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**ANALYZING NAVAJO DISCOURSE:  
INVESTIGATING FORM AND FUNCTION OF  
INTONATIONAL UNITS IN  
REFERENTIAL DISCOURSE**

**by**

**MICHELE KISER**

DISSERTATION

Submitted in Partial Fulfillment of the  
Requirements for the Degree of

**Doctor of Philosophy**

**Linguistics**

The University of New Mexico  
Albuquerque, New Mexico

**July 2014**

## DEDICATION

I dedicate this work to shimásání, Anita Arviso, dóó shiché'é yázhí, Melanie Rae Kiser,  
both of whom inspired me in their own special way.

Ahéhee'.

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**Analyzing Navajo Discourse:  
Investigating the Form and Function of Intonation Units in Referential Discourse**

By

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**ABSTRACT**

Extensive research has been conducted on the Navajo verb complex (prefix morphology) and specific constructions (i.e. relative clause structure, subject-object-inversion), but to date the proposed establishment of a method to analyze actual discourse from a functional or usage based approach has not occurred. The goal of this study is twofold. The first is to establish a method to analyze spoken Navajo using the Intonation Units (IU) as a measure as it occurs in natural, uninterrupted speech, according to the parameters outlined by Chafe (1994), and show the influence of the morphological complexity of Navajo on the size of the IU. Secondly, analyzing the function of the IU within discourse from the ‘intonation-as-information-flow’ approach (Couper-Kuhlen 2005) including deliberate manipulation by speakers in a sequential manner and the framing in which story threads are woven together expressing various points of view within a single text. IUs (Chafe 1994, DuBois et al. 1993) are portions of speech occurring under a single prosodic contour that reveal how speakers naturally segment their speech. Prosodic structure, including the suprasegmental phonetic cues of intonation, pitch, rhythm, duration and pauses, has been studied in many languages, but

to date, there has not been an analysis of Navajo that has attempted to define an IU and its function in discourse. The hope is the research presented will leave the reader with a better understanding of communicative process, how syntactic structural features are interrelated to cognitive constraints and interlocutor motivation which ultimately may influence and impact actual performance which are revealed via various voices (Dinwoodie 1999) represented within a text. By proposing a unit larger than the morphologically complex verb for analysis, a specific type of clause (i.e., relative or subordinate), or even a culturally relevant structure (i.e., subject-object inversion), the desire is the results presented will both foster and aid subsequent Navajo discourse analysis studies and ultimately positively impact Navajo language education efforts.



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## List of Abbreviations

<b>IU</b>	Intonation unit
<b>GU</b>	Grammatical unit
<b>1<sup>sg</sup></b>	First person singular
<b>2<sup>nd</sup></b>	Second person singular
<b>3<sup>rd</sup></b>	Third person singular
<b>Dist./Pl.</b>	Distributive Plural
<b>S</b>	Subject
<b>Sbj</b>	Subject
<b>O</b>	Object
<b>Obj</b>	Object
<b>V</b>	Verb
<b>VP</b>	Verb Phrase
<b>N</b>	Noun
<b>NP</b>	Noun Phrase
<b>PP</b>	Postposition
<b>Adv</b>	Adverb
<b>Adj</b>	Adjective
<b>Conj</b>	Conjunction
<b>Det</b>	Determiner
<b>Cl</b>	Classifier
<b>Indef</b>	Indefinite
<b>Nom</b>	Nominalizer
<b>Enc</b>	Enclitic
<b>Past</b>	Past
<b>Part</b>	Particle
<b>Poss</b>	Possessive

<b>Peg</b>	Peg element
<b>Pos</b>	Positive
<b>Neg</b>	Negative
<b>Quan</b>	Quantifier
<b>Rel</b>	Relativizing
<b>Sub</b>	Subordinating
<b>IMP</b>	Imperfective Mode
<b>PERF</b>	Perfective Mode
<b>FUT</b>	Future Mode
<b>yi-PROG</b>	yi-Progressive Mode
<b>US</b>	Usitative Mode
<b>IT</b>	Iterative Mode
<b>OPT</b>	Optative Mode
<b>CONT</b>	Continuous Aspect
<b>INCEP</b>	Inceptive Aspect
<b>SEM</b>	Semelfactive Aspect
<b>SRO</b>	Solid Round Object
<b>OC</b>	Open Container
<b>FFO</b>	Flat Flexible Object
<b>ToBi</b>	Tones and Breaks Indices
<b>PFV</b>	Perfective Verb
<b>IPFV</b>	Imperfective Verb

# Chapter 1

## 1.1 Introduction

The objective of this study is to provide a method for analyzing discourse in Navajo which is larger than the verb complex and specific syntactic constructions (i.e., relative clause and subject-object inversion) by using the Intonation Unit (IU) (Chafe 1994) as a measure, which may promote the analysis of discourse of Navajo among academia but also facilitate understanding of the speech process beginning with the mental aspect of conception to the communicative act of performance.

It is the hope this study will potentially aid educators in teaching their heritage language by promoting the examination of how language is currently taught and the results, when examined, may impact the pedagogical practices to ensure success in the promotion of language education and ultimately support language preservation efforts.

## 1.2 Overview of the Chapter

In this chapter, I will provide background information on the Navajo language, including a brief overview of the verb complex and modes based on Young (2000) *The Navajo Verb System: An Overview* and Young and Morgan (1987) *The Navajo Language: A Grammar and Colloquial Dictionary*.

Since one of the aims is to delimitate what constitutes an IU in Navajo, as it is defined by the amount of information contained within these chunks of speech, which have also been labeled tone grouping (Gumperz 1982) and verse (Jakobson 1960), an examination of what constitutes a word in a polysynthetic language is warranted.

Additionally, Navajo being a tonal language, the role of tone will be defined as it is related to both its lexical and grammatical function and examples will be provided as a

point of clarification so, no confusion will exist between tone and pitch in Navajo as it relates to how it functions in Navajo, including its relationship to IUs.

I will also review other literature of the research conducted on intonation in Navajo and other Athabaskan languages to highlight the fact that the vast majority of those studies are from a purely phonetic and phonological standpoint most often associated with formal linguistic theory—where data is analyzed with respect to amplitude, or measurable audible changes in fundamental frequency.

While the prior studies have furthered the overall knowledge of the Navajo language, they are in contrast to the direction of this work which is based on a functional approach which will serve to both clarify and reinforce the different method I am employing in this body of work.

I will emphasize how my study is similar to other usage-based cross-linguistic literature on IUs based on the criterion set forth by Chafe (1994). The objective of this study then is to provide an approach for analyzing discourse in Navajo by proposing not only a sensible and tangible, but understandable unit of speech to examine with regards to structure and content. Furthermore, the examination of these discrete chunks of speech will include exploring the multiple functions of these units related to semantic signaling by speakers for various pragmatic purposes.

It is the desire that the method proposed will not only provide an approach for analyzing spoken Navajo thereby promoting discourse analysis of Navajo in academia but also facilitating understanding of the speech process in toto from the germination of thought to the actual utterance, whereby each one is both reciprocating, influencing the other, which may promote both reflection and discussion among educators that may lead

to the development of different approaches and strategies in their efforts to promote, teach and revitalize their heritage language.

### **1.3 The Navajo Language**

Navajo is a member of the Southwestern/Apachean branch of the Athabaskan language family spoken in the southwestern United States. In addition to having the largest reservation among indigenous tribes with more than 27,000 square miles, it is also the largest tribe in the United States with 308,013 people identifying as Navajo according to the 2010 U.S. Census.

Those most recent census figures also reveal that there are roughly 170,000 people who reportedly speak Navajo, of which less than 5%, or approximately 7,600 people, were identified as being only monolingual speakers of the language (<https://www.census.gov/hhes/socdemo/language/data>).<sup>1</sup> Additionally, the issue of what it means to ‘speak Navajo’ is a wholly subjective assessment with no real criteria. The perception of what it means to be a Navajo speaker also has not been adequately addressed in the literature to date, and there has not been a set standard or objective description employed in any linguistic literature outlining what is meant when one professes to be a “speaker” of a language.

#### **1.3.1 Speaker Fluency and Proficiency**

There are several factors which may have an impact on fluency that should be acknowledged. Among the Navajos there is a long history of the distrust of the education system provided by the Bureau of Indian Affairs due to the sometimes forcible removal

---

<sup>1</sup> It should be recognized that speaker numbers are largely self-reported, although participation in the census is mandated by law, 100% participation is not guaranteed, so the reliability of the numbers of speakers who claim to speak Navajo cannot be verified unequivocally.

of children from their family home, and the blatant mistreatment of children at boarding schools; families often resisted sending their children to school as late as the 1940s.

Taking these factors into consideration it is reasonable to suggest that speakers over 60 years of age would have learned Navajo as their first language and are very comfortable, if not most comfortable, speaking Navajo. They would be the most conversationally proficient and polished in their delivery and would be considered very proficient in the language or ‘fluent’.

Yet, there are others who learned Navajo simultaneously with English, potentially making them ‘balanced bilinguals’, meaning they are equally proficient in both Navajo and English.

Moreover, there is at least one other potential group of adult speakers who learned Navajo as a second language and are somewhat proficient, but may be more comfortable using English, and could be labeled ‘conversationally fluent’.

The notions of what is meant by linguistic fluency and proficiency needs to be kept in mind as it relates to what speakers say and how they say it for it may affect their actual performance—most notably due to the influence of English which could potentially affect both how they structure their discourse and their overall performance, including speech anomalies such as disfluencies. The issue of fluency and linguistic proficiency will be further addressed in Chapters 2, 4 and 5.

#### **1.4. Characteristics of Navajo**

The Navajo language is classified as a polysynthetic, verb-final language. It also exhibits extensive and the closely related characteristics of polypersonalism and pronominalization, all of which will be briefly explained in the following sections.

### **1.4.1 Polysynthesis**

Navajo, as a polysynthetic language is known for its morphological complexity and extensive use of affixes which can be both inflectional, marking for person and number, in addition to having derivational functions, related to the formation of words. One of the characteristics exhibited by polysynthetic languages is the potential for speakers to use multiple affixes in word formation, resulting in a high morpheme to word ratio, which then culminates in the fusion of multiple morphemes within a single word, which is a very common occurrence in Navajo.

In many instances, “as prefixes are added they change form due to phonological rules which makes it challenging to identify the original prefixes” (Williams 2009: 57). Additionally Mithun (1999: 38) notes while speakers may understand the surface form of words that are uttered, they are “often not conscious of the meanings of individual morphemes nor of the boundaries between morphemes”.

In making the transformation from the deep or underlying structure to the surface structure, which is the actual utterance produced by a speaker, the prefixes often fuse together and in doing so undergo, sometime significant, morphophonemic changes, which result in compelling phonological reduction, culminating in a single meaningful unit that attaches to a verb stem to form a word.

### **1.4.2 Verb-Final Language**

In addition, Navajo is a verb-final language, meaning that structurally the verb is the final element in a sentence in which a subject and direct object are overtly stated exhibiting a canonical word order of Subject-Object-Verb (SOV) (Young and Morgan

1987: 205) as seen in example (1) below in which the constituents are labeled both lexically and grammatically followed by the English translation.

- (1) *Ashkii at'ééd yizts'qs.*  
 NP NP V  
 S O V  
 "The boy kissed the girl."

The verb in (1) could be spoken by itself in context and there would be no ambiguity because the verb contains all the information necessary at the sentence level including grammatical categories (i.e., argument markers).

Example (2) shows that when examining the internal composition of verbs that function as stand-alone words, the verb stem, which expresses the essence of meaning, is the final element in the construction. Additionally, subject and object prefixes, when attached to the verb, the constituent order changes to Object-Subject-Verb (OSV). However, the verb in the example below lacks an audible subject pronoun, which is not uncommon in certain constructions in Navajo.

- (2) *Yiztał.*
- |                     |           |                  |                     |    |           |
|---------------------|-----------|------------------|---------------------|----|-----------|
| 4 <sup>2</sup>      | 7         |                  | 8                   | 9  | 10        |
| yi-                 | si-       | /í- <sup>3</sup> | Ø                   | Ø  | -tał      |
| 3 <sup>sg</sup> Obj | Mode-PERF | PERF-í           | 3 <sup>sg</sup> Sbj | Cl | kick-PERF |
- "He/she kicked it".

---

<sup>2</sup> The numbering of the morphemes is in accordance with the Young and Morgan verb template. (1987: 37-3), cf. Table 1.

<sup>3</sup> The /í-/ is the Perfective morpheme, which does not have a number in the Young and Morgan Paradigmatic Verb Template. However, Kari (1974) and Stanley (1969) assigned /í-/ a number in their version of the Navajo Verb Template. In this instance /í-/ does not manifest in the final form of the verb although it does appear in other 3<sup>sg</sup> perfective constructions as seen in (4).



It is commonplace for third person subjects within Navajo verbs to be unmarked and not realized by an audible morpheme. For parsing purposes third person singular is regularly marked using the null sign, as an acknowledgement that the lack of a morpheme in itself is a meaningful, non-audible cue that actually serves to clarify meaning.

However, an audible subject pronoun is contained within the verb in (3).

(3) *Yiishtał.*

4	6c	7	8	9	10
yi-	yi-	Ø	sh	Ø	-tał
3 <sup>sg</sup> Obj	Aspect-Sem	Mode-IMP	3 <sup>sg</sup> Sbj	Cl	kick-IMP

“I kicked it once.”

Additionally, many verbs do not have an audible classifier. In those instances the null sign is also to recognize the lack of a morpheme in the structure.

### 1.4.3 Polypersonalism

It is also the norm rather than the exception for a polysynthetic language like Navajo to have arguments marked on the verb as in examples (1) and (2). This characteristic of polypersonalism allows for the construction of “word-sentences,” whereby a single verb word can convey the equivalent information of a complete multi-word sentence in English without an overtly attached NP.

Tuttle (2008: 440-449) believes a relationship exists between syntax and the word, in which syntax exists both word-internally and externally, with the difficulty being the determination of the boundary between syntax and morphology. Hale (2000: 58) proposed the Navajo verb is “fundamentally a syntactic construction, not merely a composite derived by placing morphemes in a linear arrangement... independent of syntactic relationships.” In other words the many and varied elements contained within

the verb have “structural and selectional relations to another” (i.e., subject and verb and object and verb).

Example (4), like that of (2) and (3) illustrate stand-alone transitive verbs which require two arguments for agreement. That condition is met with a marked direct object, which also serves as the complement of the verb. As the coding reveals, the verb contains all the grammatical categories necessary and conveys the information contained within a complete sentence in English as evidenced by the translation.

(4) *Nisétał.*

4	7		8	9	10
ni-	si	í-	sh-	Ø	-tał
2 <sup>nd</sup> sg Obj	Mode-PERF	PERF-í	1 <sup>st</sup> sb Sbj	Cl	kick-PERF

“I kicked you”

Example (5) is another instance revealing the close relationship of a verb to its arguments by reconstructing the sentence and presenting it with overtly stated external pronouns, which are already contained within the verb. The word order is always SOV; the overt subject and object pronouns appearance makes the word order transparent.

(5) *(Shí) (ni) nisétał.*

		4	7		8	9	10
Shí-	ni-	ni-	si-	í-	sh-	Ø	-tał
1 <sup>sg</sup> Sub	2 <sup>sg</sup> Obj	2 <sup>sg</sup> Obj	Mode-PERF	PERF-í	1 <sup>sg</sup> Sbj	Cl	kick-PERF

“(I) (you) you I kicked.”

A speaker may produce a sentence in this manner if the intent were for some type of emphasis or clarification, otherwise it would be redundant as indicated by the English translation given below, since all the relevant information of subject and direct object are

already inside the verb, and reiterating the pronouns is superfluous and unnecessary. The word for word translation into English highlights the redundancy of the overtly stated pronoun morphemes.

