinew for me.”’

In the examples involving =*na* marking so far, we have seen =*na* on a single element in a clause. However, there does not appear to be a firm maximum number of elements that can bear =*na* marking. There are instances where multiple nominal constructions bear =*na* within the same clause within the corpus. One such example has already been seen in (11e) above, which has been reproduced below in (13b). We can see other such examples in (13) below. For each instance of multiple =*na* marking in a single clause, we see some kind of subject with =*na*, plus another nominal element bearing =*na*. The examples in (13a) and (13c) both involve the secondary element with =*na* being coindexed. For (13a), the coindexed element is a parenthetical describing the subject. This examples contrasts with (13c), where the subject itself appears again, as a kind of resumptive element that has been right dislocated at the end of the utterance to reinforce who it is that said the reported speech in question. In (13b), we see a subject that bears =*na*, plus the semantic instrument ‘translucent rock.’ These examples demonstrate that multiple =*na* marking is permitted on other elements within the clause.

(13) Double =*na* marking

- a. Stative subject and parenthetical description of said stative subject

*Áa Hąshkana, súknuma'keena, xópinini wáa'okaraahe*  
**aa#hąshka=rą suk#ruwą'k=ee=rą xopri=rı waa-o-kraah=E**  
**arm#be.long=TOP child#man=DEM=TOP** be.holy=SS NOM-PV.IRR-be.afraid=SV  
*mıkak*  
wık=ak  
be.none=DS

‘Long Arms, a young man, was holy and had no fear’ (Hollow 1973b:151)

- b. Active subject and oblique object of a postposition used as an instrument

*Rá'puseena* *mı' réxeena* *ó'hara*  
**ra'-pus=ee=rą wı' rex=ee=rą o'hrE=∅**  
**INS.HEAT-be.spotted=DEM.DIST=TOP stone glisten=DEM.DIST=TOP with=CONT**  
*pá róotkika'ehe*  
pa rootki=ka'ehe  
head hit=QUOT

‘Charred-in-Streaks hit her head with a translucent rock, it is said’ (Kennard 1936:36)

- c. Active subject and resumptive right dislocated active subject

*íko'tseena* "mí'shak, maní'o'na  
 i-ko-at=s=ee=rą w~ishak wa-rı-o'=rą  
 PV.POSS-3POSS.PERS-father=DEF=DEM.DIST=TOP 1POSS-pro UNSP-2s-be=TOP  
 á'skarahara'shka éewaharani minikímaxani," éeheeromako'sh,  
 ą'ska#ra-hrE=ą'shka ee-wa-hrE=rı w-rı-kiwaxE=rı ee-hEE=oowak=o'sh  
 be.that.way#2A-CAUS=PSBL PV-1A-CAUS=SS 1A-2s-ask=SS PV-say=NARR=IND.M  
*kó'tseena*  
 ko-at=s=ee=rą  
 3POSS.PERS-father=DEF=DEM.DIST=TOP

'that father of hers said, "me, I thought that you were the one who maybe did something so I asked you,' her father did.' (Hollow 1973a:238)

The presence of multiple =*na* marking in different sources (i.e., Kennard 1936, Hollow 1970, Hollow 1973a) indicates that multi=*na* structures are possible across a range of speakers, regardless of generation, and that such constructions are not idiosyncratic.

### 3.3. Summary

Looking at the contexts within the corpus where =*na* appears, there are two general situations where we see it: when =*na* is encliticized onto old information that is being brought up again or if there is new information that the speaker wishes to bring to the forefront of the listener's attention. Previous analyses of focus in §2.2.3 allow for different kinds of focus to manifest within an utterance, but focus is generally described as a culminative prosodic feature: i.e., there can be a maximum of one focused element within a clause. Therefore, we can eliminate the hypothesis that =*na* is a focus marker.

Under the analysis discussed in §2.2.2, topicalized elements are constituents that are found at the left periphery (or perhaps also at the right periphery) of a clause through the involvement of some syntactic operation: i.e., movement. We have seen examples throughout this section where the nominals bearing =*na* have not undergone any movement to some peripheral position. For example, (13b) features both a subject with =*na* and an oblique with =*na*, where both elements appear in their canonical word order for Mandan. This same pattern applies to (11c), where the subject does not bear any topic marking, but the direct object does. This datum likewise features canonical word order for Mandan. The fact that =*na* does not necessitate the movement of a constituent from its position lower in the syntactic structure into a peripheral position within the clause eliminates =*na* as a marker of a topicalized element.

After eliminating the possibility of =*na* being a focus marker or an indicator of a topicalized element, we are left with the hypothesis that =*na* is a topic marker, as described in §2.2.1. The novelty of a topic is not inherent to whether it will bear =*na*, but the pragmatic choice of the speaker to mark some kind of aboutness-change, a contrast, or a familiar topic. Throughout the text, I have followed the convention from Kasak (2019) to gloss =*na* as TOP for 'topic marker,' and that impression is borne out by the distribution of =*na* in the corpus.

One question that Wolvengrey (1991) raises is what is the pragmatic difference between instances involving just =*na* versus =*na* plus the distal demonstrative =*ee* and the definite article



=s? This question appears linked to the overall pragmatic difference in whether overt definiteness marking is present in Mandan or not. While preparing my dissertation (Kasak 2019), I observed that definiteness is not obligatorily marked on Mandan nouns and that definiteness can be implied by context. Given the focus on verbal morphology and not nominal morphology, this tendency was not expressly written down in that work. However, I suggest that the motivation for whether to overtly mark a nominal as being definite or not in Mandan is done for some pragmatic reason. Further investigation of how definiteness is expressed in Mandan is a topic worth further research but is beyond the scope of the present paper.

## 4. Prosodic manifestations of topic and focus

Discussions of topic and focus in Siouan have generally relied on textual data rather than audio data. There is nothing inherently problematic about this approach, though ignoring the prosodic aspect of how topic and focus are expressed in these languages misses the opportunity to describe an additional layer of information structure that transcribed data can easily miss.

### 4.1. Previous work on prosody in Siouan

To my knowledge, Larson's (2009) SCLC presentation on Umo<sup>n</sup>ho<sup>n</sup> prosody is among the first instances to attempt to shift attention to suprasegmental aspects of a Siouan language. In his dissertation, Mirzayan (2010) engages in a massive multi-year undertaking to focus on a prosodic analysis of a Siouan language in his study on intonation and prosody in Lakota. This study is groundbreaking in Siouan linguistics, given the fact that so much of what we have historically examined has been done with data transcribed by ear rather than with the assistance of instrumentation. His analysis of Lakota reveals that, while lexical stress is generally associated with higher F<sub>0</sub>, higher intensity, and longer duration, there are disassociations between the presence of phrasal pitch and the pitch typically observed in lexical stress (Mirzayan 2010:3). Prosodic data throughout his work is represented using a ToBI coding protocol per Pierrehumbert (1980), Beckman & Pierrehumbert (1986a), Pierrehumbert & Hirschberg (1990), *inter alios*.

Gordon (2016) likewise examines the interaction between information structure in a set of Siouan languages with their prosody. She provides examples of prosodic data from four Siouan languages (Umo<sup>n</sup>ho<sup>n</sup>, Baxoje, Hidatsa, and Hoocak) that incorporate a ToBI-style analysis of the tunes found in audio samples from these languages. Both Mirzayan (2010) and Gordon (2016) make use of Praat by Boersma & Weenink (2020) to assist in the analysis of pitch and intensity in the data analyzed in their works, rather than relying on trying to analyze the data by ear.