#### 1.4.4 Pronominalization

Pronominalization is another characteristic of Navajo and polysynthetic languages which is closely related to that of polypersonalism. This means verbs “always have pronominal arguments attached to them,” (Faltz 1998: 38). As with examples (3) though (5), example (6) reveals the relation of constituents in terms of the OSV constituent order marked on the verb.

(6) *Kingóó ninislóós.*

		4	7	8	9	10
Kin	góó	ni	ni	sh-	Ø	-lóós
town-N	toward-ENC	2 <sup>sg</sup> Obj	Mode-IMP	1 <sup>sg</sup> Sbj	Cl	lead-IMP

“I am leading you toward town.”

Remember the word order at the sentence level is in contrast to that of the constituent order at the word level. Navajo sentences exhibit a SOV word order with arguments marked on the verb, thereby demonstrating the relationship of the existence of syntax both inside and outside the verb (Tuttle 2008, Hale 2000), as illustrated in the example below.

(7) *Hastiin ǰǰ’ yiztał.*  
           S       O           V

		4	7	8	9	10
Hastiin	ǰǰ’	yi	si-	/-í-/	Ø	Ø
man	horse	3 <sup>sg</sup> Obj	Mode-PERF	PERF-í	3 <sup>sg</sup> Sbj	Cl
						-tał
						kick-PERF

“The man kicked the horse.”

## 1.5 Navajo Verb Structure

As the previous sections have highlighted, the verb is central to the Navajo language. It is comprised of a verb stem which “includes the general and often abstract meaning expressed by the root” and can also include “essential grammatical information relating to Mode and Aspect” (Young and Morgan, 1987: 140).

In addition to being the rightmost element in a verb, stems are also monosyllabic and function as the building block for the Navajo verb to which a number of prefixes are attached and is the syllable that generally receives prominence or emphasis during production.

Prominence is widely accepted as ‘stress’ or more precisely ‘metrical stress.’ Hale, Jelinek and Willie (2003), McDonough (2002), and Kidder (2008) all claim that Navajo does not exhibit stress in terms of metrical structure because it is a ‘pronominal argument’ language with arguments appearing as part of the predicate. Furthermore, since the verb stem is phonetically prominent, due to its “rich semantic and aspectual information,” Navajo is considered as “[+rightmost]” language meaning it “is not possible for accent to be assigned on any but the rightmost morpheme” (McDonough 2002: 15-17).

Additionally, every Navajo verb must, in addition to being two syllables, have a prefix of some sort, there being a few exceptions involving irregular verbs (Faltz, 1998: 7). The prefixes, which may be as small as a single monosyllabic morpheme, a portmanteau prefix, or even a series of prefixes, are conjoined with the verb stem. Those verb prefixes have the base shape of CV (consonant + vowel) or CVC (consonant + vowel + consonant). It should be noted that the designations of CVV (consonant + vowel

+ vowel) and CVVC (consonant + vowel + vowel + consonant), are also used in order to account for the long vowels which are recognized by some as VV rather than a singular unit represented by V.

The most fundamental and meaningful Navajo verb is composed of the stem at the right edge of the word. Then, moving leftward the verb includes the classifier, subject pronoun, and mode prefixes. Additional prefixes are then added to the front end of base structure for specificity and clarification with regards to the type of action or event being discussed (i.e., derivational morphemes).

It should be noted that the sequencing of these prefix morphemes is rigid (Young and Morgan 1987: 39). The fixed nature of these prefixes is revealed in Young and Morgan’s paradigmatic verb template, which Navajo scholars often use in the analysis of verbs in order to capture all of the nuances of the meanings of the various morphemes that may be employed in the construction of a verb as seen in Table 1.

Table 1: Young and Morgan Paradigmatic Verb Template

00-0	1 A,b,c,d, and e	2	3	4	5	6 A,b, and c	7	8	9	10
Post Position	Adverbial Thematic	Iterative	“da” Plural	Direct Object	Deictic	Adverbial Thematic	Mode	Subject Pronouns	Classifier	Stem
DISJUNCT				CONJUNCT					STEM	

(Young and Morgan 1987: 37-38)

The *slot and filler* template used to parse verbs includes fifteen to seventeen prefix positions that are rigid in regard to their linear ordering (Young and Morgan 1987: 39). The various prefixes that attach to the verb can express a wide variety of concepts

such as mode and aspect, which not only define an action but can, and often do, further refine the interpretation of the action or event.

In many instances, when a single verb is spoken out loud, it is not readily apparent how many morphemes a word may actually contain in the underlying structure due to phonological rules. In making the transformation from the deep structure to the surface structure of what a speaker actually utters, the prefixes often fuse together and in doing so undergo morphophonemic changes (sometimes significant), which result in compelling phonological reduction, culminating in a single meaningful unit that attaches to a verb stem to form a word.

### **1.5.1 Mode and Aspect in Navajo**

In addition to marking for subject and object within a Navajo verb as mentioned in 1.4.2 and 1.4.3, grammatical aspect is also extensively marked. Within the structure of the Navajo verb, predictable inflectional patterns exist. These inflectional changes manifest in the various modes and aspects found in the language. Young and Morgan label mode and aspect the ‘twin features’ of the language “distinguished by prefix, stem shape or a combination of special prefix and stem shape,” (Young and Morgan 1987: 144).

There are seven distinct modes describe how an event is perceived by speakers (Young 2000) and are “that feature of the grammatical system that serves to define the manner in which a verbal action is conceived,” (Young and Morgan 1987: 144). Mode distinctions are generally signaled by changes in prefixes, specifically the portmanteau of positions 7 and 8 in addition to changes in the shape of the stem (Kari 1973: 18).

The modes as defined by Young and Morgan are briefly: Imperfective (a simple, incomplete or ongoing action/event), Perfective (a simple complete action/event), Future (prospective action/event), Usitative (an action performed customarily), and the closely related Iterative (an action performed repeatedly or habitually), Optative (expressing a wish or desire either positively or negatively by particles *laana* and *lágo* respectively followed by the verb *nisin*), and lastly Progressive (an ongoing action/event without reference to beginning or end—1987: 144-164).

Some would argue that the modes in Navajo are, in fact, aspectual categories with the exception of the Future mode, which most closely resembles what is widely accepted as tense in the truest sense, and is marked by a specific morpheme identified as either *di*<sup>-3</sup> or *di*<sup>-13</sup> (Young 2000: 22-23).

However, the term mode in Navajo is used to distinguish the similarity exhibited across the verbal paradigmatic conjugational patterns, with the most notable differences revealed as affix changes occurring word internally and most often accompanied by a stem change, except in the instance of exceedingly regular verbs that maintain the basic stem shape for the most part across all modes. What sets mode in Navajo apart from aspect is that modes cannot transect one another. For instance, it would be impossible to have an Imperfective-Perfective verb, which would in essence be an incomplete-completed action.

Of the seven modes, six of them, with the exception being the Progressive, all tend to conjugate in a similar manner. Example (8) illustrates how the verb complex transforms across modes by the changing shape of the internal prefixes and stems which are mode dependent.

(8)

A. Imperfective— incomplete action

*Gohwééh yishdlá.*

		7		8	9	10
gohwééh	yi- <sup>4</sup>	Ø		sh-	-d-	-dlá
Coffee	(peg)	Mode-IMP		1 <sup>sg</sup> Sbj	Cl	drink-IMP

“I am drinking coffee.”

B. Perfective—complete action

*Gohwééh yishdláq’.*

		7		8	9	10
gohwééh	yi-		-í-	sh-	-d-	-dláq’
Coffee		Mode-PERF	PERF-í	1 <sup>sg</sup> Sbj	Cl	drink-PERF

“I drank coffee.”

C. Future—action that will occur

*Gohwééh deeshdlíít.*

		6		7		8	9	10
gohwééh		di- <sup>3</sup> /di- <sup>13</sup>		yi-		sh-	-d-	-dlíít
Coffee		Aspect-INCEP		Mode-yi-PROG		1 <sup>sg</sup> Sbj	Cl	drink-FUT

“I will drink coffee.”

D. Usitative—a regularly occurring action or event

*Gohwééh yishdlííh.*

			7		8		9	10
gohwééh	yi-		Ø		sh-		-d-	-dlííh
coffee	(peg)		Mode-US		1 <sup>sg</sup> Sbj		Cl	drink-US

“I usually drink coffee.”

---

<sup>4</sup> The Ø imperfective and Usitative Modes requires a peg-element (yi-/y-/ w-) to maintain syllable integrity, and to prevent the naked Verb Theme from appearing as a word (Young and Morgan 1987: 112, Young 2000: 86).



E. Iterative—a habitually reoccurring action or event

*Gohwééh náshdlííh.*

	2	7	8	9	10
Gohwééh	ná-	Ø	sh-	-d-	-dlííh
Coffee	Aspect-IT	Mode-IMP	1 <sup>sg</sup> Sbj	Cl	drink-IT

“I repeatedly (habitually) drink coffee.”

F. Optative—an action expressing a wish or desire

*Gohwééh wóshdláá’ (laana nisin).*

	7	8	9	10		
Gohwééh	w- ó-	sh-	-d- -dláá’	(laana	nisin)	
Coffee	(peg) Mode-OPT	1 <sup>sg</sup> Sbj	Cl	drink-PERF	Pos-Part	1 <sup>sg</sup> -want-IMP

“I want/wish/desire to drink coffee.”

Just a brief note on aspect. Aspect, in terms of active verbs, is the “feature of the grammatical system that serves to define the kind of verbal action that is represented by the verb base” (Young and Morgan 1987: 164). In other words, mode describes the way in which an action or event is perceived, and aspect refines the way in which an action or event is described in terms of how it is carried out.

Aspects can cross-cut modes. For example a verb can be Imperfective (an incomplete action — i.e. *naashnish*, ‘I am working.’) and transitional (implying a change in state, being or form) such as a person standing up or sitting down (i.e., *sèdá*, ‘I am sitting.’). One could also construct a Perfective (completed action) transitional verb indicating a person has completed the action of standing up or sitting down. There are 12 aspectual and 10 subaspectual categories in Navajo: however, they are not entirely germane to the focus of this paper, so they will not be covered in depth in this section.

However, a few examples of aspect will be provided for illustrative purposes regarding the topic of the next chapter.

## **1.6 Words in Navajo**

Since one of the major undertakings of this body of work is to establish a median or measure of words speakers generally utter per IU during naturally occurring uninterrupted streams of speech, it is necessary to examine and try to define what exactly a word means in Navajo.

There are many ways in which to form words in Navajo that the concept of what constitutes a word in Navajo should be thought of as that of a continuum. On one end of the spectrum some Navajo words exhibit very simple and compact constructions. These would include basic nouns which identify objects as well as simple compounds comprised of two nouns as exemplified by the list in Table 2. It should be noted that within these compound constructions some phonological reduction does occur. For instance, in Table 2 (3) the /*a-*/ from the word ‘*azis*’ (i.e., a bag or container) is an indefinite prefix and is therefore dropped when it is attached to the noun for water (4) ‘*tó*’ to form *tózis*’ meaning a water bag.

Additionally, some compounds result in the production of idiomatic expressions. The word ‘window’ is derived by combining the words ‘*tsé*’ and ‘*sq*’ which acknowledges a conceptual construction as ‘glass’ is made from ground sand and stars are bright and reflective which results in the notion of ‘window’ as seen in Table 2 (7).

Table 2: Basic Navajo Words and Simple Compound Words

	Navajo	English
1	kò'	Fire
2	tó	Water
3	azis	Bag
4	tózis	Water bag
5	tsé	Rock
6	sò'	Star
7	tsésò'	Window

### 1.6.1 Verb Words

However, as one continues to move along the spectrum, the definition of a word becomes a bit more complex when one takes into account *verb words*. Mithun asserts there are both cross-linguistic and language-specific means to identify words in polysynthetic languages but concedes "...the best criterion is usually the judgment of native speakers" (1999: 38). Along the same lines, Dixon and Aikhenvald also assert that due to the multiple morpheme word constructions and fusion, polysynthetic words can be much longer and more complex than a word in English (2002).

Navajo, due to its morphological structure can both be quite complex, yet simultaneously it can also be thought of as being incredibly concise and precise in terms of this type of word formation as well. This is due to the fact that so much grammatical information can be potentially contained in verbal word constructions.

It should be noted that the word in example (9) shows it is possible to form a word with the nearly all the positions of the Young and Morgan verb complex template filled by at least one morpheme and therefore could be considered an extreme example of extensive prefixation, fusion and morphophonemic sound changes.

(9) *Ch'ínínáádashizhdinólchéét.*<sup>5</sup>

“They all continually start to chase me out in a horizontal manner again.”

The verb is analyzed using the slot and filler method and is broken down morpheme by morpheme as seen in Table 3 (the first slot 0-00 is the only unfilled slot because this verb does not require a postposition structurally).

Table 3: Parsed Verb using Young and Morgan’s Paradigmatic Verb Template

00-0	1 A,b,c,d, and e	2	3	4	5	6 A ,b, and c	7	8	9	10
Post Position	Adverbial Thematic	Iterative	“da” Plural	Direct Object	Deictic	Adverbial Thematic	Mode	Subject Pronouns	Classifier	Stem
	ch'í, ní	ná	da	shi	ji	di	ni	oh	ł	chéét

Table 4 lists the definition of each morpheme within the word sentence. It is possible for more than one morpheme to occupy the same position in the template, however the ordering of those prefixes slot-internally is important because if /ch'í-/ and /ní-/ were reversed the meaning would be ambiguous. If the two prefixes were reversed the meaning you be misconstrued because there is a word *nich'í* which is a weather referent meaning to blow, to arrive (i.e., a breeze) which is not related to the meaning of the verb.

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<sup>5</sup> The verb was constructed during the Navajo Verb System class taught at Navajo Language Academy summer workshop by Paul Platero in at Diné College in Tsaile, Arizona.

Table 4: Morpheme Meanings for Chínínáádashizhdinołchéét

1b— ch'í	adverbial thematic—out horizontally
1b — ni <sup>5-</sup>	adverbial thematic— cessative-terminative
2 — ná	iterative—repeatedly
3 — da	plural (3+ actors)
4 — shi	direct object—I/me
5 — ji	deictic—4 <sup>th</sup> person/polite referent
6 — di <sup>3-/13-</sup>	adverbial thematic—inceptive prefix
7 — ni	mode—terminus
8 — oh	subject pronoun—you dual (2)
9 — ł	classifier—causation
10 — chéét	stem handle AB (animate being)

Furthermore, example (10) is that of an intransitive verb while (11) is a transitive verb, and both are quite common examples of words which are likely to be found in everyday conversation.

(10) *Naashnish.*

1		7	8	9	10
na -	#	Ø	sh-	-l-	-nish
around/about		Mode-IMP	1 <sup>sg</sup> Sbj	Cl	work-CONT-IMP

“I am working”

(11) *Nishch'id.*

##	4	7	8	9	10
	ni-	Ø	sh-	Ø	-ch'id
	2 <sup>sg</sup> Obj	Mode-IMP	1 <sup>sg</sup> Sbj	Cl	scratch-REP-IMP

“I am scratching you.”

### 1.6.2 Complex Compound Words

Lastly, the one other type of word formation process at other end of the spectrum in Navajo is that of extensive compounding. The names of many objects in Navajo are realized via what could be called postpositional nominalized verbal constructions. This

unique type of construction occurs because Navajo speakers, when naming objects, typically take both the form and function of the object into consideration, which is then expressed in the overall meaning. This particular characteristic of the process involved in naming objects or coining new phrases for items likely exerts some influence on how speakers segment chunks of information since the constructions can be quite elaborate as seen in examples (12) and (13) below.

(12) *bikáá' dah 'asdá'hí danineezígíí*

bikáá'	dah		'a
PP-on it	Part-up, upon it, at an elevation		3 <sup>sg</sup> Sub-Indef Obj
sidá	(h) <sup>6</sup> -í	nineez	-ígíí
3 <sup>sg</sup> Sub-sit-PERF	Nom-Enc-the one	3 <sup>sg</sup> -long	Nom-Enc-the one

“sofa/couch”

(13) *chidí naa'na'í bee'eldqoh bikáá' dah naaznilígíí*

chidí	naa'na'	-í	bee'eldqoh	-tsoh	bikáá'
car	3 <sup>sg</sup> -crawls around	Nom-Enc-the one	gun-N	Enc-Adj-large	PP-on
bikáá'	dah		naaznil		
PP-on it	Part-up at an elevation		Obj-Pl-in position (orderly)		
	-ígíí				
	Nom-Enc-the one				

“army tank”

(Young and Morgan 1987: 7)

Examples (12) and (13), at first glance would appear to be a conglomeration of individual words simply strung together, but as Tuttle (2008) notes in her work on attempting to define what a word is in Ahtna, a northern Athabaskan language spoken in

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<sup>6</sup> /h/ is an epenthetic consonant added between a verb and a nominalizing enclitic when the verb being nominalized ends in a non-nasal vowel.

the southwestern area of Alaska: words in polysynthetic languages may be perceived as multiple words by a nonspeaker but understood as a singular unit with specific meaning by native speakers.

Specifically in terms of verbal words, "...fortition cues that Europeans recognize as left edges of words do not occur at all left edges in Ahtna; they only occur at stem boundaries, and in limited context, following certain structures within the prefix sequences" (Tuttle 2008:47). This same type of phenomenon occurs in Navajo as illustrated by the seemingly long orthographic representations above in examples (11) and (12), for a couple of comparatively short words in English, 'chair/sofa' and 'army tanks'

## **1.7 Intonation**

Intonation in discourse in a very broad sense is the variations of pitch or the rhythm and tempo used by speakers during natural discourse, which is not used to distinguish words. It can be used for a wide range of discourse function including the attitude and emotion of the speaker, indicating differences between questions and statements, serving to distinguish between different types of questions in addition to focusing attention on important elements and regulating interaction and information flow.

### **1.7.1 Intonation and Linguistic Tone in Navajo**

While intonation may be the 'pitch' or 'rhythm' of speech, Navajo utilizes linguistic tone. In linguistic terms, tone is the alternation in pitch in a language that distinguishes words either lexically or grammatically. Navajo is a tonal language; syllables are inherently low tone by default, and marked syllables have high tones

Most often in Navajo tone is used to inflect and distinguish words that would otherwise be homonyms. As seen below in example (14) the difference between second and third person singular is realized as the high tone /í/ in production of the second person singular form by speakers.

- |      |    |                               |    |                               |
|------|----|-------------------------------|----|-------------------------------|
| (14) | a. | <i>dílkos</i>                 | b. | <i>dílkos</i>                 |
|      |    | 2 <sup>sg</sup> Sbj cough-IMP |    | 3 <sup>sg</sup> Sbj cough-IMP |
|      |    | ‘you are coughing’            |    | ‘he/she/it is coughing’       |

Example (15) further illustrates how tone affects the lexical interpretation of words. The example in (14-a) is a commonly used abbreviation of the word for ‘it will become’ potentially signaling a future event; the word in (14-c) with high tones can be interpreted as ‘and’. However, the form used in the sentence in (14-e) functions as a locative enclitic in particular contextual settings, which is indicative of yet another meaning entirely.

- |      |    |                         |    |                                     |
|------|----|-------------------------|----|-------------------------------------|
| (15) | a. | <i>doo</i> (dooleet)    | b. | <i>'Ashhosh<sup>7</sup> doo.</i>    |
|      |    | ‘it will become’        |    | ‘I will be asleep’                  |
|      | c. | <i>dóó</i>              | d. | <i>Shimá dóó Shizhé'é</i>           |
|      |    | ‘and’                   |    | My mother and my father             |
|      | e. | <i>-dóó</i>             | f. | <i>Shighandóó nighanji' nízaad.</i> |
|      |    | from (a specific point) |    | From–my-home-to-your-home-it’s far  |

The contrastive pair in example (15) also illustrates how tone is used to lexically differentiate words that are identical orthographically short of diacritic markings, to evoke different connotations.

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<sup>7</sup> The spelling of *Ashhosh* is from the Young and Morgan Dictionary (1987: 7). Another widely accepted form involved is *Ashxosh* where a /x/ is used as the first letter of the stem indicating aspiration during pronunciation.



- (16)
- 1 'azee'  
'medicine'
  - 2 'azée'  
'mouth'
  - 3 'ázée'  
'one's own mouth'

## 1.8 Previous Research

This section begins with a review of the scholarly literature on the work that has been done on intonation across a wide range of languages. The sketch of Navajo in the previous section should help illustrate how the prosody of this polysynthetic language is likely to differ from the intonational unit patterns of languages of other morphological structures. The section concludes with a brief overview of how intonation has been previously examined regarding methodology and in other polysynthetic Athabaskan languages to underscore how the approach of this study is unlike any other studies to date.

### 1.8.1 Cross-linguistic Research on Intonation

Research in the field of discourse analysis with an emphasis on how the spoken word is segmented by speakers is relatively new. Over the past several years there have been numerous studies on intonation approached from differing points of view, which will be discussed in more detail in the Chapter 3.

One of those approaches, which focuses on how information flows during discourse (Couper-Kuhlen 2001), involves trying to understand how and why people segment speech the way they do during naturally occurring discourse within a single

prosodic contour. Prosodic contour includes the distinct rising and falling patterns of pitch, tone, or stress which can be delimited into units that express the speaker's mind at the moment. These segmented units, as previously indicated will be referred to as Intonation Units (IUs).

The languages that have been studied in terms of prosody and intonation are representative of the multiple language types identified around the world: isolating, analytic, synthetic, agglutinative, fusional, and polysynthetic. A great number of studies on a variety of typologically different languages includes English (Chafe and Danielewicz 1987, Chafe 1994, Croft 1995), Dutch (Swerts and Geluykens 1994), Hebrew (Izre'el 2005), Japanese (Matsumoto 2001), Mandarin (Tao 1996), and Wardaman, an Australian aboriginal language, (Croft 2007).

### **1.8.2 Athabaskan Intonation Research**

Comparatively, relatively few studies have been conducted in which prosody and intonation have been examined in some of the indigenous languages of North America. The research to date has been predominantly focused on the northern languages located in Canada and Alaska including: Athna (Berez 2011), Beaver (Schwiertz, 2009), Dena'ina (Lovick and Tuttle, 2012), Klamath (Underriner 2002), Slave (Rice 1987), Tanacross (Holton 2005), Tlingit (Crippen 2010), Yup'ik (Woodbury 1988), and overview of Athabaskan Prosody (Hargus and Rice 2000).

One study, conducted by Lovick and Tuttle on Dena'ina, did examine two types of discourse units, 'intonation units' (segmented based on criteria set forth by Chafe 1994) and story units, which are "made up of one or more intonation units" (2012: 298). The goal was to determine if "prosodic cues in addition to semantic ones" (2012: 293)

during traditional storytelling in Dena'ina. For their study they adopted Chafe's (1994) IU definition, the criteria of what constitutes an IU will be detailed in Chapter 3, and found in their recorded texts "the right boundary of an intonation unit is typically marked by a following pause and by increased rhyme length" (2012: 331).

Additionally, they acknowledged that "verbal interactions are structurally organized and that traces of this organization can be found in the interaction itself" (Lovick and Tuttle 2012: 294). The authors then used this framework to examine the data to determine how syntax, semantics, and prosody interact at unit boundaries in addition to briefly examining how speakers manipulate intonation units and how they are then perceived by the listener. The approach of Lovick and Tuttle examines some questions raised in this study, but does not explore all facets this body of work will address, specifically the communicative act in terms of motivation, poetics and performance.

However, the other studies conducted on various Athabaskan languages have examined intonation as part of grammar with an emphasis on quantitative phonological and phonetic analysis involving measurable audible changes in fundamental frequency visible on spectrograms. Berez' work on Ahtna (2011) focused on timing and pitch related to prosody to determine whether the intonation unit was impacted by different genres of speech, oral performance and expository discourse. In terms of intonation units, "Ahtna... exhibits an overwhelming tendency for pauses to occur between the boundary of two IUs" leading to the conclusion that "discourse-level prosodic units are emergent... and are often below the level of conscious awareness of speakers and listeners" (2011: 9, 20).

One method employed in the study of polysynthetic languages, like that used by Crippen (2010) involved the analysis of the intonational phonology of Tlingit, which required the use of a modified version of ToBi (tones and break indices), a system of transcribing the prosodic structure and intonation in languages, specific to the intended prosodic grouping of an utterance and tonal events such as pitch accents and boundary tones, as seen in Figure 1.

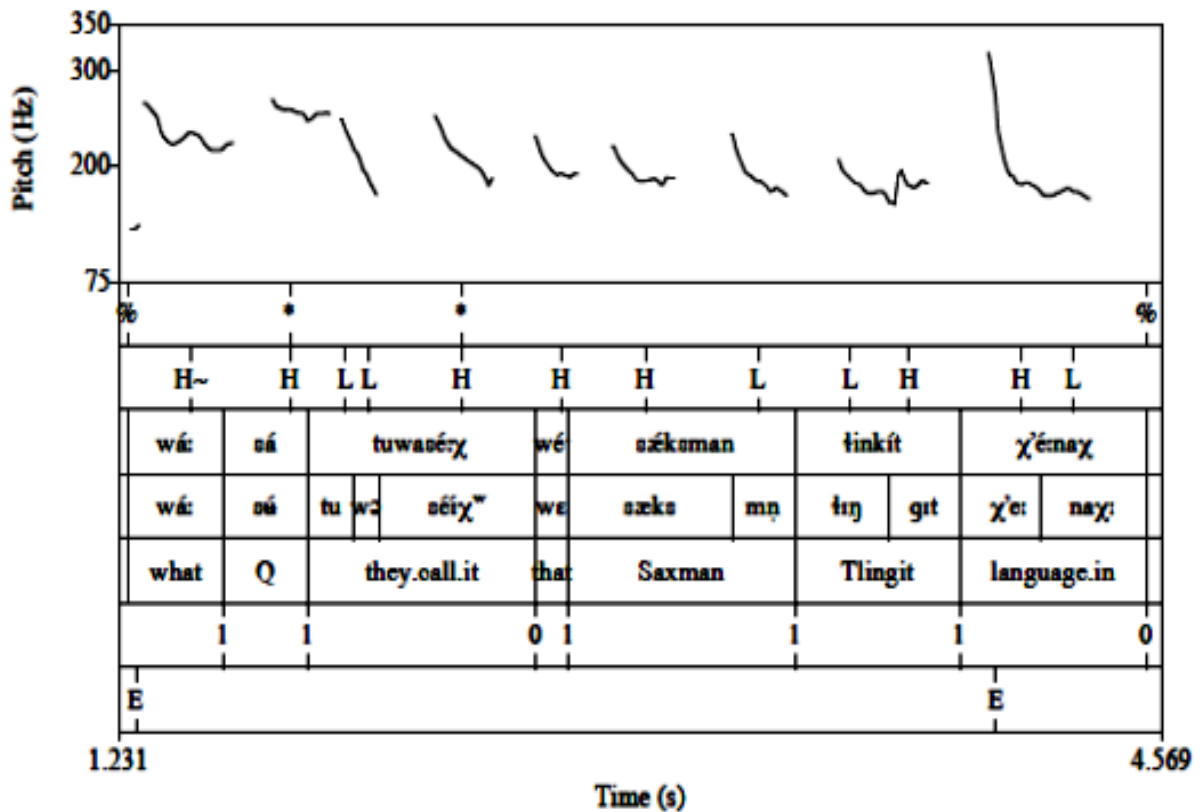


Figure 1: Tlingit ToBi Graph (Crippen 2010:18)

Crippen concluded that Tlingit has an intonational system “characterized by the manipulation of existing lexical tones and combinations of them with intonational tones” (2010: 16).

There has also been one study on intonation and prosody in Southwestern/Apachean Athabaskan languages such as San Carlos and Jicarilla Apache (Tuttle 2005), which focused on the duration of prosodic units and the distinction between stress related prominence and boundary marking prominence.

### **1.8.3 Previous Research on Navajo Prosody and Intonation**

Prosody and intonation have been studied in Navajo starting with Landar (1959) who looked at stress phonemes, terminal contours, and pitch variation but not in terms of phrases or even segments of speech, nor from that of a discourse analysis point of view. Landar suggested, based on the analysis of the data examined, that stress in Navajo is phonemic and the distribution of stress phonemes is not predictable. Landar's study involved data from only two speakers from Shiprock, New Mexico which was recorded during 1955 and 1956.

Other studies (Jelinek 1989, McDonough 1999, Hale, Jelinek and Willie 2003) found that Navajo does not exhibit tonal intonation compared to that which was thought to be universal in the world's languages: the distinctions between declarative, interrogative and focus constructions. McDonough (2002) also examined if intonation was used as a contrastive feature of interrogative and declarative constructions and found no evidence of intonation contrasts in her instrumental analysis; the two distinct constructions shared nearly identical pitch tracks.

McDonough (2002) specifically examined intonation in Navajo as it relates to the internal contours of yes/no questions and focus constructions. The author concluded that, based on instrumental analysis of the tonal contours of those two different types of pragmatic constructions coupled with the language's Subject-Object-Verb/Pronominal

Argument structure, Navajo does not exhibit intonation under those specific conditions. Figure 2 below shows the yes/no question “nich’iyą’ísh hóló”, “Is this your food?” elicited by a native Navajo speaker and shows no rise in intonation as is generally associated with interrogatives in many languages including English.

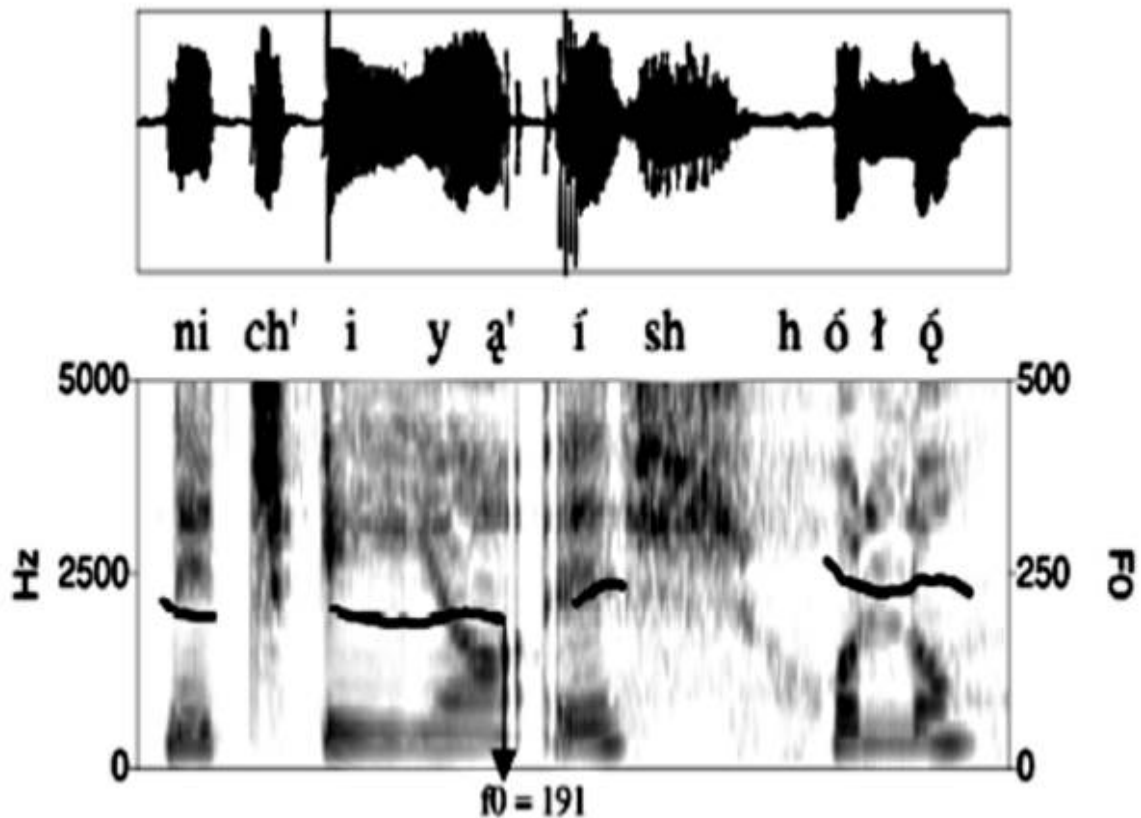


Figure 2: Spectrogram and pitch trace (McDonough 2002: 14)<sup>8</sup>

And lastly, Kidder (2008), who examined the phonetics and phonology of prosody, asserts that Navajo both “lacks a stress system on the word and phrase level, as well as lacking an intonation system that interacts with the syntactic semantic components” (2008: 66). Instead she suggests intonation and proposed information

<sup>8</sup> It should be noted there is a slight discrepancy in the spelling (\*nich’ihą’ísh hołó vs. nich’iyáánish hóló) but is not significant enough to affect the intended meaning which is clear since the English translation is also provided.

generally conveyed via intonation is accomplished differently in Navajo by using prosodic cues such as the interaction between contrastive pitch and contrastive duration.