### 4.2. Prosody of topic and focus in Mandan

The interface between prosody and information structure has been discussed in different Siouan languages to varying degrees of depth. There has been some discussion of suprasegmental features in Mandan in with respect to the interaction between F<sub>0</sub> and lexical stress (Kasak 2019:136ff), but no discussion beyond the level of the word and into the realm of the phrase or the utterance.

What follows below thus represents the first attempt at examining patterns of prosodic behaviors in Mandan with respect to topics and focus. The phonetic data herein come from two

different Mandan recordings. One recording features Mrs. Mattie Grinnell (1867–1975), relaying the traditional narrative “No Tongue.” The other recording is of the narrative “Blackwolf” or “The Gambler,” as told by Mr. Edwin Benson (1931–2016). Each narrative is approximately 30 minutes of continuous speech in Mandan. While there are transcriptions of both narratives, I have only analyzed the first 5 minutes of each narrative using Praat.

Rather than go through the data using a ToBI protocol, I examined instances involving *=na* by creating a TextGrid for each token and then running a the Praat script “create-pictures-selected-sound-and-textgrid” by Elvira-García (2017) to create a Praat picture of each token that featured the spectrogram and TextGrid with an F0 curve superimposed over the waveform. This F0 curve serves to illustrate the pitch track of each token to show how the pitch accent manifests on each element within these sentences.

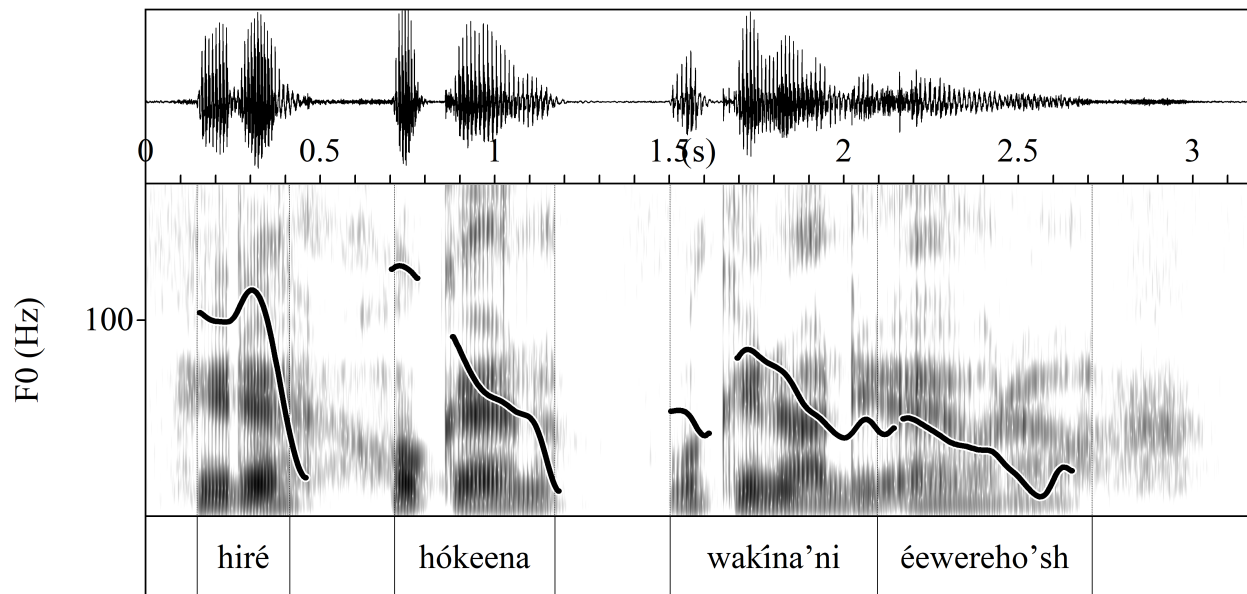
Let us begin by looking at some examples from Mr. Benson’s telling of “Blackwolf.” In (14) below, we see the direct object *hók* ‘story’ bear the distal demonstrative *=ee* plus the topic marker *=na*. The direct object is not the leftmost element in the sentence below. The leftmost element, instead, is the adverbial *hiré* ‘now.’ Figure 1 shows the F0 curve throughout the course of this utterance. We can see that the two initial elements, the adverbial and the direct object, both have a much higher pitch than the verbal complex *wakína’ni éewereho’sh* ‘I want to tell.’

(14) “Blackwolf” excerpt 1<sup>13</sup>

<i>Hiré hókeena</i>	<i>wakína’ni éewereho’sh</i>
hire hok= <i>ee</i> = <i>ra</i>	wa-kira’= <i>rj</i> ee-we-reh= <i>o’sh</i>
now story= <i>DEM.DIST=TOP</i>	1A-tell= <i>SS</i> PV-1A-want= <i>IND.M</i>

‘Now, I want to tell a story.’ (Trechter 2012:11)

Figure 1: Excerpt 1 from “Blackwolf”



<sup>13</sup>This .wav file is available here: <https://github.com/ryankasak/SCLC41/blob/main/BW1.wav>.

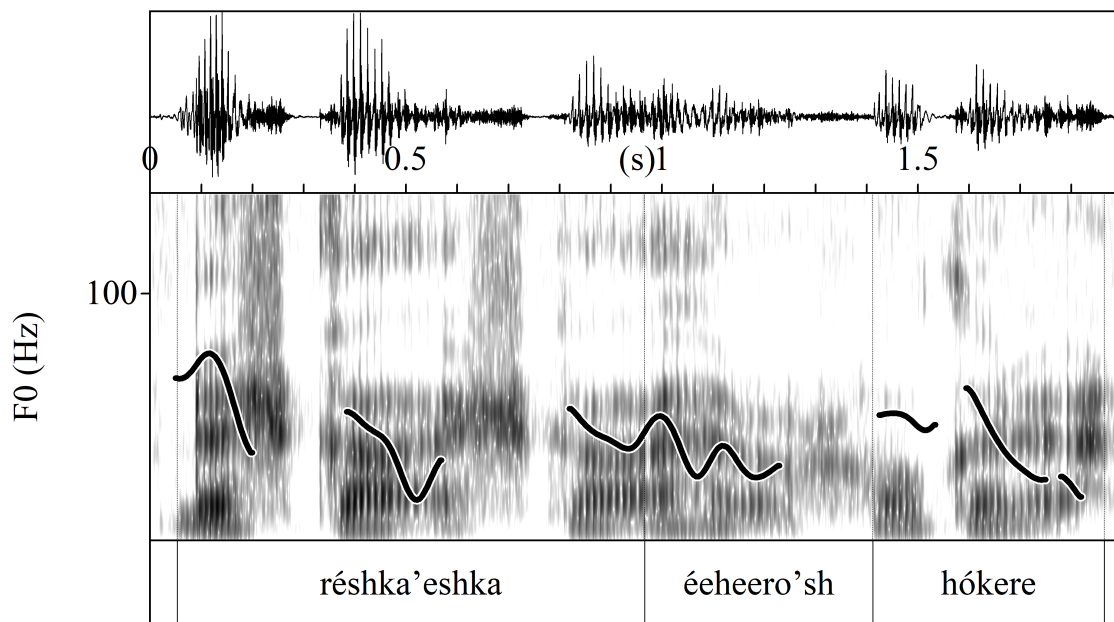
We can compare the data in (14) with what we see in (15) below, which is also taken from “Blackwolf.” There is no element bearing =*na*, but we do see a right dislocated direct object, *hókere* ‘this story.’ This direct object appears to be a postposed familiar topic, and yet it does not bear a topic marker. Typically, we see strong declination in Mandan, where the final word in an utterance has a drastically lower pitch than the initial word. However, *hókere* begins with a pitch that is approximately the same as the preceding verb *éheero’sh*, which under normal circumstances in an SOV language like Mandan would be the final element in the utterance. Instead, we see an uptick in pitch after the end of *éheero’sh*, followed by a steep drop-off at the end of the utterance.