To date, all of the research on Navajo intonation and prosody has been from a generative approach with the focus being primarily on the phonetic characteristics of prosody by measuring audible changes in fundamental frequency visible on spectrograms, which in turn have led to the identification of the phonetic characteristics of intonation units. These quantitative studies have largely concluded that Navajo does not exhibit tonal intonation like many other language and lacks intonation in certain constructions altogether (McDonough 2002, Kidder 2008).

Furthermore, previous studies on Navajo have not examined intonation as it relates to its role in discourse from a usage-based approach, nor has there been any research with consideration of using the intonation unit as a way to segment speech that then can be evaluated initially in terms of form, function and meaning and secondarily in terms of poetics, performance and validation of the ‘voices’ (Dinwoodie 1999) of the interlocutors.

## **1.9 Summary**

This introduction has provided a sufficient, albeit concise, explanation of the Navajo language, the various constructions that constitute a word, as well as a brief description of the verb complex that will serve as suitable background information.

Secondly, the review of the literature on IUs in Athabaskan language, as well as the research conducted to date on Navajo from a purely phonological and phonetic standpoint, reinforces the notion that the multi-faceted approach of this study from a usage-based point of view has not been explored and will directly contribute to the

understanding of Navajo discourse on several levels, from the cognitive processes and inherent constraints on production due to the structure of the language, the intent of speakers revealed by the organization of the communicative act the resulting success of the speech act as verbal art or performance.

The next chapter will examine how language and thought are inextricably linked not only in terms of the linguistic relativity theory but the impact on the overall communicative act. Additionally, the communicative act will be examined with regards to speaker motivation and intent which may affect the overall organization, word choice and production—viewing the speech act in terms of poetics as a performative act both crafted and manipulated by the speaker allowing for various ‘voices’ to emerge and revealing the function of those voices through discourse via the manipulation of the spoken word.



## **Chapter 2**

### **2.1 Introduction**

The previous chapter provided an overview of the Navajo language including a brief description of the Navajo verb complex, a morphological examination of the various types of constructions that constitute words, and an examination of syntax both word-internally as it is contained within the verb and as it exists externally within an actual sentence with overtly stated NPs.

Moreover, the review of the cross-linguistic literature on intonation and prosody illustrated that the studies conducted to date on Athabaskan languages have been conducted from a quantitative approach measuring audible changes in amplitude of speech, which was highlighted in order to emphasize the lack of a method from a usage-based approach to analyze Navajo language discourse in terms of a sensible units larger than stand-alone verbal word units, which are in essence ‘word sentences,’ or that of specific types of clauses and constructions.

### **2.2 Overview of the Chapter**

This chapter will focus on two interrelated areas. First, an overview of the development of the study of the relationship between speech and thought, the linguistic relativity theory will be examined and how ‘thinking for speaking’ (Slobin 1996) serves as an integral part of the speech production, which is a fundamental to the method that will be proposed in this body of work as a means of analyzing Navajo discourse. In accordance with the Sapir-Whorf hypothesis, typological differences in languages will have the potential to not only affect the way people speak but also the way they think in

terms of their conceptualization of the word, or world view based on their culture, which is then reflected in the language produced.

Secondly, the speech act will be examined from the standpoint, the verbal behavior in the speech performance. The performative act itself lends itself to a variety of possible functions of utterances in the communicative process (e.g., emotive, referential, and vocative), which will also be explored. Additionally, the concept of poetics (i.e. verbal art) will be illustrated as it relates to structure, and how it may shape performance with regards to how discourse or text of various genres are realized.

Finally, one of the last elements to be contemplated are the various ways in which speakers manipulate their verbal behavior via framing, or the establishment of speech scenarios, and thereby set the tone and overall direction of the speech act.

### **2.3 Thought and Language**

Speaking may be as natural as breathing, yet it is a complex process involving multiple aspects beginning in infancy which involves simply mastering the physical ability to manipulate the articulators necessary to produce the sounds of a language. The next stage involves the production of streams of sounds with meaning (i.e., words). Eventually this leads to the “selection and combination of words” to “form a speech chain” (Jakobson 1960: 356) more commonly known as a “phrase,” or “verse,” and even loosely classified by others using the somewhat ambiguous term “utterance.” The act of selecting and combining words is not random, involving complex thought processes involved in formulating these segments of speech in order to produce coherent and communicatively effective speech.

Researchers have been trying to answer the question for decades regarding language as a true reflection of thought, language affecting or influencing the way people think, speakers of different languages thinking differently, and if particular languages foster a different world view among speakers.

Linguists concede a relationship between language and thought does exist, however, the exact nature of that relationship has been and continues to be the subject of much debate. This is evident by the way the relationship between language and thought has been defined to date, which is both varied and reflective of the researcher's specific discipline (e.g. philosophy, psychology, anthropology, and linguistics).

### **2.3.1 Early Research**

The idea that language and thought are interrelated was first introduced in the 19<sup>th</sup> century by German linguist Wilhelm von Humboldt (Slobin 1996). Nearly 80 years ago, Lev Vygotsky, a Soviet Belarusian psychologist whose specialty was in developmental psychology, began exploring the relationship between speech and the development of mental concepts including cognitive awareness suggesting that “thought undergoes many changes as it turns into speech” (1986:219).

According to John-Steiner, Vygotsky considered language the primary vehicle of conscious thought (1985: xx). Vygotsky wrote, “The structure of speech does not simply mirror the structure of thought... (it) undergoes many changes as it turns into speech” (1986: 219). Additionally, Vygotsky stated that, from a psychology standpoint, the meaning of every word is a generalization or concept and that “the meaning of a word represents such a close amalgam of thought and language that it is hard to tell whether it is a phenomenon of speech or a phenomenon of thought” (1986: 212). In an eloquent

summation Vygotsky stated, “Thought does not express itself in words, but rather realizes itself in them” (1986: 251).

### **2.3.2 Inner and External Speech**

The other realm that Vygotsky explored involved the concept surrounding the existence of two kinds of speech: inner and external speech. “Inner speech is speech for oneself; external speech is for others” (1986: 225). Inner speech is not just speech without sound but it centers itself on meaning; it “works with semantics, not phonetics” (Vygotsky 1986: 244). It has also been described as thinking in terms of pure concepts and pure meanings. Vygotsky suggested inner speech exhibits “disconnected and incomplete” syntax which would not be understandable if actually recorded (1986: 235, 247). John-Steiner concurs, suggesting inner thought or “verbal thinking is often condensed and metaphorical” (1985: 139). Additionally, “the inner language of thought differs from language used for communicative exchanges in its rapidity, in its condensed form, and in its functions” (John-Steiner 1985: 139).

While conceding inner speech may be thought of as a ‘draft’ of external speech; Vygotsky stressed that complex mental processes occur in the overall structuring of inner speech, which then is transformed and manifests into “syntactically articulated speech intelligible to others” (1986: 248-9). John-Steiner summarizes, “the process of placing a thought into its verbal and social context is required in turning thoughts outward” (1985: 210). Vygotsky also suggested that just possessing the understanding of words is not enough to fully comprehend what another is saying — meaning that having an understanding the speaker’s thought and motivation is crucial to effective communication

(Vygotsky 1986: 253). He concludes that “thought and speech turn out to be key to the nature of human consciousness” (1986: 256).

## **2.4 Linguistic Determinism and Linguistic Relativity**

Nearly two decades later, in the 1950s, two other doctrines emerged as a means of trying to explain how the typological differences among languages may impact how languages can influence and possibly shape thought: linguistic determinism and linguistic relativity.

The doctrine of linguistic determinism advocates the idea that thought is determined by language; the language people speak helps determine the very way in which they think about their physical and social world. This doctrine has long since been abandoned according to Gumperz because the “argument, experiment and analysis are not convincing” in addition to “evidence of many kinds for significant universals in language, perception and cognitive development” and “there are many indications that there are multiple modes of thinking, some of which are independent of language” (1991: 615).

The second and more widely accepted proposal, linguistic relativity, also known as the Sapir-Whorf hypothesis, advocated that as languages differ, so do the thoughts of speakers. Linguist Edward Sapir and his student Benjamin Lee Whorf are known for their part in the popularization of this very principle.

### **2.4.1 Sapir-Whorf Hypothesis**

The linguistic relativity hypothesis proposes that language influences thought and different languages influence thought in different ways. Benjamin Whorf suggested that the characteristics of various languages’, including grammatical and semantic,

categorizations will result in very different views of the world among speakers of structurally different languages (1956). Since language is a reflection of speakers' reality, it is reasonable to expect that speakers of different languages will describe events in the world differently. The structure of a language affects the ways in which speakers conceptualize and perceive their world, which in turn ultimately affects both the way they organize their thoughts and ultimately speak about their perceptions of reality. As Boroditsky points out "speakers of different languages may be biased to attend to and encode different aspects of their experience while speaking" (2001:2).

Whorf studied Native American languages and attempted to explain how differences in grammatical systems and language use affected the way in which speakers of these diverse languages conceptualized the world around them. Among Whorf's better examples of the linguistic relativity theory is his claim that "the Hopi language was a time-less language" with no distinction of past, present or future (Tohidian 2009: 68).

The theory of linguistic relativity had been dismissed by many in the field since Whorf did not have a degree in linguistics. Whorf, in fact, was a chemical engineer by schooling and a fire prevention engineer/inspector by trade. One of the consequences of this background was that he was labeled an "amateur" by his critics. Another result of his non-linguistic background, by default, was that the linguistic relativity theory was discounted and not rigorously pursued during the following two decades as the Chomskian-driven approach dominated the field and served as the impetus for a great deal of research from a generative perspective.

The approach to linguistic study as it is related to cognitive psychology appears to have been partially responsible for the slow death of this field of research but it has

since not only been resurrected but validated (Slobin 1987) as an area of research in the linguistic subfield of psycholinguistics and dubbed as neo-Whorfism.

## **2.5 Thought and Speech**

More than sixty five years after Vygotsky's groundbreaking work, and more than twenty years after Sapir and Whorf's contribution to the field, Slobin offered a more contemporary yet complimentary approach. Initiated by Vygotsky and advanced by Edward Sapir and Benjamin Whorf. Slobin suggested a person's reality is influenced by the language he speaks, which in turn "affects the ways in which we think while we are speaking" (1996: 91). As Boroditsky asserts, "one's native language plays an important role in shaping habitual thought" (2001: 1). Additionally, John-Steiner notes, "language systems organize categories of reality and structure ways of approaching situations" (1985: xxii).

Within the past twenty years interest in the linguistic relativity theory has seen resurgence. With this new interest, the theory has evolved. It is not simply centered on the notion that that the language we speak influences the way we think about reality; it has been both restated and redefined as well. As Lucy (1997: 295) suggests, "Linguistic relativity proposals emphasize a distinctive role for language structure in interpreting experience and influencing thought".

Meanwhile, Pavelnko points out, "speakers' constructions of the world may be influenced by the structural patterns of their language" (2005: 435). Expanding on that concept, Brown and Gullberg, asserting the "fundamental cross-linguistic differences in lexicalization patterns have consequences for how events are construed or linguistically

conceptualized, that is for what information speakers of a language consider as relevant and therefore select for expression” (2011:80).

### **2.5.1 Approaches to Research**

There are three approaches to this type of research which include: 1) semiotic, which focuses on “how speaking any natural language at all may influence thinking”, 2) structural, which examines “how speaking one or more particular natural languages may influence thinking”, and 3) functional, which looks at “whether using language in a particular way (e.g., schooled) may influence thinking” (Lucy 1997: 292).

The second approach in terms of structure is of particular interest as Lucy considers “whether quite different morphosyntactic configurations of meaning affect thinking about reality,” which he calls “structural relativity” (1997: 292). He also advocates this approach because “ideally it makes possible the characterization of the distinctive way a language interprets the world” (Lucy 1997: 296).

The concept of structural relativity is applicable here because the Navajo discourse samples/texts examined for this study were all produced by bilingual speakers with varying levels of proficiency in both languages and with the majority engaging in some form of codeswitching between Navajo and English.

### **2.5.2 Thinking for Speaking**

In the last fifteen years, there has been yet another approach that has emerged and garnered much attention; it examines the thought process in real time action. Slobin (1996) is credited with coining the phrase “thinking for speaking”; he posits, “There is a special kind of thinking that is intimately tied to language—namely thinking that is carried out online, in the process of speaking” (1996: 75).



In essence, ‘thinking for speaking’ (Slobin 1996) and the linguistic relativity hypothesis are not mutually exclusive nor are they identical, but should be viewed as quite complimentary. Thinking for speaking according to Slobin “involves picking those characteristics of objects and events that: a) fit some conceptualization of the event, and b) are readily encodable in the language” (1996:76). Lucy also proposes “certain properties of a given language have consequences for patterns of thought about reality” (1987: 294).

These differences in the perception of reality, or a culture’s world view, may be in part the result of the influence of the structural and grammatical aspects of a given language. “Different languages organize the flow of information differently, which require speakers to attend to specific markings of grammatical aspect in terms of temporal description and attention to the particular details that receive linguistic expression” (Slobin 1996:78). For example, English allows the combination of an aspectually neutral verb form and a progressive as seen in Example (17).

(17) “The boy fell out... and the dog was being chased by the bees.”  
(Slobin 1996: 79)

However, in Spanish, it is possible to combine the use of a perfective verb with that of an imperfective expression within the same utterance to indicate punctuality as seen in Example (18) below.

(18) Spanish  
*Se cayó el niño y le perseguían al perro las avispas.*  
“The boy **fell-PFV** and the wasps **chased-IPFV** the dog.”  
(Slobin 1996: 79)

Slobin notes that grammatical German and Hebrew “do not require speakers to attend to this contrast” as seen in the following examples. Examples (19) and (20) are sentences produced by five-year-old children and demonstrate that at a very early age children are aware of what kinds of distinctions in terms of grammatical aspect are required by their native language.

(19) German

*Der Junge fällt vom Baum runter.... und die Bienen gehen hinter dem Hund her.*

“The boys **falls** down from the tree.. and the bees **go** after the dog.”

(Slobin 1996: 80)

(20) Hebrew

*Hu nafal ve hakelev barax.*

“He **fell** and the dog **ran away**.”

(Slobin 1996: 80)

Slobin suggests that grammatical aspect can be, and should be, viewed as a continuum, based on Examples (18—20), and as revealed in Table 5.