(15) “Blackwolf” excerpt 2<sup>14</sup>

*Réshka’eshka éheero’sh, hókere.*  
 reshka-eshka ee-hee=o’sh hok=re  
 this.way-SIM PV-say=IND.M story=DEM.PROX

‘One says it like this, this story.’ (Trechter 2012:11)

Figure 2: Excerpt 2 from “Blackwolf”



In (16), we again see an instance where there is an utterance-initial adverbial *máxha* ‘one time, once,’ followed by a nominal bearing =*na*, *numá’keena* ‘a man.’ This time, the element bearing the topic marker is the subject. Again, given the fact that Mandan has historically been described as a language with prototypical SOV word order, it is worth noting that subjects are not always the initial element to occur in a sentence. We can see that the F0 curve starts out high utterance-initially, as is expected, but then it drastically increases even farther up to align

<sup>14</sup>This .wav file is available here: <https://github.com/ryankasak/SCLC41/blob/main/BW2.wav>.

with the lexical stress in the word *numá'keena*. Declination is on full display within the rest of the clause, as the F0 peaks within *numá'keena* 'a man,' which is the subject, and promptly drops down as we get to the final verb of the clause, *ó'rak* 'be.'

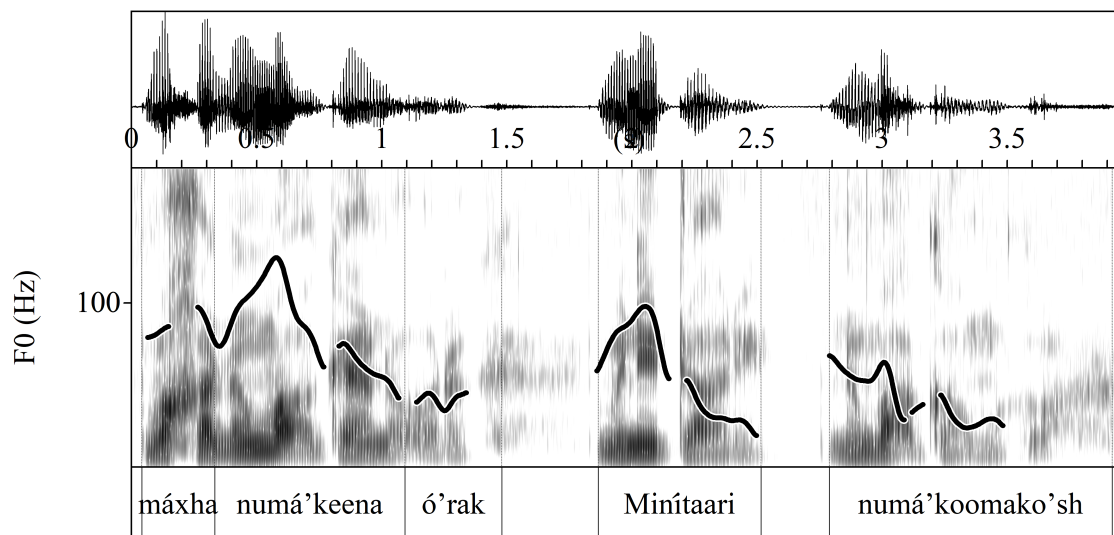
At the onset of the following clause, we see another nominal element, *Minítaari* 'Hidatsa,' feature a high F0 which then decreases and goes back up to a mid tone for the utterance final verb *numá'koomako'sh* 'was a man,' where the declination is even more stark than what we saw in the first clause. For both nominals that appear before a verb, we see a rapid fall from high to low pitch, though the verb *ó'rak* started out with low pitch and ended with low pitch, while the utterance-final verb *numá'koomako'sh* began with a mid pitch before dropping to a low pitch that was even lower than the low pitch in *ó'rak*.

(16) "Blackwolf" excerpt 3<sup>15</sup>

*Máxha numá'keena ó'rak Minítaari numá'koomako'sh.*  
 wəx#ha ruwə'k=ee=rə o'=ak wri#taari ruwə'k=oowək=o'sh  
 one#TIMES man=DEM.DIST=TOP be=DS water#cross man=NARR=IND.M

'One time, there was a man and he was a Hidatsa man.' (Trechter 2012:11)

Figure 3: Excerpt 3 from "Blackwolf"



The final excerpt from "Blackwolf" appears below in (17). Like (15), there are no elements that bear the =*na* topic marker. However, there is a perceptual prosodic prominence on the verb *kíikini'sjh* 'to really gamble.' When running Elvira-García's (2017) Praat script to analyze this example, there is a disconnect between how the pitch track is interpreted by the basic loadout of Praat in Figure 4 (pitch track shown as a blue line superimposed over the spectrogram versus the intensity shown as a yellow line) versus how the F0 track appears in Figure 5 (i.e., the version produced with the Praat script).

<sup>15</sup>This .wav file is available here: <https://github.com/ryankasak/SCLC41/blob/main/BW3.wav>.

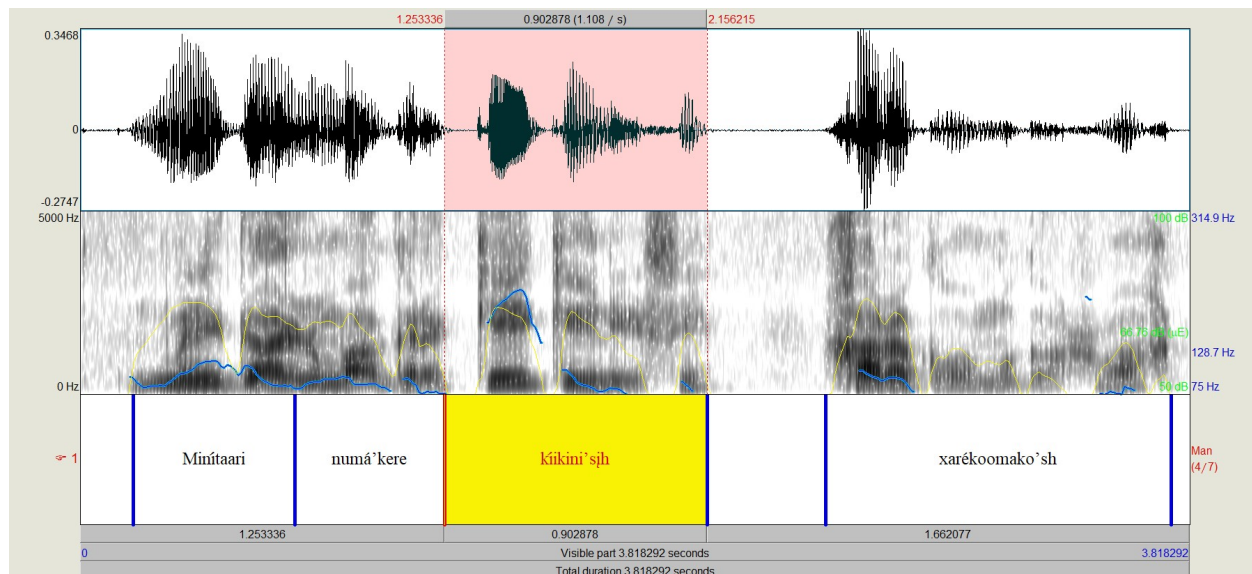
(17) “Blackwolf” excerpt 4<sup>16</sup>

*Minítaari numá'kere kíikini'sih xaréoomako'sh*  
 wri#taari ruwá'k=re kíikri'=sih xarek=oowaḱ=o'sh  
 water#cross man=DEM.PROX gamble=INTS be.brave=NARR=IND.M