Table 5: Grammatical aspect

- Hebrew – none
- German – perfect
- English – perfect, progressive
- Spanish – perfect, progressive, imperfective/perfective

(Slobin 1996: 82)

As Lucy notes, “language embodies an interpretation of reality and language can influence thought about that reality” (1997: 294). Another language that marks extensively for grammatical aspect in which Lucy’s assertion appears to be validated is

Navajo. As discussed in Chapter 1, there are seven distinct modes which define or describe how an action or event is perceived by the speaker (Young 2000) and are realized by changes in the shape of prefixes and stems (Kari 1973). Again the modes are viewed differently than aspectual categories due to the similarity of paradigmatic conjugational patterning among modes that is not found with either the aspectual and sub-aspectual prefixes available to speakers.

Example (21) (1—5) is a recapitulation of one the most commonly used verbs in Navajo, with the most notable difference occurring in the changes of the internal prefixes. The verb ‘to work’ could be considered an exceedingly regular verb meaning that the verb stem remains constant and does not change shape throughout the most common conjugations in the five modes represented. The verb stem can and does change, albeit rarely, and when it does it is based on conveying distinct meaning by specific speaker aspectual choices.

(21)

1 Naashnish.

Na-	Ø	sh-	-l-	-nish
around	Mode-IMP	1 <sup>sg</sup> Sbj	Cl	work-CONT-IMP

“I am working”

2 Nishishnish.

na-/ni-	si-	/-í/	sh –	-l-	-nish
around	Mode-PERF	PERF-í	1 <sup>sg</sup> Sbj	Cl	work-CONT-PERF

“I worked”

3 Nideeshnish.

na-/ni-	di <sup>-3/-13</sup> -	yi –	sh –	-l-	-nish
around	inceptive	Mode-yi-PROG	1 <sup>sg</sup> Sbj	Cl	work-CONT-FUT

“I will work”

- 4 Nináshnish.  
na-/ni- ná Ø sh – -l- -nish  
around iterative Mode-IMP 1<sup>sg</sup> Sbj Cl work-CONT-IMP

“I usually/habitually work”

- 5 Naóshnish.  
na-/ni- ó– sh – -l- -nish (lanna nisin)  
around Mode-OPT 1<sup>sg</sup>Sbj Cl work-CONT-IMP (Pos-Part 1<sup>sg</sup>-want)

“I want/wish/desire to work”

The following word sentences seen below in Example (22) (1—5) highlight another verb that is highly frequent in conversation; this verb not only exhibits internal prefix changes that are associated with changes in mode, but it is also considered an irregular verb because of the change in stem shape which is mode related. Depending on the context in which the verb is used it can have multiple meanings, the general one being used is that of “singular unspecified animate subject goes on foot or in an unspecified manner, at an unspecified but usually slow rate of speed” (Young and Morgan 1992: 661)

(22)

- 1 Naashá.  
Na- Ø sh- Ø -á  
around Mode-IMP 1<sup>sg</sup>Sbj Cl go around-CONT-IMP

“I am going around/about,”

- 2 Niséyá.  
na-/ni- si- / í-/ sh- Ø -yá  
around Mode-PERF PERF-í 1<sup>sg</sup>Sbj Cl go around-CONT-PERF

“To make a round trip,”

3 Nideeshaaʔ.

na-/ni-	di <sup>-3/-13-</sup>	yi –	sh –	Ø	-aaʔ
around	Aspect-INCEP	Mode-yi-PROG	1 <sup>sg</sup> Sbj	Cl	go around-CONT-FUT

“I will go around/about.”

4 Nináshdaah.

na-/ni-	ná	Ø	sh–	Ø	-daah
around	Aspect-IT	Mode-IMP	1 <sup>sg</sup> Sbj	Cl	go around-CONT-IMP

“I usually go around/about.”

5 Naósha’.

na-/ni-	ó-	sh-	Ø	-a’	(lágo nisin)
around	Mode-OPT	1 <sup>sg</sup> Sbj	Cl	go around-CONT-IMP	(Neg-Part 1 <sup>sg</sup> -want)

“I do not wish/desire to go around/about.”

The morphological richness exhibited by Navajo illustrates Brown and Gullberg’s observations about cross-linguistic variation, “such differences are not limited to surface linguistic forms, but also extend to conceptualizations” (Brown and Gullberg 2011: 79). As Athanasopoulos states, the degree to which “different languages attend to the shape/material characteristics of different types of objects is relative to the degree to which individuation is emphasized in the grammatical systems of their language” (2007: 691).

There is another area where Navajo differs from English in terms of how objects are categorized and discussed: Navajo has a classificatory verb system where the status of the noun is understood via agreement of the verb stem. There are 11 handling verbs which distinguish items based on several factors including size, shape, and texture. If an incorrect stem is used, the phrase becomes unclear.

For example, the word for paper and book are the same in Navajo, so different verb stems are used to distinguish and clarify the meaning. Therefore, if I asked someone to give me a *piece of paper* it would not only be incorrect, but confusing to use the stem that indicates a *solid round object* since piece of paper is clearly not solid or round as seen in example (23) below.

(23)

- 1 \*Naaltsoos shaa ní'aah.<sup>9</sup>  
 naaltsoos shaa ni- ni- Ø -'aah  
 book-N to me-PP Mode-IMP 2<sup>sg</sup>Sbj Cl SRO (solid round object)

“Give me the book.”

- 2 Naaltsoos shaa níłtsóós.  
 naaltsoos shaa ni- ni- -ł- -tsóós  
 paper-N to me-PP Mode-IMP 2<sup>sg</sup>Sbj Cl FFO (flat flexible object)

“Give me a piece of paper.”

Another example in which the meaning is based on the agreement between the nouns and appropriate verb stem is illustrated in Example (24). In example (24) (1) the implication is that the water is in some type of some type of closed container such as a water bottle, however by changing the verb stem as in (24) (2), the inference is the water is in an open container, such as a glass or cup. Furthermore by changing both the postposition and the stem in (24) (3) implies a different type of request.

(24)

- 1 Tó shaa ní'aah.  
 tó shaa ni- ni- Ø- 'aah  
 water-N to me-PP Mode-IMP 2<sup>sg</sup>Sbj Cl SRO (solid round object)

“Give me the water”.

---

<sup>9</sup> It would be correct to use this construction when asking for a book because the stem implies the handling of a solid round object.

- 2 Tó shaa níkaah.  
 tó shaa ni- ni- Ø -kaah  
 water-N to me-PP Mode-IMP 2<sup>sg</sup>Sbj Cl OC (open container)

“Give me the water”.

- 3 Tó shá nízííd.  
 tó shá ni- ni- Ø -zííd  
 water-N for me-PP Mode-IMP 2<sup>sg</sup>Sbj Cl pour-IMP

“Pour the water for me”.

The examples above are indicative of how conceptualization and construal interact in the formulation of speech. The use of the correct handling verb represents the mental concepts or cognitive symbols that are a reflection of reality and the speaker’s mental processes. These cognitive concepts could also be viewed as cultural conceptualizations that are realized grammatically in terms of structural differences. This results in a nexus between thought and speech, conceptualization and construal, which is ultimately realized in the speech.

## 2.6 Bilingualism and Thought

During the past several years, efforts to understand the relationship between language and conceptualization among bilinguals have increased and whether speaking more than one language may affect or influence speakers’ concept of the world and if so, in what ways.

The way in which bilinguals process thought and speech is germane to this body of work, as the samples of speech analyzed were all produced by speakers with some level of proficiency who exhibited instances of code switching behavior, which will be discussed in the next section.

Several cross-linguistic studies have demonstrated speakers of different languages may have a different world view due to the language they speak. There is a growing body of work involving bilinguals and how “different aspects of language may influence distinct modes of thought” (Pavlenko: 2005: 434). The typological differences in languages realized “in lexicalization patterns may have consequences for event construal and differences in what information is verbalized” (Brown and Gullberg 2011: 79).

As Pavlenko points out, “it is quite possible that bilinguals are the only ones to experience directly the effects of linguistic relativity” (2005: 437). Athanasopoulos (2007) also suggests “bilinguals maintain two separate cognitive representations of the relevant concepts, and they fluctuate between the two contrasting mental views of the world according to the language they are engaged in” (2007: 692). Meanwhile, Pavlenko points out “some bicultural bilinguals do indeed experience difficulties in translating from one language to another” (2005: 437).

Boroditsky proposes that “speakers of different languages may be biased to attend to and encode different aspects of their experience while speaking” (2001: 2). The research to date has established strong evidence that bilinguals’ thought and language processes are different than monolinguals’.

### **2.6.1 Fluency**

Beginning in the late 1960’s there has been a documented decline in the use of the Navajo language for a variety of reasons which has contributed to the drop in both the number of fluent speakers and a decline in the level of fluency especially among younger speakers. In 1969, Spolsky (1970) conducted a study and found that 95% of the six-year-olds spoke Navajo fluently.



However, just a little over two decades later Platero's (1992) results revealed a startling trend where more than half of the 638 children who participated in his study were monolingual English speakers. Additionally, Holm (1993) conducted a study involving 3300 kindergarten students living on and off the reservation and found that less than one-third were considered fluent in Navajo by their teachers.

There have been concerted efforts during the past four decades to reverse the trend of diminishing use of Navajo by young people with some success with specific schools dedicated to teaching Navajo language and culture and even using immersion as a teaching method for students at the elementary level (i.e. Rock Point, Ft. Defiance, and Shiprock) and other community based programs. While there may be children who are being raised in a bilingual environment, based on the trends of the past 40 years, the likelihood of children being raised as monolingual Navajo speakers is quite slim.

### **2.6.2 Age of Acquisition**

Other factors may impact thinking for speaking in bilinguals: the level of fluency and the age of acquisition. One of the problems regarding fluency is that a fixed definition of what fluency does not exist. However, Filipovic offers "bilingualism is a matter of degree" (2011: 6).

Additionally, the impact of age of acquisition can have an effect on whether the speaker's L1 influences the L2 in terms of lexical and grammatical domains. Brown and Gullberg submit, "Linguistic conceptualization is resistant to restructuring in the second language" (2011: 79).

The impact of the age of acquisition and resistance to conceptualization restructuring in the second language is evident in teaching Navajo to college students at

the University of New Mexico. While many students who take Navajo are Navajos whose first language is English and may have heard Navajo growing up. As a result students struggle with the different ways of thinking when speaking and writing Navajo. The students have trouble grasping the concept that arguments are attached to verbal words: particularly challenging is the third person singular forms of verbs because third person singular subjects, with the exception of 3a (animate) and 3s (spatial) subject morphemes, are not marked by an audibly produced morpheme. Additionally when writing, students often try to write Navajo using English sentence structure as seen below in Example (25), which are actual written productions from students as well as the correct form.

(25)

1 What is your mother's name?

a) \*Haash      nimá      wolyé?  
     What      your mother    3<sup>sg</sup>-is called

b) Nimá      haash      wolyé?  
     your mother    what      3<sup>sg</sup>-is called

2 My father works for the federal government.

a) \*Shizhé'é    naalnish    yá      Wááshindoon.  
     My father    3<sup>sg</sup>-work    PP-for    the federal govt.

b) Shizhé'é    Wááshindoon    yá      naalnish.  
     My father    the federal govt.    PP-for    3<sup>sg</sup>-work

One hypothesis for this divergence to structural continuity in Navajo is the influence of English. As Brown and Gullberg state, “L1 patterns guide construal in L2” (2011: 80).

The culture associated with a specific language and its influence on a speaker's world view or conceptualization may also play a role in bilingual discourse in addition to the influence of the different lexicons as language structure. As a result, one would expect bilinguals to exhibit prosodic differences that are language specific driven by conceptual as well as structural differences.

## **2.7 Code Switching**

The alternation of languages within speech, or code switching, is generally studied as it is related to natural conversation since it “cannot be directly elicited” but rather is constrained based on the ‘norms of the perceived norms of the speech situation’ (Poplack 1980: 595). Code switching is a unique form of interactive talk when analyzed may provide insight into the reciprocal relationship between discourse and structure.

Code switching is generally thought of as a cross cultural phenomenon with distinct features seen in the speech of bilinguals around the world (Kamwangamalu 1989: 321). More precisely it is ‘the alternation of two languages within a single discourse, sentence or constituent... provided that constituent is not a bound morpheme’ (Poplack 1980: 583, 585). When patterns of code switching emerge, the analysis of how and when the switches between languages occur could lead to a clearer understanding of how discourse may shape the structure of the code switching event.

Poplack discovered that ‘balanced bilingual’ also referred to as the ‘fluent bilingual’ is subject to an ‘equivalence constraint’ meaning code switches occur “at points in discourse where the juxtaposition of L<sup>1</sup> and L<sup>2</sup> elements does not violate a syntactic rule of either language” (Poplack 1980: 586). Once thought of as syntactically random, the general consensus now is code switching is in fact rule governed speech;

however, there is “little agreement on the precise nature of the rules involved” (Poplack 1980: 585).

On the other hand, the non-fluent bilingual also code switches with regularity and is able to ‘maintain grammaticality in both L<sup>1</sup> and L<sup>2</sup> (Poplack 1980: 581). For example, Poplack found that the distinct structures of Spanish and English were never violated by the study participants regardless of the type of code switching nor degree of fluency (1980: 600). Tags, single words, such as nouns, and even short phrases are subject to code switching as seen below in (26)

(26) Tell Larry *QUE SE CALLE LA BOCA*.  
‘Tell Larry to shut his mouth’.

(Poplack 1980: 587)

Example (27) demonstrates that code switching may also occur within a single sentence. This type of intra-sentential switching is considered more complex “since a code-switched segment, and those around it, must conform to the underlying syntactic rules of two languages which bridge constituents and link them together grammatically” (Poplack 1980: 589). This means a switch is prohibited “from occurring within a constituent generated by a rule from one language which is not shared by the other” (Poplack 1980: 586).

(27) Why make Carol *SENTARSE ATRAS PA’QUE* (sit in the back so)  
everybody has to *move PA’QUE SE SALGA* (for her to get out).

(Poplack 1980: 589)

Code switching can also be viewed as a way of modifying or adapting a communicative event for the sake of personal intentions since the underlying motivation

for code-switching varies from individual to individual and possibly from situation to situation and is always contextually salient.

Finally, code-switching, in some instances, may be activity driven. As Auer notes, code switching related to conversational meaning is based on the premise that “certain conversational activities prompt the usage of one language or the other” based on activity type (1995: 117). Certain types of activities are more strongly linked to a particular language and when the activity changes, so too does the language choice.

The way in which speakers, either monolingual or bilingual, conceptualize and frame their speech involves examining the role of discourse from another approach: that of language in terms of poetics and performance, which is inextricably intertwined with the previously discussed concept of ‘thinking for speaking.’

## **2.8 Language as Poetics**

Beginning in the 1960s, the performance aspect of language with regards to its role as verbal art, and what insight it can offer by way of the cultural organization of the communicative process and its role in shaping language structures, emerged (Jakobson 1960 and Bauman and Briggs 1990). The argument in support of the relationship between language and society is “that verbal art provides a central dynamic force in shaping linguistic structure” (Bauman and Briggs 1990: 59), though the concept of poetics has often been discounted by both anthropologists and linguists who have tended to focus on the fundamental areas of interest in both fields (Bauman and Briggs 1990).

The theory of language as performance (*parole*) takes into account the notion that the speech act is meaningful because it is “connected with some type of content or function” (Bauman and Briggs 1990: 65). By studying narrative as performance, “a wide

range of vantage points on how language can be structured and what roles it can play in social life” can also be investigated (Bauman and Briggs 1990: 61). The goal of the speaker to effectively communicate the intended message can be thought of as audience oriented, and the way in which the discourse unfolds is a direct result of the circumstances in which the text is performed.

## **2.9 Language as Performance**

If poetics is in fact verbal art, then performance “provides a frame that invites critical reflection on communicative processes” (Bauman and Briggs 1990: 60). Beginning in the 1970s performance-based studies focused on the cultural organization of the communicative process; the social action between performers and audiences which “invites critical reflection on communicative processes” (Baumann and Briggs 1990: 60).