‘The Hidatsa man loved to gamble.’ (Trechter 2012:11)

Praat’s built-in pitch tracking shows the pitch in *kíikini'sih* to be drastically higher than in any other word. This pitch is represented in Figure 4 below as a blue line on the waveform. To my ear, this word stands out as being more prosodically prominent than the other words in the sentence, but the F0 analysis undertaken by the Praat script does not confirm Praat’s own pitch tracking. The Praat picture in Figure 5 shows *kíikini'sih* as having noticeably lower pitch than the high pitch on the word *Minítaari*, contrary to what we see above in Figure 4.

Figure 4: Excerpt 4 from “Blackwolf” (without Praat script)



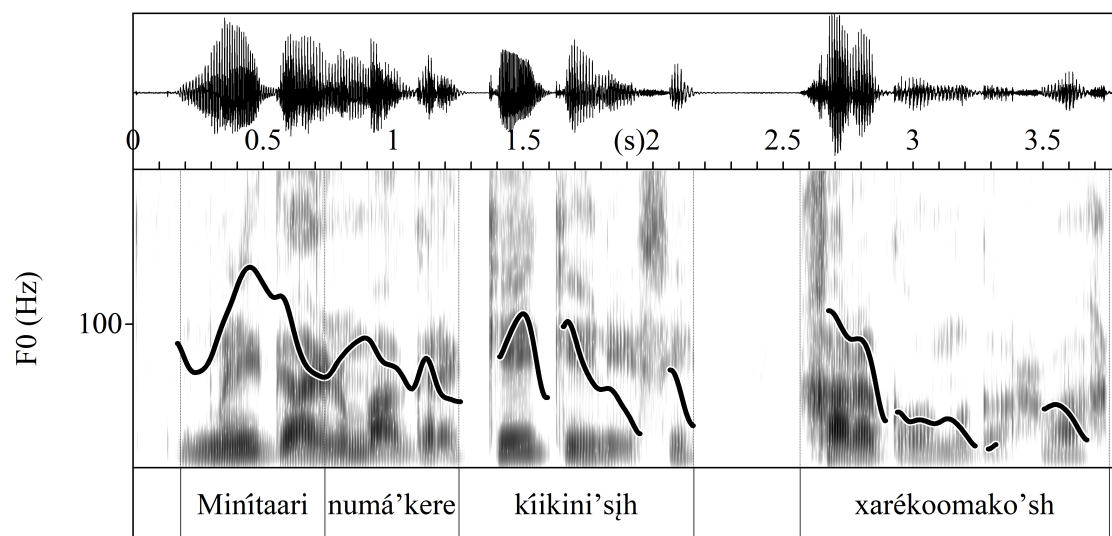
Even if this word does not have the F0 cue that I had initially expected, we do still see the expected high F0 for the first word in the utterance, followed by a very low F0 at the end of the utterance.<sup>17</sup>

The previous four examples come from Mr. Edwin Benson’s telling of “Blackwolf,” but he is not alone in making use of overt =*na* to mark topics or in employing other prosodic or syntactic strategies to indicate some kind of topic or focus. The other speaker whose Mandan is

<sup>16</sup>This .wav file is available here: <https://github.com/ryankasak/SCLC41/blob/main/BW4.wav>.

<sup>17</sup>One possible explanation for this mismatch between the pitch track in Praat and the Praat picture derived therefrom could be that the perceived sharp increase and subsequent drop in pitch is so drastic that the “Octave Jump cost” value of 0.35 could be high enough to affect the algorithm’s decision about whether a jump in F0 is reasonable and negate the magnitude of the rise in F0 here. Rather than cherry-picking the data, I have elected to maintain the same parameters of this Praat script throughout this paper. Further examination of this overcompensation for such a drastic pitch jump in Mandan prosody warrants future attention that is beyond the scope of the present work.

Figure 5: Excerpt 4 from “Blackwolf” (with Praat script)



discussed here is Mrs. Mattie Grinnell, who was already a centenarian by the time Dr. Robert Hollow interviewed her for his study of the Mandan language. The following example is from her telling of the narrative “No Tongue.”

In (18), we can see a stative subject *mí'ti xténa* ‘a big village’ bearing the topic marker =*na*. In this situation, it is not the noun that bears the topic marker, but the stative verb acting in an adjectival capacity. The presence of the topic marker on the stative verb indicates that the entire noun phrase is being treated as the topic, rather than just an element within the noun phrase being the topic.

(18) “No Tongue” excerpt 1<sup>18</sup>

*Mí'ti*        *xténa*        *téroomako'sh*.  
*wj̄#ti*        *xtE=r̄a*        *tE=oow̄ak=o'sh*  
 stone#home be.big=TOP stand=NARR=IND.M

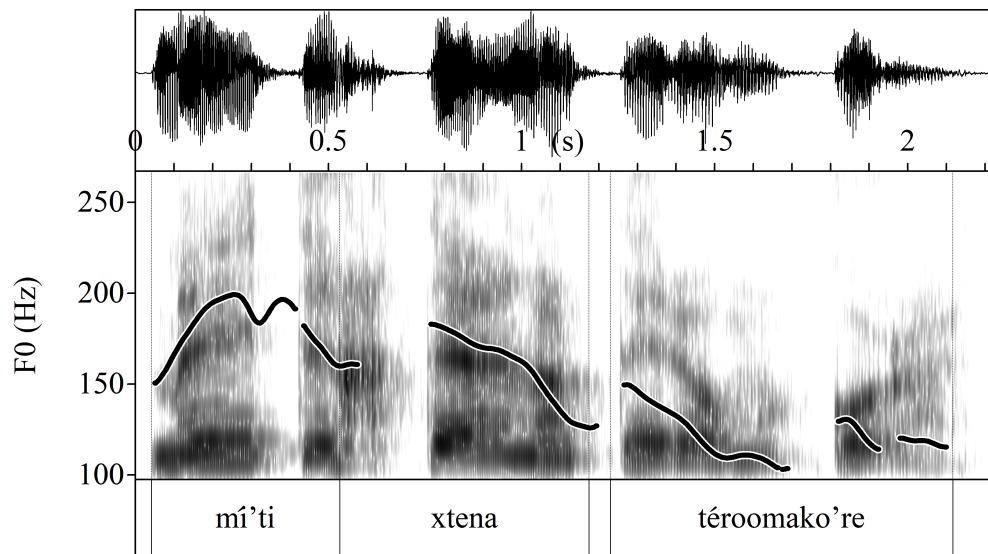
‘A big village was there.’ (Hollow 1973b:176)

Looking at the F0 track in Figure 6 below, we see that the highest F0 values are on the head of the noun phrase, *mí'ti* ‘village,’ rather than the adjunct, *xténa* ‘big,’ to which the topic marker is encliticized. Once again, like we have seen in the examples from Mr. Edwin Benson, there is a sharp declination as Mrs. Mattie Grinnell reaches the end of an utterance. This consistent drastic declination suggests that these drops in pitch in sentence-final environments are not idiosyncratic, but a strong tendency of Mandan prosodic patterns.

The final piece of data analyzed here is also from “No Tongue.” In (19), we see the subject *minísweeruteena* ‘the dog,’ postposed after the verb in a case of right disjunction or tacking it onto the end of the sentence as an afterthought or parenthetical. The F0 peak is highest on the verb *íhekoomako'sh* ‘he knew it,’ and there is a low F0 plateau after the initial lexical stress within this

<sup>18</sup>This .wav file is available here: <https://github.com/ryankasak/SCLC41/blob/main/NT1.wav>.

Figure 6: Excerpt 1 from “No Tongue”



word. The F0 rises again on the primary and secondary stresses of the word *minísweeruteena* ‘dog’ [m<sup>h</sup>nis<sup>h</sup>.we:ru.ʔte:nã].<sup>19</sup> As we can see for *minísweeruteena* in Figure 7, the F0 falls sharply halfway through the syllable as Mrs. Grinnell ceases phonation and the final syllable becomes almost whispered.

(19) “No Tongue” excerpt 2<sup>20</sup>

*Íhekoomako’sh,*                      *minísweeruteena.*  
 i-hek=oowək=o’sh              wrįs#wee#rut=ee=rą  
 PV.INS-know=NARR=IND.M horse#feces#eat=DEM.DIST=TOP

‘He knew it, **the dog**<sup>21</sup> did.’ (Hollow 1973b:181)

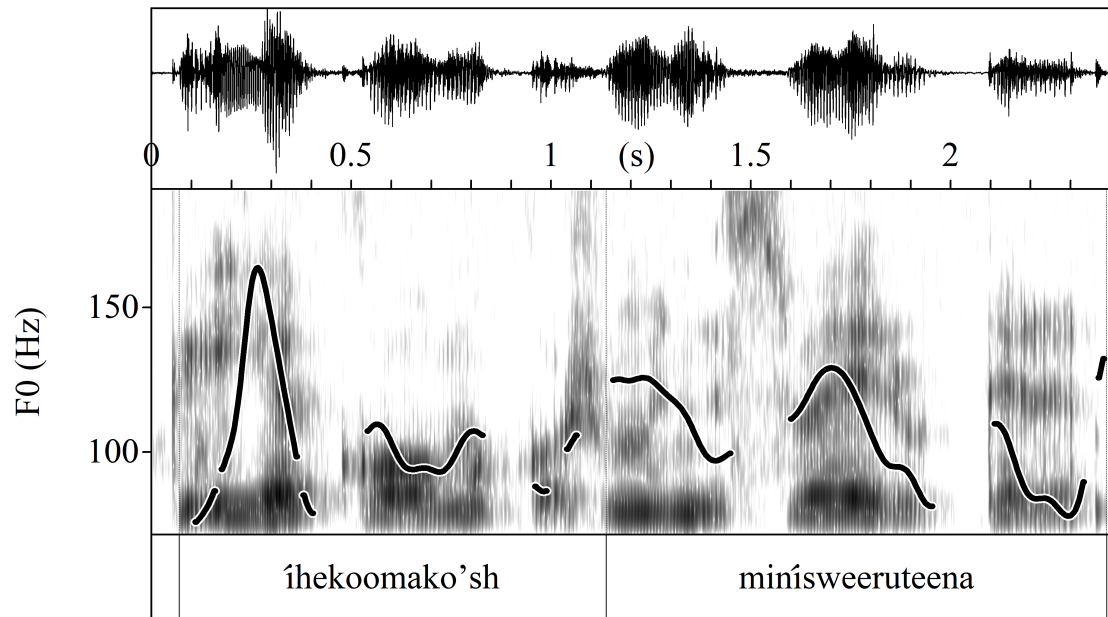
This datum in (19) further illustrates that there is no unique prosodic characteristic for nominal elements bearing =na. The expected high left boundary tone is visible in Figure 7 and the peak of this boundary tone in *íhekoomako’sh* ‘he knew it’ is dramatically higher than any of the pitch peaks within *minísweeruteena* ‘the dog.’ Again, this lack of prosodic prominence on the element bearing =na reinforces the argument herein that this formative is not a focus marker.

<sup>19</sup>The superscript [ʔ] here indicates an excrescent vowel. As discussed in Kasak (2019:78ff), these vowels, often called Dorsey’s Law vowels, are a phonetic phenomenon found in consonant clusters where the second element is a sonorant. These vowels are merely an extension of the following vowel, which is the real nucleus of the syllable. While these vowels are generally perceptible by Mandan speakers as can be determined from home orthographies, they are extraphonological and are really tautosyllabic with the following vowel. See Hall (2006) for further discussion on the phonological treatment of excrescent vowels across the world’s languages.

<sup>20</sup>This .wav file is available here: <https://github.com/ryankasak/SCLC41/blob/main/NT2.wav>.

<sup>21</sup>The Mandan word for dog literally means ‘horse that eats feces.’ Many other Siouan languages likewise have some lexical connection between dogs and horses: e.g., Lakota *šųŋkawakħąŋ* ‘horse’ (lit. ‘sacred dog’).

Figure 7: Excerpt 2 from “No Tongue”



### 4.3. Summary

Previous descriptions of Siouan grammars have rarely addressed how prosody is treated or the nuances of how the information structure of a language is treated by the prosody or the syntax of said language. The most extensive treatment of prosody and intonation is found in Mirzayan’s (2010) dissertation on these aspects of Lakota grammar. Other discussions of information structure have largely been relegated to describing various morphological formatives as focus markers, topic markers, or topicalization markers with little to no description of the conditions under which a speaker uses them or whether there are situations where their use would be obligatory or even proscribed.

All previous studies on Mandan that involve instrumentation like in Kasak & Lundquist (2019) or Kasak (2019) focus on word-level phonological phenomena rather than the interface of pragmatics and prosody. The six examples of Mandan above focus on looking at the behavior of F0 as an attempt to investigate whether there are certain prosodic markers to indicate focus or topics. This section has involved description of what the data show, rather than the implications of the data. A discussion of these findings appears in §5 below.

## 5. Discussion of prominence marking

Six different excerpts from the first five minutes of two Mandan narratives have been examined above in §4. Several patterns regarding the prosodic treatment of prominence marking with respect to information structure emerge. First and foremost, there is a strong tendency to move topicalized elements to the left periphery of an utterance, as well as to shift an element that acts as a topic of reminding the listener about a fact to the right edge of an utterance. These topics did not necessarily bear the topic marker *=na*, either.