By examining performance in this manner, it is possible to gain insight into how speakers of different language shape verbal traditions, which may reveal consistencies in structure related to a particular genre of speech or even a particular type of patterning of ‘verses’ or ‘lines’ that may be genre dependent.

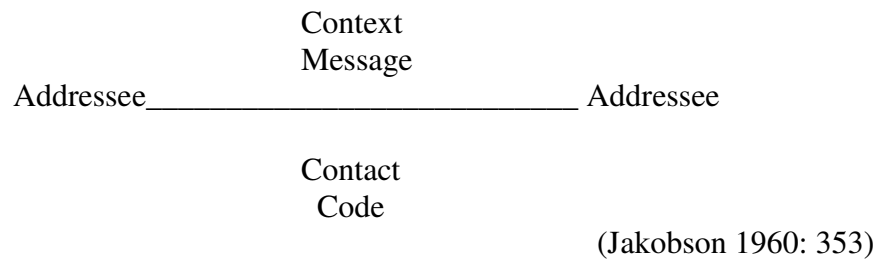
The status of speech as a social action is reinforced by “poetic patterning... genres... and other dimensions of performance” (Bauman and Briggs 1990: 65). The form, function and meaning of verbal art cannot be understood apart from context. Baumann and Briggs emphasize, “the structure and dynamics of the performance event serve to orient the participants – including the performer” (1990: 71).

## **2.10 Speech Event**

In order to analyze the communicative act there must be an understanding of the overall speech act with regards to the “constitutive factors in any speech even, in any act

of verbal communication” (Jakobson 1960: 353). Figure 3 represents the six factors directly associated with the speech event. The *addresser* sends a message to the *addressee*. To be understood the message must have relevant *context*. The *contact* then involves the “physical channel and psychological connection” between the interlocutors. Finally, the *code* involves both the aspects of grammar and competence.

Figure 3: Speech Event Model



Each of the elements is crucial to the communicative act and each also “determines a different function of language” (Jakobson 1960: 353).

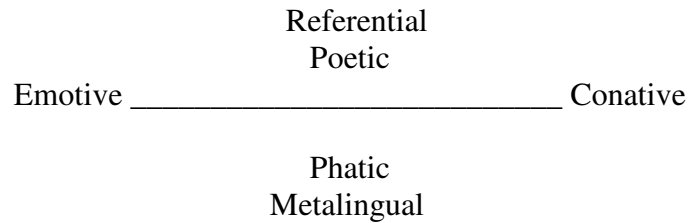
### 2.10.1 Functions of Language

The six functions of language related to the speech event are: emotive, vocative, phatic, metalingual, referential and poetic. The *emotive* reveals something about the speaker with regards to intention or purpose. The *conative*, also known as the *vocative*, functions in terms of identification of the addressee. The *referential* function is as the name implies, it refers to someone or something being spoken about. The *poetic*, sometimes referred to as the *metapragmatic*, is concerned with the actual formulation of sentences, parallelism and rhythmic couplets. The *phatic* refers to how language is directed toward in terms of channel (i.e., eye contact and body language) and may involve the “profuse use of ritualized formulas to prolong communication” (Jakobson

1960: 355). The *metalingual* function involves grammar, structure, lexicon, and usage.

Figure 4 is a corresponding scheme of the functions in Figure 3.

Figure 4: Function of Speech Model



(Jakobson 1960: 353)

## 2.11 Narrative Structure and Presentation

The texts analyzed for this work are all narratives representing a variety of genres (i.e., joke telling, monologue, personal testimonial, and storytelling), thus, the criteria set forth by Hymes (1977) in his study of Chinookan language with regard to this type of presentational form are relevant. According to Hymes (1977: 43), the way in which speakers choose to structure narratives is thought to involve three aspects: 1) the organization of poetic form (i.e., verse and lines), 2) organization of rhetorical form (i.e., organization of expectations), and 3) the pattern of vocal realization (Hymes 1977: 438). Ideally, these three elements are interwoven with each other and are “fully realized in a performance” (Hymes 1977:40).

Hymes’ work on Chinookan narratives shows how each of the aforementioned elements are structured by the speaker as they relate to covariation between form and meaning. In essence, certain elements recur in “structurally significant roles” (Hymes 1977: 438), and these recurrent elements represent a regulatory element within the narrative. The term ‘line’ is used by Hymes to describe an utterance which consists of a



verb plus some segment of additional narrative (1977: 438). Example (28) depicts signal lines.

(28)

NaX lack wak'áSkaS,	The girl got up,
t'áya gagúXa wátuL	she fixed the fire,
wáx gag LuX iLlászwa,	she lit pitch,
gagíyukSdix qáXba Sdúktkba:	she looked where the two were
Á:di ::! ILGákikt!	Ah! Ah! Blood!

(Hymes 1977: 432-433)

Example (28) revealed another pattern within the storytelling genre, larger units of interest which Hymes calls “verses” recognizable by their repetitive nature “within a frame” and “the relation of putative units to each other within a whole” (Hymes 1977: 438). Jakobson also recognizes the concept of the verse and suggests that it exceeds the limits of poetry but at the same time implies poetic function” (1960: 358).

The concept of frame can be likened to a mental image the speaker wishes to convey. By framing one’s speech, the speaker ‘sets the stage’ for the communicative act in which they are about to engage, culminating in both the execution and presentation of the material in a particular manner, or “verses” that can advance the narrative in a variety of ways.

The speech act in example (29) represents a sequential and parallel frame to the events described in the excerpt of the narrative in example (28) in that it is complementary to the previous frame while moving the story forward by providing new details germane to events taking place within the narrative at the same time.

(29)

Íwi gag Luq'wma:	She raise her light to it, thus:
íyalxmitba wiCaLm,	her uncle is on his bed,
Lq'úp íyatuk,	his neck cut,
yúmqt.	he is dead.
GaSaX' lqiLX	She screamed.

(Hymes 1977: 432-433)

### 2.11.1 Voices

Another element of particular importance when examining narrative is contextualization; verbal art forms need to be viewed in terms of their “social and cultural contexts of production and perception” (Bauman and Briggs 1990: 72). These instances of performance can be examined in terms of “voices” or in terms of the types of “role of inhabitants” speakers adopt during the performance of communicative acts according to Silverstein and Urban (1996: 8).

The concept of voice can be realized in a variety of ways. As it relates to discourse in general, voice affords one the opportunity to be heard, where speakers are self-aware of their role as one who is “representing the current material interests of the community” as well as allowing “participation in new fields” (Dinwoodie 1999: 167) as seen in example (30), which has been slightly reformatted by omitting the voice notations that appeared above in the original text. However, the layout including the indentations are otherwise consistent and indicative of the different voices exhibited as part of the overall layout.

Additionally, the Navajo text is written using a combination of the current orthographic standard for Navajo with the occasional insertion of International Phonetic

Alphabet symbols (IPA) symbols. As a point of clarification, there are two minor word boundary discrepancies, but they are not significant enough to cause confusion nor detract from or change the overall meaning of the utterances.

(30)

Jó díidi xáádéé'šǐ hosiidlǐí'.	Now, this (story begins) when we came into being
Jó	Now,
'áádóó	from there
deezt'í', silǐí'	it started (began to extend), it came into being.
'áádóó,	And from there,
t'ahnt'ée' ǎ' dadzitsaa,	It came to be that someone was sick,
jiní.	they say.
'áádóóšǐí nt'ée',	From there apparently, at that time,
"Xa'át'íǎ ǎe bééhodooziǐǎǎ?"	By what means will it become known (what ails) him?

(Dinwoodie 1999: 172)

### 2.11.2 Speech Frames

Secondly, the type of communicative act (i.e., narrative or storytelling), allows for the interlocutor to partake in “double voice discourse” where the intent is two-fold; the speaker is sharing the knowledge of something (i.e., rite) as well as the communication of the actual rite itself (Dinwoodie 1999: 168). Speakers have the ability to combine various voices and multiple frames creating the opportunity for multiple discursive functions.

Within the narrative, the relationship between the performer and audience is resituated within the narrative scenarios allowing for the multimodal expressions of the speaker's beliefs, attitudes and obligations as part of the art of performance. Example (31) from the data used in this study is not only an example of a speaker employing “double voiced discourse” where they are expressing knowledge of an event, a solar

eclipse, as well as personal belief as to the event being described, but also that of metapragmatics where the “effects and conditions of language use becomes objects of discourse” (Dinwoodie 1999: 168), in terms of actual speech in action.

(31)

Sundaygo,	On Sunday
Jóhonaa' éi daatsaah,	(what is known as) the dying sun
ha'nínígíí.	how they talk about it.
Tł'éhonaa' éiyígíí,	The moon, that one
éidíyígíí=,	that one, the one which,
Ałne'anát'ash jini.	they travel behind each other, they say.
Doo shíí daatsaah da.	It probably doesn't die.
Hááhályìh jini ákwé'é.	They say it rests there.
Éi shíí biniyé á'té.	That's probably why it's like that.

(<http://www.youtube.com/watch?v=7lkif6EmvDA>)

This perspective regarding the textuality of voices is especially important in the analysis and understanding of the communicative act with respect to how it is inextricably linked to poetics and performance. It also illustrates how speakers actively shape discourse from selecting and combining words in “verses” and utilizing “voices” and “frames” setting the stage for the communicative act thereby allowing the expression of attitudes, beliefs, and knowledge.

These concepts of poetics and performance are especially relevant to this body of work. While the intent is to establish a method to analyze discourse, just as important are the functions of the way in which communicative acts are organized as they relate to framing, the discourse for the intended audience—which in turn, may reveal new information about verbal morphology.

## 2.12 Summary

In this chapter the concept that language and thought are inextricably intertwined has been explored. Vygotsky, posited that thought is not expressed in words, but rather realized through them. The contributions of Benjamin Whorf and Edward Sapir as related to linguistics determinism and linguistic relativity. This chapter examined, including potential pitfalls of the doctrines. Additionally, the concept of ‘thinking for speaking’ coined by Slobin (1987) was also explored.

It was shown, that there does appear to be a certain level of reciprocity between thought and language that shapes the way people view the world and this reality is realized in grammatical and lexical concepts encoded in a language, which may affect cognitive processes such as shaping habitual thought. Frequent use of specific linguistic forms focuses attention on their particular function, possibly making them more salient on a conceptual level.

Another aspect considered in this chapter is how language and thought function together in the minds of bilinguals and the potential for the activation of two conceptual systems which can be revealed by instances of and specific types of code switching.

Lastly, the functions of discourse were explored which entail viewing the communication as verbal art as it relates to poetics and performance. The structure and functions of the speech were explored as they relate to the structuring of the communicative act. Additionally, narratives and their presentation in terms of recurring patterns of verses, which are crucial units in the framing or the situating of the performative act, were defined as well. Furthermore, the concept of voices was

considered as yet another function of discourse allowing access to intimate knowledge of a cultural and personal nature.

The focus of the next chapter will be the intonation unit (IU), including the paralinguistic characteristics which define the unit, what kind of information speakers package within these units, what types of structures are representative of IUs, as well as the various functions of these units that enable and foster successful communication.

## **Chapter 3**

### **3.1 Introduction**

The previous chapter provided an explanation of how language and thought are inextricably linked in relation to the linguistic relativity theory to include the nexus between culture and cognition, and how both those entrenched factors, influence linguistic structure and ultimately impact the speech act.

Additionally, the communicative act was examined from a poetics and performance standpoint as it relates to speaker motivation and intent, which may affect the overall organization of the speech act as it is associated with word choice, structure and production. Attitudes and beliefs about the speaker can be revealed by viewing the speech event as a performative act by the discourse framing speakers employ to manage and foster the flow of information in a variety of ways.

### **3.2 Overview of Chapter**

This chapter focus is a cognitive approach to the speech act theory. How interlocutors package information into cognitively manageable units organizationally will be examined from the speaker's point of the view into meaningful and understandable portions of speech from the addressee's standpoint, motivated by the goal of the performative act which is to effectively communicate thoughts, ideas and events.

To reiterate the first objective of the study, the IU will be defined from a usage-based perspective will be examined to show of how these units are realized in naturally occurring uninterrupted streams of speech. In addition to outlining the criteria for an IU, the correspondence between an IU and a Grammatical Unit (GU) will also be discussed. Another area of consideration will involve examination of the "one new idea" constraint

(Chafe 1994) as it relates to both cognitive processes and lexicalized phrases and will end with the naturally occurring phenomenon of intonation chaining.

Lastly, the concept of prosodic cues as they are deliberately employed and managed by speakers with regards to semantic signaling as a method in which speakers organize and disseminate information for specific effects will also be examined.

### **3.3 Language Process**

Language is a dynamic process involving the production of a continuous stream of sound by the speaker that ideally is interpretable and comprehensible to the addressee. Chafe (2001) proposes that language in action should be viewed as “two streams, one a stream of thoughts, the other of sounds” (2001: 673). These two metaphorical streams possess different qualities; sounds are tangible in that they are “publicly observable” whereas “thoughts are experienced within the mind” making them less amenable to objective research (Chafe, 2001: 674). Ultimately, the organization and communication of thoughts is the essence of language (Chafe 1994), and the speech act itself provides a “more direct expression of the ongoing thought processes” (Chafe and Danielewicz 1987: 91)

The way in which speakers perform communicative acts reveals there is an “organization of thoughts from moment to moment into a focus and a periphery,” whereby the focus is revealed in the discourse produced (i.e., a single word, a phrase, or a clause). The main focus of interest is the verbalization of the temporarily active information in the speaker’s mind while the periphery information, which includes the semi-active concepts or background information not at the core of the current stream of



discourse, and the inactive concepts are those which are stored in long-term memory and are secondary and not part of the focus nor considered peripherally active (Chafe 1994).

The active thoughts, ideas, concepts which are the focus of the speaker are realized by the prosodic production in an utterance. In order to ensure clarity, in this body of work an utterance will refer to any portion of verbalized speech with meaning including a single word, phrase or clause. Accordingly, prosody as it will be used is defined as the rhythmic rising and falling of pitch that occurs in spoken language.

### **3.4 Intonation and Prosody**

The terms intonation and prosody are invariably linked as one and is part of the other. Due to the close relationship, the distinction between the two, can appear opaque because they are interchangeably misused

#### **3.4.1 Intonation**

“Intonation is the pitch or *melody* of speech” according to Wennerstrom (2001: 17). Intonation can be thought of as the pattern of speech including pitch changes that are *not* used to distinguish words (i.e., noncontrastive). It can be applied to describe patterns associated with a specific language and culture. For example, in English, intonation has been documented as functioning to indicate a distinction between a statement that is produced with a falling contour at the end of an utterance in contrast to a question which ends with a rising pitch contour.

#### **3.4.2 Prosody**

Chafe defines prosody as a “variety of perceptual and physical properties of sound including, pitch, loudness, timing voice quality and the presence or absence of vocalization itself” (1994: 56). Meanwhile, Woodbury offers insight into the function of

this unique feature of the speech production which has been said to mark “phonological units above the level of the word,” which express “surface syntactic constituency” (1988: 1). Prosody reveals information about speakers’ attitudes and emotions as well as serves as indication of the speaker’s background.

### **3.4.3 Linguistic Tone**

While intonation may be the pitch or melody of speech, it is a different concept from that of linguistic tone. To reiterate, Navajo is a tonal language; syllables are inherently low tone by default and marked syllables have high tones. As discussed in the previous chapter, tonal changes in pitch in Navajo are linguistic tone and are used by speakers to distinguish words either lexically or grammatically.

## **3.5 Discourse Methodology**

The recognition of the importance of the study of prosody with a focus on the role of intonation has fostered several different approaches which are methodologically distinct, yet somewhat complimentary.