When we look at the kinds of topics that appear in the left periphery, we see several patterns as they pertain to the prosody of Mandan. Firstly, adverbial and nominal elements in the left periphery of an utterance have much higher F0 peaks than the matrix verb or the matrix verb plus a subordinated verb. In cases where there are no adverbial or nominal elements that precede the verb, as we see in (19), the verb takes on a high F0 peak that is comparable to the non-verbal elements heretofore discussed. We can therefore surmise that there must be some kind of left boundary tone for certain intonations in Mandan that are causing this tendency to have very high F0 at the onset of an utterance. This boundary tone seems to be associated with intonational phrases rather than the overall utterance itself, as we have two clauses in a single utterance in (16), and we see the expected high F0 peaks on the adverbial and nominal elements in the left periphery of the first clause, as well as a high F0 peak again on the nominal in the left periphery of the second clause.<sup>22</sup>

When multiple elements appear in the left periphery, like adverbials or topicalized nominals, both elements have similar high F0 peaks. This F0 behavior reinforces the notion that both of these elements are kinds of topicalized elements, since both *máxha* ‘once’ and *numá’keena* ‘a man’ in (16) with Figure 3 experience high F0 peaks while the verb *ó’rak* ‘be’ has the expected low F0 for the end of a clause or utterance. We see a version of this F0 distribution in (14) with Figure 1, where again we have multiple elements in the left periphery: *hiré* ‘now’ and *hókeena* ‘a story.’ The adverbials discussed here each have their own intonational phrase, which accounts for why they have such high F0 values when compared to following verbs. However, when compared to the nominal that follows these adverbials, the nominal elements bearing the topic marker =*na* both appear to have marginally higher peak F0 values than the adverbials do.

Elements that have been shifted to the right periphery have a similar F0 behavior, such as the postposed direct object *hókere* ‘this story’ in (15) with Figure 2 and the postposed subject *minísweeruteena* ‘the dog’ in (19) with Figure 7. In both of these examples, there is a nominal element that follows what should be an utterance-final verb, given the fact that Mandan has a default SOV word order. We have seen in §4.2 that there is a strong process of declination in Mandan, and that utterance-final verbs universally have very low F0 throughout. In these two instances, however, there is a nominal element that serves as a reminder of a familiar topic that appears in utterance-final position. Contrary to the strong drop in F0 we have seen on verbs, we see a resumption of high F0 values that overlap with the lexical stress of the postposed word. There is no discernable difference in the manifestation of F0 for a word bearing the topic marker =*na* like in (19) versus the word that lacks the =*na* marker in (15).

One of the examples examined in §4.2 has an utterance-initial nominal that appears with the topic marker =*na*: (18) in Figure 6. The subject *mí’ti xténa* ‘a big village’ exhibits the expected high F0 peak, though not on the word bearing the =*na*, but on the head of the overall noun phrase, *mí’ti* ‘village.’ There does not seem to be a correlation between =*na* and whether a lexical item takes a focus intonation. Likewise, it is not obvious whether a construction like the one in (18) is prosodically different from a sentence that begins with a nominal lacking the topic marker =*na*.

<sup>22</sup>I adopt the notion of the prosodic hierarchy per Nespor & Vogel (1986), Beckman & Pierrehumbert (1986b), Selkirk (1986, 2011), *inter alios*, where the domain of the utterance (Utt) can consist of one or more intonational phrases (tP), which in turn are made up of phonological phrases (φP), which contain prosodic words (ω), which are made up of feet (Ft), which are divided up into syllables (σ), which can be decomposed into morae (μ). Different phonological phenomena can have a sensitivity to one or more kinds of domain boundaries within this prosodic hierarchy. See the aforementioned authors for a more thorough explanation of this notion.

This topic is introducing new information into the discourse, which makes it categorizable as a kind of aboutness-shift topic as discussed in §2.2.1. There does not seem to be a difference in the prosody of an aboutness-shift topic versus any other element that happens to be the first element of an utterance or intonational phrase.

The sole instance of a possible focused element in the data analyzed for this study is found in (17), represented in Figures 4 and 5. While going through the audio for this narrative, I was immediately struck by how much different the word *kíikini'sih* ‘to really gamble’ was to my ears and how it initially looked to have a drastically higher F0 than anything else I have observed in going through the data for either narrative. However, there is conflicting information being given by Praat itself and the Praat script used in this study. As mentioned above in §4.2 the very fact that there was such an extreme octave jump involved in this word could actually be nullified by the algorithm used by the Praat script to track the course of the F0 over the course of the token. The monumentally high formant values that shot up and quickly came back down on the first syllable of the word *kíikini'sih* could have been treated as a set of outliers and smoothed out by the algorithm of the script.

## 6. Conclusion

Throughout the work presented here, I have had three over-arching goals stated in (1). The first of these goals was to examine previous literature on topic- and focus-marking in Mandan. I have done so by looking at how the issue of topic- and focus-marking has been treated in other Siouan languages in §2 and then looking at what those who have worked on Mandan have said about this question in §3. Overall, the only discussion of information structure in Mandan has revolved around the mention of the formative =*na*. This formative is referred to by different nomenclature by different authors, but I establish here that it must truly be a topic marker and not a focus marker or a topicalization marker, given the fact that there are no pitch patterns that would equate to focus intonation and that the topic marker can appear on elements that are not in the left periphery of a clause (i.e., they have not been topicalized). We do not consistently see high or some other kind of pitch contour associated with any element bearing =*na* in the data presented here. Therefore, we are left with the conclusion that =*na* is definitely a topic marker, as we have excluded the other two possibilities.

The secondary goal of the work herein is to compare and contrast previous literature on topic- and focus-marking in Mandan with actual audio recordings of L1 Mandan speakers to evaluate the veracity of previous claims as to the status of the topic marker =*na*. Using Praat, I employed five instances that involve topics and one that possibly involves focus. The Praat pictures generated by Elvira-García’s (2017) Praat script yielded readily analyzable figures that show the behavior of F0 with respect to words in the periphery of a sentence, both left and right.<sup>23</sup> These figures illustrate the fact that elements bearing =*na* are associated with higher F0 peaks, even when appearing utterance-finally when declination would otherwise depress the F0 values as phonation began to cease. Clearly, some kind of prosodic prominence is being bestowed upon elements bearing =*na*, but there is not sufficient evidence from this study to demonstrate that there are unique tunes for different kinds of topics in Mandan.

<sup>23</sup>An earlier version of this script was also employed in the analysis of Hidatsa not having lexical pitch accent in Boyle et al. (2016).

In Frascarelli & Hinterhölzl (2007), the authors note that both Italian and German have different tunes for different topics, and as such, it is worth exploring the Mandan corpus further to see if similar observations can be made. These authors argue further that the three different intonational contours are reflective of three different syntactic positions occupied in the left periphery by these topic. More work is needed on Mandan to determine if the same conclusion can be drawn about it. There is a marginally higher peak F0 in constructions involving an adverbial that is followed by a nominal bearing the topic marker =*na*, but this study is not conclusive in its findings about whether there is a generalized H\*+L topic intonation used across the different topic types. Furthermore, it is not altogether obvious that the adverbials that we have seen in the left periphery in §4.2 are not themselves a kind of topic. If this is the case, then perhaps the temporal adverbials act as contrastive topics while the topics bearing =*na* that follow them are aboutness-shift topics. The right dislocated topics discussed here all are familiar topics. If this analysis holds, then we have at least some empirical basis to state that there is some order in which topics can co-occur, where contrast topics must precede aboutness-shift topics. It is not clear yet how familiar topics fit into this ordering, and further work is needed to resolve this issue.

The final goal of the work here as laid out in 1 is to provide insight into how an understanding of this aspect of Mandan prosody can be used in Mandan language instruction. The loss of Mr. Edwin Benson in 2016 means that there are no longer any remaining L1 speakers of this language. There are still those on Fort Berthold who are working to preserve and promote the Mandan language, and while learning vocabulary and figuring out verb paradigms are all vital components of the language learning process, learning to put words together in a “Mandan way,” having prosody that reflects speech that *sounds* like how an L1 Mandan speaker would say it is likewise one of the many goals towards fluency. This need to acquire the prosody of an L2 is no different for those learning any other language. More work is needed on this issue, but what I have discovered in this study is that Mandan syntax and information structure are deeply intertwined and that word order is not as rigid as described elsewhere (Mixco 1997:46). Mandan is far more flexible in its word order than previously thought, and additional work is needed to see if the generalizations uncovered here are borne out throughout the corpus in a meaningful way, or if there are other patterns of topic-marking yet to be described.

Some future avenues of research on this matter will undoubtedly need to involve a larger amount of analyzed audio. This process is already underway for the narratives “Blackwolf” and “No Tongue,” but I have many hours of Mandan speech that needs to be transcribed or retranscribed plus annotated in Praat. There are also, no doubt, countless hours of recordings in the possession of the Nueta Language Initiative in Twin Buttes or archived at Nueta Hidatsa Sahnish College in New Town, plus recordings of spoken or sung Mandan in the possession of family members in and around Fort Berthold. Other issues that have yet to be addressed involve other information structure morphology attested in Mandan, such as the formative =*nu*, which Mixco (1997:42) glosses as ‘the aforementioned’ or ‘the former’.

(20) Use of ‘the aforementioned’ in the corpus

<i>róo</i>	<i>numá’kaakikereseena</i>	<i>súkeenus</i>
roo	ruwá’k-aaki=krE=s=ee=rą	suk=ee=rų=s
DEM.MID	person-COLL=3PL=DEF=DEM.DIST=TOP	child=DEM.DIST=ANF=DEF

tanúma'kshikereromako'sh  
 ta-ruwá'k#shi=krE=oowák=o'sh  
 AL-man#be.good=3PL=NARR=IND.M

'these people had the **mentioned child** as their chief' (Hollow 1973b:209)

The =*nu* enclitic is very rare in the corpus, so it is not obvious if there is some stylistic choice for when to use it versus when to treat an element as a familiar topic. Further work is needed to compare the prosody of elements bearing =*nu* versus those bearing =*na* or even topics that have no morphological topic marking. In particular, more attention is needed on the ordering of enclitics in constructions featuring =*nu*. The definite marker =*s* is almost universally found preceding the distal demonstrative =*ee* when =*nu* is present, but we see an inversion of this order in the example above in (20).

The unfortunate truth about the work presented here is that each “answer” I have for some issue I investigate, multiple additional avenues of inquiry spring forth. Ultimately, this paper has aimed to address this question: “what can we tell about the prosody of a language that has no L1 speakers using only older audio recordings?” To that question, I can provide the pithy response: “quite a bit.” The data examined here were sufficient to formulate an understanding of the purpose of the formative =*na* in Mandan. The audio recordings, even the limited analysis I have been able to accomplish, reveal that there are likely intonational patterns as they relate to multiple topics present in a sentence versus non-topic subjects or direct objects. Finally, I find that the correlates of focus marking in Mandan are not clear and may be marked by more than mere pitch, and that additional analysis must happen that perhaps takes intensity and other cues into consideration. This study was never meant to provide a conclusive, all-encompassing answer to the issue of topic and focus in Mandan, but it does demonstrate that the well is deeper than we originally thought and that there is more about prosody and the interaction between pragmatics and morphology in Mandan to be described.

## References

- Baker, Paul & Sibonile Ellece. 2011. *Key terms in discourse analysis*. New York, NY: Continuum.
- Beckman, Mary & Janet B Pierrehumbert. 1986a. Japanese prosodic phrasing and intonation synthesis. In Alan W. Biermann (ed.), *Proceedings of the 24th Annual Meeting of the Association for Computational Linguistics*, 136–144. New York, NY: Association for Computational Linguistics.
- Beckman, Mary E. & Janet B. Pierrehumbert. 1986b. Intonational structure in Japanese and English. *Phonology Yearbook* 3. 255–309.
- Beeching, Kate & Ulrich Detges. 2014. Introduction. In Kate Beeching & Ulrich Detges (eds.), *Discourse functions at the left and right periphery: Crosslinguistic investigations of language use and language change* (Studies in Pragmatics 12), 1–23.
- Boas, Franz & Ella Deloria. 1941. *Dakota grammar*. Washington, DC: U.S. Government Printing Office.
- Boersma, Paul & David Weenink. 2020. *Praat: Doing phonetics by computer*. [Computer program]. Version 6.1.27, retrieved 13 October 2020 from <http://praat.org>.

- Boyle, John P. 2007. *Hidatsa morpho-syntax and clause structure*. Chicago, IL: University of Chicago dissertation.
- Boyle, John P., Ryan Kasak, Sarah Lundquist, Armik Mirzayan, Jonnia Torres & Brittany Williams. 2016. *A preliminary study on accentuation in Hidatsa*. Paper presented at the annual meeting of Society for the Studies of Indigenous Languages of the Americas at the Linguistic Society of America annual meeting. Washington, DC.
- Coberly, Mary. 1979. A text analysis and brief grammatical sketch based on ‘Trickster challenges the Buffalo’: A Mandan text collected by Edward Kennard. *Colorado Research in Linguistics* 8. 19–94.
- Collette, Vincent. 2019. Nakoda “intensifier” *-ǰ*. In Ryan M. Kasak (ed.), *Proceedings of the 38th Siouan and Caddoan Languages Conference*, 79–97. Chicago, IL: Northeastern Illinois University Linguistics Department.
- Dorsey, James Owen & John R. Swanton. 1912. *A dictionary of the Biloxi and Ofo languages* (Smithsonian Institution, Bureau of American Ethnology, Bulletin 47). Washington, DC: United States Government Printing Office.
- Elvira-García, Wendy. 2017. *Create pictures with tiers*. [Praat script]. Version 4.4, retrieved 15 May 2017 from [https://github.com/wendyelviragarcia/create\\_pictures](https://github.com/wendyelviragarcia/create_pictures).
- Fant, Lars, Inge Bartning & Rakel Österberg. 2021. The left and right periphery in native and non-native speech – A comparative study between French L1/L2, Spanish L1/L2 and Swedish L1. *International Review of Applied Linguistics in Language Teaching* 59(1). 87–120.
- Frascarelli, Mara. 2007. Subjects, topics and the interpretation of referential *pro*: An interface approach to the linking of (null) pronouns. *Natural Language & Linguistic Theory* 25(4). 691–734.
- Frascarelli, Mara. 2012. The interpretation of discourse categories: Cartography for a crash-proof syntax. In Valentina Bianchi & Cristiano Chesì (eds.), *Enjoy linguistics! Papers offered to Luigi Rizzi on the occasion of his 60th birthday*, 180–191. Siena, Italy: Centro Interdipartimentale de Studi Cognitivi sul Linguaggio (CISCL) Press.
- Frascarelli, Mara & Roland Hinterhölzl. 2007. Types of topics in German and Italian. In Kerstin Schwabe & Susanne Winkler (eds.), *On information structure, meaning and form: Generalizations across languages*, 87–116.
- Gordon, Binah T. 2016. Information-structural variations in Siouan languages. In Catherine Rudin & Binah T. Gordon (eds.), *Advances in the study of Siouan languages and linguistics* (Studies in Diversity Linguistics 10), 393–423. Berlin, Germany: Language Science Press.
- Hall, Nancy. 2006. Cross-linguistic patterns of vowel intrusion. *Phonology* 23(3). 387–429.
- Helmbrecht, Johannes & Christian Lehmann (eds.). 2006. *Hocqk–English/English–Hocqk learner’s dictionary*. 2nd edn. Erfurt, Germany: Arbeitspapiere des Seminars für Sprachwissenschaft der Universität Erfurt.
- Hirst, Daniel & Albert Di Cristo (eds.). 1998. *Intonation systems: A survey of twenty languages*. Cambridge, UK: Cambridge University Press.
- Hollow, Robert C. 1970. *A Mandan dictionary*. Berkeley, CA: University of California, Berkeley dissertation.
- Hollow, Robert C. 1973a. Mandan texts. Box 5: Robert C. Hollow materials. (A set of Edward Kennard’s (1933–1934) 22 texts re-elicited, transcribed, and translated by Robert C. Hollow held at the North Dakota State Historical Society.)