### **3.5.1 Areas of Research**

Three main areas of research exist in the field of intonation in discourse. The first, looks at intonation as part of grammar in the broadest sense of the term. Historically, this meant linguists attempted to draw correlations between “declarative, interrogative, and exclamatory sentence types and final falling or rising intonation,” (Couper-Kuhlen and Selting 1996). The research however, involved trying to verify “intonational contours as specifying a relationship between propositional content and the mutual beliefs of participants in the current discourse” (Couper-Kuhlen 2005: 15). Often, this type of analysis of intonation involves measurable audible changes in fundamental

frequency where “test sentences are read out ‘in context’, as follow-ups to prior sentences” providing “*discourse context* for the interpretation in question” (Couper-Kuhlen 2005: 15).

The second approach is that of intonation-as-contextualization, which centers on the idea that “linguistic signs need embedding in a context in order to be fully interpretable,” (Couper-Kuhlen 2005: 16). In other words, “all linguistic signs are contextual”—meaning they are only fully understood under specific circumstances related to the prior speech acts. While contexts are not given per se, but rather made germane via contextualization cues, including both the verbal and nonverbal, as well as, use of code switching and gesture (Couper-Kuhlen 2005: 16).

Lastly, and the direction of this study, is the intonation-and-information-flow approach which has traditionally been more centered on “unit segmentation and inter-unit continuity” (Couper-Kuhlen 2005: 15). This school of thought evolved out of “close observation of real discourse” rather than constructed examples, and has tended to be primarily “monologic and uniform in genre (e.g., oral narration and instructional monologic)” (Couper-Kuhlen 2005: 15).

In this type of textual analysis, the manner in which speakers segment their utterances and how these “segments are linked transitionally to one another” may also reveal whether these segmented units can stand alone as complete units or if they are in fact inseparable due to both cognitive and physiological constraints (Couper-Kuhlen 2005: 15). Additionally, the movement of ideas into and out of semi-active and inactive states of consciousness as the speech act is occurring in real time—this is of particular interest in terms of discourse structure.

### **3.6 Intonation Unit (IU) Background**

Research in the field of discourse analysis as it relates to prosody in general and more specifically intonation has undergone significant growth within the past three to four decades. As Couper-Kuhlen states, prior to the 1970s, “no one had ever thought of combining the notion of intonation with that of discourse” (2005: 14). Moreover, at first intonation was thought of as merely “the difference between a sentence of written prose and that of a sentence read aloud” (Couper-Kuhlen 2005: 14).

Today the role of intonation in language is widely recognized as highly relevant to the study of discourse. Over the years of development in the field of discourse analysis, the study of how people divide their speech into manageable segments during discourse in real time has provided valuable insight into all the elements tied to speech processing related to the actual performance as well as the cognitive constraints that potentially limit and restrict production.

Intonation units are “a pervasive feature of natural speech” (Chafe 2001: 675) and believed to “express what is in the speaker’s short-term memory,” and reveal the “focus of consciousness at the moment of production,” (Chafe and Danielewicz 1987: 95). Croft, meanwhile offers “intonation units are argued to be the natural, complete unit of spoken language,” (1995: 842). Furthermore, “intonation units emerge from the stream of speech with a high degree of satisfying consistency, not just in English, but in all languages” (Chafe 1994: 62).

However, some confusion arises due to the assorted labels assigned to this unit by various linguists. The general view of what is regarded as an IU is basically the same, however the terminology has not been consistent with the same concept referred to as

“information unit” (Gumperz 1982: 107), “idea units” (Chafe 1980), intonational phrase” (Selkirk 1984), the “intermediate phrase” (Pierrehumbert 1980), the “tone unit” (Halliday 1967a and Brazil 1985), and the “intonational unit” by Chafe (1994) just to name a few.

In this body of work, the unit of speech that will be examined will be referred to as the Intonation Unit (IU) as defined by Chafe (1994). The notion that discourse is segmented by speakers into manageable units has been a topic of interest from a functional approach in the areas of discourse analysis and cognitive linguistics.

Beginning with Chafe (1980) and his research involving the ‘Pear Film,’<sup>10</sup> the study of prosody and intonation in discourse has become much more focused and investigated from a usage-based perspective with particular emphasis on the cognitive components involved in speech being considered as a relevant and meaningful factor impacting production.

It has also been suggested that prosody and intonation are not only directly influenced by cognitive constraints, but these constraints on the IU itself are “clearly of a different sort than performance errors or disfluencies” (Croft 1995: 840). In addition to cognitive constraints that affect both speaker and hearer, a speakers’ utterance can successfully produce much information which the addressee can process and comprehend; the physiological constraints also affect production. Chafe and Danielewicz suggest that speech is produced in spurts partly due to the ‘biological necessity’ for speakers to breathe (1987: 15).

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<sup>10</sup> A six-minute film made at the University of California at Berkeley in 1975 by Wallace Chafe who, with his research team, he designed a very simple film and shown to speakers of a number of languages, who were asked to tell what happened in it in order to determine how different languages express ideas, concepts, and actions.

### 3.6.1 IU Criteria

Currently, in addition to the definitions offered by other linguists (Chafe and Danielewicz 1987, Croft 1995, and Woodbury 1988), DuBois et al. categorize intonation units as “a stretch of speech uttered under a single, coherent intonation contour” (1993: 47). For this study, the term IU as defined by Chafe (1994:60) is used to reference this phenomenon of speech: an IU may have any or all of the following features;

- Pauses preceding and following it
- A pattern of acceleration-deceleration
- Overall decline in pitch level
- Falling pitch contour at the end
- Creaky voice at the end

Chafe and Danielewicz state that, “It seems that, under normal conditions, a speaker does not, or cannot, focus attention on more information that can be expressed in about six words” (1987: 95). Chafe asserts that attempts to achieve a very high degree of syntactic complexity are likely to cause disfluencies including hesitations, false starts, restarts, and repetitions (Chafe 1994).

While an IU is a stream of speech uttered under a single intonation contour, it should not be confused as being equivalent to that of a sentence: “an IU does not grammatically correspond to a sentence, since it frequently is a unit smaller than a sentence and sometimes (though quite rarely) is not a full grammatical constituent at all” (Croft 1995: 841). Croft further emphasizes the point by distinguishing a sentence as the “largest syntactic unit that all agree must be sanctioned or generated by a grammar” whereas “the IU is argued to be the natural complete unit of spoken language” (1995: 842).

### 3.6.2 Types of IUs

In accordance with the “intonation and information flow” approach, intonation units can be delineated as to their function within an utterance. Chafe (1994) further subdivides IUs in terms of their functional roles within discourse, labeling them as *fragmentary*, *regulatory*, and *substantive* (1994:63-64). Fragmentary units function as the name would imply; they are incomplete or unsuccessful intonation units which can include a variety of linguistic disfluencies such as non-lexical utterances or fillers (e.g., “*um*”, “*ah*”, “*huh*”), speakers restarting a phrase due to loss of the train of thought, and repaired utterances, which allow speakers a means of correcting mispronunciations and even false starts as revealed in example (32).

- (32) 1       ... I mean she       (fragmentary)  
      2       I know she has       (fragmentary)

(Chafe 1994: 64)

Regulatory units are those units which regulate interaction in discourse, including referential discourse. The regulatory function of these IUs can include the interaction between participants, fostering information flow, and promoting discourse development, which may also reveal the mental processes of the speaker. Sometimes the information contained within regulatory units corresponds to particles most often labeled as discourse markers, which in essence perform the similar function of linking phrases or, in the case of this study, IUs together. Whereas discourse markers may be short one word utterances, when used in a regulatory manner, they can also be part of a larger unit. The IUs as revealed in Table 6 below, depending on their structure, according to Chafe (1994) fulfill particular categorical discourse functions.

Table 6: Discourse Functions of Regulatory IUs

Textual	and then, well
Interactional	mhm, you know
Cognitive	let me see, oh
Validational	maybe, I think

(Chafe 1994:65)

Substantive units are the most salient of IU type and convey “ideas of events, states or referents,” and are the crux of the content the speaker is trying to transmit to the audience which also tend to have the “grammatical form of single clauses,” (Chafe 1994: 65), as seen by example Table 7 below.

Table 7: Substantive Single Clause IUs

1	...and these gals were taking pictures	(event)
2	..but then your back gets sway back	(event)
3	..She has something with her gallbladder	(state)

(Chafe 1994: 66)

What Chafe deems successful intonation units are either substantive or regulatory as seen in example (33). Although many substantive IUs convey the equivalent of a single grammatical clause, many other convey parts of clauses seen in (33) (4).

- (33)
- |   |                    |               |
|---|--------------------|---------------|
| 1 | ... Well,          | (regulatory)  |
| 2 | Isn't she healthy? | (substantive) |
| 3 | ... Mhm,           | (regulatory)  |
| 4 | More or less       | (substantive) |

(Chafe 1994: 64-65)



### 3.6.3 Words per IU Ratio

As Chafe and Danielewicz (1987) discovered, much variation of words exists per intonation unit in English depending on the type of analyzed communication as shown in Table 8. According to Chafe and Danielewicz' analysis, conversation and lecture texts exhibited 6.2 and 7.3 words per intonation unit respectively (1987).

Table 8: Genre and IU length

<u>Words per Intonation Unit</u>	
Conversation	6.2
Lectures	7.3
Letters	8.4
Academic Papers	9.3

(Chafe and Danielewicz 1987: 96)

When looking at substantive IUs specifically, 60 percent of the IUs, in Chafe's data compiled on English, were those of single clauses that conveyed ideas of events, states or referents with a mean length was 4.84 words per IU (Chafe 1994: 63). It is unclear how the remaining IUs were distributed in terms of the percentage that were either regulatory or fragmentary as Chafe did not include that information in the text.

When realized as a clause, substantive IUs can be broken down and spread across multiple IUs. One of their functions is then the expression of active ideas within the current "focus of consciousness," which are "highly transient" and are "continually being replaced by other event and state ideas," with this movement serving as a reflection of our mental experience (1994: 66-67).

The absence of cross-linguistic evidence suggests a possible universal regarding the amount of information contained in an IU (Chafe 1994). That in turn may lead to correlations that can be drawn when comparing IU length among different types of

languages. Furthermore, in addition to type of language, the genre of the speech act being analyzed (e.g., monologue, storytelling, and instructional narrative) may also affect the length of IUs because some types of speech genres, such as storytelling, are much more rehearsed forms of oral literature by their very nature and may be more set in term of style and delivery.

### 3.6.4 Words per IU in Polysynthetic Languages

Interestingly, typological differences in language are likely to affect the number of words per IU. To illustrate this, Chafe examined the Seneca language, an endangered polysynthetic Iroquoian language spoken in western New York State and Ontario, Canada, and discovered the number of words per IU in Seneca was two, or a third of that of English (1994: 148) as seen in Example (32) below.

Chafe found the IU length in Seneca is half that of English, with a modal length of 2 words per IU as seen in example (34). Chafe suggests this because Seneca words tend to contain much more information than English words.

(34)

- |   |  |                           |
|---|--|---------------------------|
| 1 | <i>O'wáswa'</i><br>fire goes out<br>The fire keeps going out                       | <i>gɛ:s</i><br>habitually |
| 2 | <i>wá:dikhwɛ:dá't,</i><br>they finished eating<br>they finished eating             |                           |
| 3 | ne      c:sagyédòtho?<br>the      I would put wood in again<br>to put more wood in |                           |

(Chafe 1994: 154-155)

Lovick and Tuttle found similar results in their examination of two recorded narratives in Dena'ina, a polysynthetic Athabaskan language, which exhibited about half the words per IU when compared to English. Lovick and Tuttle's data revealed an average of 3.0 and 3.17 words per intonation unit among Dena'ina speakers (2012: 11).

Similar results were found in the Navajo data analyzed, which will be discussed in the next chapter, and is likely due the complex morphological structure of the language, which impacts the way in which words are formed, requiring more mental effort to produce complex compound words which will likely impact the number of words per IU produced. Example (35) illustrates the way in which a single word in Navajo that might be perceived as multiple words in English, for it is in fact a single word, a NP, expressed in a single IU.

(35) *Béésh Ts'ósí Bee It Na'atsihí,*

Béésh	Ts'ós	í		Bee		It
Metal	thin	the one	which-Rel-Enc	by means of-PP		with it-PP

Na'atsih	-í
one stirs	the one-Nom-Enc

“whisk”

(<http://www.youtube.com/watch?v=bMmz1A4950E>)

Example (36) is an illustration of two postpositional phrases that when strung together with the verb represents a single concept generally perceived in English as a NP, also expressed in a single IU.

(36) *Baa dloh hasin baa hane'ígíí*

baa dloh hasin baa hane' ígíí  
about laughter to have about story the one which-Rel-Enc

“joke”

(<http://www.youtube.com/watch?v=IkQL3sy10Pc>)

Based on analysis of the Seneca text Chafe concluded, that a speaker's “ability to activate only one idea per focus of consciousness seems to depend on limitations inherent in human mental processing, regardless of the language one speaks” (1994: 159).

### 3.7 ‘One New Idea’ Constraint

In addition to specific characteristics that are indicative of IUs as well as specific types of IUs related to discourse function, there is a cognitive limit as to the amount of information which may be contained within a single IU has been posited. Chafe suggests that an IU cannot express more than ‘one new idea’ as it relates to the activation of referents (Chafe 1994: 109). This concept applies to both the speaker and the hearer and directly deals with the cognitive aspects of speech, namely production on behalf of the speaker and processing limitations of the addressee. Chafe asserts that one will not find IUs “in which both the subject and predicate express new information” (1994: 108).

The ‘one new idea’ per IU theory is dependent on the acceptance that “lexicalized phrases express ideas that are activated as integrated wholes” (Chafe 1994: 115) which is revealed by the reference to ‘asthmatic bronchitis’ in example (37) (3) which technically expresses two separate illnesses but in combination reveals the “unitary idea of a particular malady” (1994: 118). Example (38) provides additional examples of lexicalized phrases.

(37)

- 1 She was in the hospital,
- 2 three times,
- 3 with... asthmatic bronchitis.

(Chafe 1994: 117)

(38)

- rapid progress
- beautiful weather
- personal relations
- a new job
- a quiet wedding
- a rigid schedule

(Chafe 1994: 118)

Findings from other studies appear to corroborate the ‘one new idea’ constraint. Croft asserts “the cognitive constraints on IU structure are clearly of a different sort than performance errors or disfluencies” (1995: 840). Also noteworthy is the study Swerts and Geluykens conducted that focused on intonation units in instructional monologues in Dutch, which reveals “a speaker will try to mark these units as clearly as possible to facilitate comprehension,” suggesting cognitive constraints affect both speaker and listener (1994: 21). With respect to the instructional monologues analyzed, Swerts and Geluykens state that “each instruction can be regarded as a coherent group of sentences dealing with one particular topic” (1994: 24) as seen in example (39) below.

(39)

- 1 *dan pakken we de plant,*  
then we take the plant
- 2 *en die plant die aetten we naast de voordeur,*  
and that plant we put next to the front door
- 3 *links naast de voordeur op de grond,*  
to the left of the front door on the ground

- 4 *dus gelijk met de onderkant van de voorgevel,*  
so it is parallel to the bottom side of the façade

(Swerts and Geluykens 1994: 27)

There are communicative motivations for segmenting speech and intimate speakers may “manipulate pauses to structure the information flow with longer pauses at IU breaks and shorter pauses at shallow breaks,” (Swerts and Geluykens 1994: 33). They also suggest this manipulation of pause length may be an attempt by the speaker to “make it easier for their interlocutors to process discourse structure by marking major chunks of discourse and making them more easily identifiable” (1994: 35).

Wennerstrom also suggests “intonation performs an organizational function in other genres in discourse” namely oral narratives and storytelling (2001: 204). The “performance features” suggested by Wolfson (1982) afford the listener the opportunity to realize the events as much more authentic. Stories offer a glimpse of the attitudes and values of the speaker and “reflects its teller’s culture as a whole” (Wennerstrom 2001: 205). This is evident in polysynthetic languages as seen by the excerpt of the Mouse Story in Dena’ina in example (40).