- Hollow, Robert C. 1973b. Mandan texts. Box 3: Robert C. Hollow materials. (A set of 22 texts recorded, transcribed, and translated by Robert C. Hollow held at the North Dakota State Historical Society.)
- Ingham, Bruce. 2003. *Lakota*. Munich, Germany: LINCOM Europa.
- Kasak, Ryan M. 2019. *Affix ordering and templatic morphology in Mandan*. New Haven, CT: Yale University dissertation.
- Kasak, Ryan M. & Sarah Lundquist. 2019. Nasal harmony in Hoocąk and Mandan. In Ryan M. Kasak (ed.), *Proceedings of the 38th Siouan and Caddoan Languages Conference*, 99–122. Chicago, IL: Northeastern Illinois University Linguistics Department.
- Kaufman, David V. 2008. Focality and topicality marking in Biloxi. *Kansas Working Papers in Linguistics* 30. 150–158.
- Kennard, Edward. 1934. *Mandan folkloristic texts*. (Collection of 28 narratives elicited and transcribed by Edward Kennard held at the American Philosophical Society.)
- Kennard, Edward. 1936. Mandan grammar. *International Journal of American Linguistics* 9(1). 1–43.
- Ladd, D. Robert. 1984. English compound stress. In Dafydd Gibbon & Helmut Richter (eds.), *Intonation, accent and rhythm: Studies in discourse phonology*, 253–266. New York, NY: Walter de Gruyter.
- Ladd, D. Robert. 2008. *Intonational phonology*. 2nd edn. Cambridge, UK: Cambridge University Press.
- Larson, Rory. 2009. *Pronunciation and prosody in Omaha*. Paper presented at the 26th Siouan and Caddoan Languages Conference. Lincoln, NE: University of Nebraska–Lincoln.
- Lee, Yong-cheol. 2015. *Prosodic focus within and across languages*. Philadelphia, PA: University of Pennsylvania dissertation.
- Lyons, John. 1982. Deixis and subjectivity: *loquor, ergo sum?* In Robert J. Jarvella & Wolfgang Klein (eds.), *Speech, place, and action: Studies in deixis and related topics*, 101–124. New York, NY: John Wiley & Sons.
- May, Lillian, Krista Byers-Heilein, Judit Gervain & Janet F. Werker. 2011. Language and the newborn brain: Does prenatal language experience shape the neonate neural response to speech? *Frontiers in Psychology* 2(222). 1–9.
- Mirzayan, Armik. 2010. *Lakota intonation and prosody*. Boulder, CO: University of Colorado, Boulder dissertation.
- Mixco, Mauricio. 1997. *Mandan*. Munich, Germany: LINCOM Europa.
- Nespor, Marina & Irene Vogel. 1986. *Prosodic phonology*. Dordrecht, Netherlands: Foris.
- Oliverio, Giulia R. M. 1996. *A grammar of Tutelo*. Lawrence, KS: University of Kansas dissertation.
- Pierrehumbert, Janet B. 1980. *The phonology and phonetics of English intonation*. Cambridge, MA: Massachusetts Institute of Technology dissertation.
- Pierrehumbert, Janet B. & Julia Hirschberg. 1990. The meaning of intonational contours in the interpretation of discourse. In Peter R. Cohen, Jerry Morgan & Martha E. Pollack (eds.), *Intentions in communications*, 271–311. Cambridge, MA: MIT Press.
- Ramus, Franck. 2002. Language discrimination by newborns: Teasing apart phonotactic, rhythmic, and intonational cues. *Annual Review of Language Acquisition* 2(1). 85–115.
- Rankin, Robert L., Richard T. Carter, A. Wesley Jones, John E. Koontz, David S. Rood & Iren Hartmann (eds.). 2015. *Comparative Siouan dictionary*. (Available online at <http://csd.clld.org/>). Leipzig, Germany: Max Planck Institute for Evolutionary Anthropology.

- Reinhart, Tanya. 1981. Pragmatics and linguistics: An analysis of sentence topics. *Philosophica* 27(1). 53–94.
- Rizzi, Luigi. 1997. The fine structure of the left periphery. In Liliane Haegeman (ed.), *Elements of grammar: Handbook of Generative Syntax*, 281–337. Dordrecht, Netherlands: Kluwer.
- Rizzi, Luigi. 2001. On the position “Int(errogative)” in the left periphery of the clause. In Guglielmo Cinque & Giampaolo Salvi (eds.), *Current studies in Italian syntax: Essays offered to Lorenzo Renzi* (North-Holland Linguistic Series: Linguistics Variations 59), 287–296. New York, NY: Elsevier.
- Ross, John Robert. 1967. *Constraints on variables in syntax*. Cambridge, MA: MIT dissertation.
- Ross, John Robert. 1986. *Infinite syntax!* Norwood, NJ: Ablex Publishing.
- Selkirk, Elizabeth O. 1986. On derived domains in sentence phonology. *Phonology Yearbook* 3. 371–405.
- Selkirk, Elizabeth O. 2011. The syntax-phonology interface. In John Goldsmith, Jason Riggle & Alan C. Yu (eds.), *The handbook of phonological theory*, 2nd edn., 435–484. Hoboken, NJ: Wiley Blackwell.
- Traugott, Elizabeth C. & Richard B. Dasher. 2002. *Regularity in semantic change*. Cambridge, UK: Cambridge University Press.
- Trechter, Sarah. 2012. In the words of our ancestors: The Mandan language and oral traditions preservation project. (Transcriptions that accompany two DVDs of Edwin Benson relaying traditional Mandan narratives.)
- Wolwengrey, Arok. 1991. A marker of focus in Mandan discourse. In Frances Ingemann (ed.), *The proceedings of the 1990 Mid-America Linguistics Conference and Conference of Siouan-Caddoan Languages*, 583–598. Lawrence, KS: University of Kansas.
- Xu, Yi, Ching X. Xu & Xuejing Sun. 2005. On the temporal domain of focus. In *Proceedings of the International Conference on Speech Prosody 2004*, 81–84. Nara, Japan: ISCA.
- Yang, Chunsheng. 2016. *The acquisition of L2 Mandarin prosody* (Bilingual Processing and Acquisition 1). Philadelphia, PA: John Benjamins.