(40)

- |   |                                    |                         |            |
|---|------------------------------------|-------------------------|------------|
| 1 | <i>Nvit’a</i>                      | <i>nu’u ninit’ut</i>    | <i>ha.</i> |
|   | your sleeve                        | put it over your eyes   | and        |
|   | Put your sleeve over your eyes and |                         |            |
| 2 | <i>Qatsiniyil.</i>                 |                         |            |
|   | put your head against the ground   |                         |            |
|   | Put your head against the ground   |                         |            |
| 3 | <i>Devit’a</i>                     | <i>nu’u ni’i’t’ut.</i>  |            |
|   | his own sleeve                     | he put it over his eyes |            |
|   | He put his sleeve over his eyes.   |                         |            |

- 4     *[Qa] qatsiniyel.*  
       he put his head against the ground  
       He put his head against the ground
- 5     *Idi ela*  
       and then  
       and then
- 6     *qenq'a            nduniyu.*  
       a house           he came into  
       He came into the house.

(Lovick and Tuttle 2012: 304-305)

The theory also appears to hold true in Navajo as seen by the examples below, which are excerpts of the text analyzed for this work. Example (41) is a sentence spanning several IUs from an instructional narrative, whereas example (42) is that of a monologic narrative with the speaker retelling a joke.

(41)

- 1     *Díí tléé' éí=yá=,* (.5 sec)  
       this night (filler)  
       Tonight
- 2     *hait'áo    chiilchin..            ájiiP'íhígíí,* (1.5 sec)  
       how       sumac berry pudding    the one which one will make  
       how one makes sumac berry pudding
- 3     *nihít            íishjáá áshlééh doo.*  
       you plural    visual I make    future  
       I will show you

“Tonight I’m going to show you how to make sumac berry pudding.”

(<http://www.youtube.com/watch?v=bMmz1A4950E>)

(42)

- 1 *Áádóó, shíí* =  
And then, okay=
- 2 *amásání* *yit* *jini*  
maternal grandmother-indefinite with her one says  
*Shimásání* “*Azee iit’ini nlóóne’ yah aninááh’ nit ní,*”  
Grandma the doctor in there into to go with you he said  
“Grandma, the doctor said to go into the room,”
- 3 “*Áádóó,*  
And then,
- 4 “*dah ni’di’doodloh dóó nit i’di’dqqldoot, ní*  
up you will be hung and with you be shot he said  
*jini.*  
it is said.  
‘And then grandma, the doctor says go into the room and then you  
will be hung up and shot, he said’, it is said.”

(<http://www.youtube.com/watch?v=IkQL3syl0Pc>)

Based on Examples (39) through (42), it is reasonable to suggest that speakers, regardless of the type of language, do adhere to the ‘one new idea’ constraint as outlined by Chafe (1994).

It should be noted that another type of construction afforded speakers as a way of potentially combining separate ideas, events, referents or states in a single IU involves the use of conjunctions such as *and*, *or*, and *but* in English (Chafe 1994: 118). Example (43) shows that even though English speakers use conjunctions in an effort to express more than one new idea, Chafe discovered “whenever the conjuncts do express separate new ideas, we find them in separate intonation units” (1994: 118).



(43)

- a. Gallbladder and,
- b. ... heart trouble and,
- c. ... back problems

(Chafe 1994: 118)

Example (44) below is an excerpt of Navajo data analyzed and reveals similar utilization of conjunctions in order to express new referents, events or ideas which is expressed in lines (3) and (4) by use of the conjunction *áádóó*—which translates as ‘and then.’

(44)

- |   |                                       |                              |
|---|---------------------------------------|------------------------------|
| 1 | <i>Sunday=,</i>                       | “Sunday”                     |
| 2 | <i>neeznáádigo,</i>                   | “when it is ten”             |
| 3 | <i>áádóó é’é’ aahgo tsostsi’idgo,</i> | “and then during the evening |
| 4 |                                       | when it is seven”            |
| 5 | <i>áádóó Wednesday evening dó’.</i>   | “and then Wednesday evening  |
|   | too.”                                 |                              |

(<http://www.youtube.com/watch?v=AXdj2HARRRs>)

### 3.8 Clause Centrality Hypothesis

In examining intonation units in various languages, an interesting pattern emerged revealing the “centrality of the clause in the study of spoken language” (Izre’el 2005: 4). A clause is generally understood as consisting of both a predicate and its associated core arguments. Matsumoto further suggests a clause consists of predicate that “expresses a complete proposition” (2001: 527).

There are some language such as Hebrew where clauses can be “either verbal or non-verbal” whereby a “non-verbal predicate consisting of any part of speech” (Izre’el 2005: 6) as seen in example (45) (1) which represents a prepositional phrase whereas (45) (2) is an example of a clause.

(45)

1 *ha-kvish ha-ze* ||  
the-road the-this-open  
“This road is clear.”

2 *ani be-kurs* ||  
1<sup>sg</sup> in-course  
“I am attending a course.”

(Izre’el 2005: 6)

Izre’el points out that in Hebrew a verb always constitutes a clause as seen in examples (46), which is very similar to what can occur in Navajo since arguments are marked on the verb.

(46)

1 *balaa-til*  
swallowed-1<sup>sg</sup>  
“I swallowed-up”

2 *azav-ti-hal*  
left-1<sup>sg</sup>-her  
“I left her.”

(Izre’el 2005: 7)

Interestingly two of the three Hebrew data samples revealed a comparatively low number of single-IU clauses with 31% and 23% compared to the 60% reported for English (Chafe 1994: 66).

Other studies on Japanese and Mandarin Chinese (Matsumoto 2000, Iwasaki and Tao 1993) have further suggested another designation of ‘semi-clause’ which contains a verb phrase only with an overtly stated object but no subject. While Japanese does allow for ‘semi-clauses’ Matsumoto also found that the clause is the “syntactic exponent of the Japanese substantive IU” (2001: 15). His results revealed nearly 70% of IUs in Japanese were single-IU clauses (Matsumoto 2001: 542).

With regard to information available on Athabaskan languages, Tuttle and Lovick found that traditional narratives in Dena'ina indicated a propensity for the centrality of clauses. However, based on their calculations, only 43% of the IUs in Dena'ina narratives were clauses due to the fact that some clauses spanned multiple IUs while other IUs contained multiple clauses (2012: 299-300).

### **3.9 Intonation Units approximate Grammatical Units**

Another element taken into consideration in the analysis is the relationship proposed by Chafe and expounded upon by Croft (1995: 840) that a single IU is almost always equivalent to that of a single grammatical unit (GU). However, as Croft stated, it should be noted that “not all GUs are themselves IUs” (1995: 948). Generally speaking, a grammatical unit is often thought of as either a clause or a phrase “which are clearly identifiable in spoken language” (Croft 1995: 841). Croft also contends an IU is not equivalent to a sentence “since it frequently is a unit smaller than a sentence and sometimes is not a full grammatical constituent at all,” (1995: 841).

The analysis of the “grammatical properties and constraints on the IUs found in the English pear-story corpus” revealed that 97% of the time IUs equaled GUs and 91% of the time those IU were also so-called full GUs, which included a full noun phrase (NP), prepositional phrase (PP), or clauses (Croft 1995: 844).

GUs are by definition grammatically independent as well as rule governed (Croft 1995: 841) and can be considered a complete constituent, which generally contains a full set of complements (Croft 1995: 845-847). Given the close association between IUs and GUs, Croft proposed an “IU storage hypothesis” (1995: 875) whereby those GUs found in single IUs are considered “stored/precompiled syntactic structures from which more

complex structures, usually broken across IUs, are computed in language processing,” (Croft 1995: 875). Keeping both the IU storage hypothesis and GU constraints in mind, it should be noted that clauses may be further dissected into subordinate and relative clauses which increases the likelihood of realization across IUs (Matsumoto 2001, Croft 1995).

Examples (47) and (48) illustrate the ‘one new idea constraint’ per IU and the IU~GU equivalency and reflect a complex postpositional nominalized verbal constructions. However, examples (48) and (49) are indicative of idiomatic expressions, as the word for word translation or interlinear gloss does not convey what the expression actually means from the perspective of the communicative intent of the speaker.

(47)

1      *Ásaa' bee 'abézhí,*  
          *ásaa'      bee                    'abézh                    í,*  
          bowl/pot   by means of   3<sup>rd</sup>sg-indef-boiled   the one-Nom-Enc  
          “cooking pot”

(<http://www.youtube.com/watch?v=bMmz1A4950E>)

(48)

1      *Bq̄q̄h ha'íízhahí*  
          *bq̄q̄h                    ha'íízhah                    í*  
          alongside it   something curves out   the one-Nom-Enc  
          “cup”

(<http://www.youtube.com/watch?v=bMmz1A4950E>)

(49)

1      *baa ahééh nisin*  
          *baa                    ahééh                    nisin*  
          concerning   gratitude   1sg-want/desire  
          “to be thankful”

(<http://www.youtube.com/watch?v=AXdj2HARRRs>)

As Matsumoto (2001) and Croft (1995) pointed out, the breakdown of clauses into subordinating and relativizing clauses can also result in a GU being broken apart or split across multiple IUs as seen in examples (50) through (53) below.

(50)

1	<i>Dii tlée' éi=yá=,</i>	tonight...
2	<i>heit'áo chiitchin.. ájiiłłhígíí,</i>	how sumac berry pudding which one will make,
3	<i>nihit úshjáá áshlééh doo.</i>	I will show you how to make.

“Tonight I’m going to show you how to make sumac berry pudding.”

(<http://www.youtube.com/watch?v=bMmz1A4950E>)

(51)

7	<i>Chiitchin éiyáháq,</i>	Sumac berry are,
8	<i>nanise' k'ii wolyéhígíí,</i>	the plant K'ii the one that is called,
9	<i>bqah náhádleeh.</i>	on it they usually grow.

“Sumac berries grow on the plant called K'ii.”

(<http://www.youtube.com/watch?v=bMmz1A4950E>)

(52)

1	<i>Áko ndi ahéhee'</i>	Even so I’m thankful,
2	<i>díí - -</i>	this one--
3	<i>íí'anígíí biyi' kqodi</i>	inside right here
4	<i>honildlónígíí baa ahééh nisin</i>	we are alive I am grateful

“So I’m thankful we are here and grateful to be alive.”

(<http://www.youtube.com/watch?v=AXdj2HARRRs>)

(53)

1	<i>Diné,</i>	Navajo people,
2	<i>éí k'ad t'áá díí,</i>	they right now just here,
3	<i>áko yaa'í keedahat'í</i>	so they all plural reside here.

“Navajo people, right now, live here.”

(<http://www.youtube.com/watch?v=AJk5f9YvG60>)

As examples (50) through (53) show, it is not uncommon for IUs to be linked or connected to one another and the next section will explore the connectedness of IUs in discourse text.

### 3.10 Intonation Chaining

As has been noted, speech is a continuous stream of sounds which are segmented into smaller singular ideas uttered under a single prosodic contour defined as an intonation unit. IUs are not produced by speakers one after another, rather IUs exhibit an interrelatedness described as intonation chains, which can be thought of as being associated with the GU concept in terms of IU demarcation. Berez argues that IUs are not produced in isolation but “typically occur as links in larger chains defined by the nature of the intonation at the end of each IU” (2011: 17).

The function of different types of grammatical units appears to be the catalyst for intonation chaining. As Croft notes, relative clause structures can modify an entire clause thus “providing an additional assertion” though not as salient as the main clause (1995: 843). Furthermore, ‘lexical non-autonomous’ IUs serve to connect or link an IU to the preceding IU (Croft 1995).

Additionally, sequential IUs correspond to regulatory IUs (Chafe 1994) as well as lone NPs, which can function as IUs and are related to neighboring GUs. Croft notes that

a lone NP spoken as an independent unit “is a cross-linguistically widespread phenomenon” (1995: 847).

Boundary tones associated with “intonation chaining” which have been classified by DuBois (2006) may be *continuative*, *terminative*, *truncated* or an *appeal*. A *continuative* boundary signals the next IU is a continuation of the current one which may or may not complete the idea being expressed. Whereas, a *terminative* boundary tone often associated with both a deceleration in speech and pitch signals the end. A *truncated* boundary is an intonation contour that is incomplete for some reason such as a false start or a repair.

This specific method was not employed in the analysis of the Navajo data, but it did foster a similar approach. The Navajo data was coded for categories of syntactic completeness, adhering to the IU approximating GU equivalency, or whether the preceding or following IU completed the proposition, which is indicative of a GU being realized across multiple IUs, as mentioned in the previous section and seen in examples (50) through (53) above.

### **3.11 Functions of IUs**

Now that it has been established what IUs are, that they are predominantly clause-like in structure, thereby closely related to and in the majority of instances equal to GUs, their function in the speech act as it relates to poetics and performance must be addressed.

### 3.11.1 Semantic Signaling

According to Gumperz, prosodic cues<sup>11</sup> influence the possibilities and selections in relation to the “variety of possible interpretation by directing the listener” to the nuances of perception in addition to linking pertinent “semantic features together in a theme” etching out an evolving “line or argument” (1982: 104). Gumperz further defines “line of argument” as a “cohesive thematic structure which makes sense within the cultural tradition embodied in our lexical knowledge” (1982: 104).

Prosodic cues, as defined by Gumperz, are not relevant when looked at individually, but when viewed overall do have intrinsic value when evaluated in context, which includes the experience of the interlocutors. These linguistic cues perform a variety of functions including the signaling of topic or focus of the speech event. Additionally they may also, and often do reveal the speaker’s perspective, beliefs and point of view (Gumperz 1982: 128).

Additionally, IUs also function to enhance the overall performative act by the speaker employing various prosodic tactics, which “make the narrated conversation livelier” or for the “creation of suspense” (Lovick and Tuttle 2012: 328).

In addition to the functions already mentioned, as it is germane to referential discourse narratives, (i.e., the recounting of jokes, myths and stories), IUs afford the speaker the opportunity to construct a communicative event in which different frames represent not only the different roles in terms of *voices* the speaker is representing but also reveal their significance within the speech act. An experience storyteller then can

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<sup>11</sup> Prosodic cues, according to Gumperz (1982: 100) include: (a) intonation, (i.e., pitch levels on individual syllables and their combination into contours; (b) changes in loudness; (c) stress, a perceptual features generally comprising variations in pitch, loudness and duration; (d) other variations in vowel length; (e) phrasing, including utterance chunking by pausing, accelerations, and decelerations within and across utterance chunks; and (f) overall shifts in speech register.



artfully weave together the various frames, which may be analogous and complementary, yet distinct, in the execution of the performative act. This type of function will be further examined in the discussion of the study's findings in Chapter 5.

### **3.12 Summary**

In this chapter, the way in which speakers package ideas into information chunks and the paralinguistic cues associated with delimiting segments of speech into IUs and their function in discourse was examined.

It is clear, from a usage-based perspective, as Berez (2011) asserts, that the production of speech is naturally segmented and not deliberately divided into phrases and clauses at a conscious level by speakers. Considering the 'intonation and information flow approach,' it is evident there are clearly discernable ways in which speech is segmented via audible cues as detailed by Chafe (1994) and Gumperz (1982). The resulting segmentation of speech, which appears to be constrained by both cognitive and physiological limitations, fosters communication in allowing discourse to be readily produced by the speaker and understandable to the hearer.

The cognitive constraints associated with the number of ideas allowable per IU was also examined, the concept of IUs approximating the "centrality of clauses" and their close association with GUs as well as the IU storage hypothesis were also described.

Furthermore, the concept of the interrelatedness of IUs realized via intonation chaining in which speakers often, and naturally link IUs to the previous or following IU as a way in which to manage the information flow in discourse.

Finally, the possible functions of IUs was explored as they are both managed and manipulated by speakers to not only reveal a specific theme related to the discourse, but

also in essence add flavor to the communicative act by making it more animated and climactic were examined.

The next chapter will discuss the methodological approach used for this body of work. The criteria employed in the selection, collection and analysis of data used will be outlined and will include a description of the demographics of the participants, the annotation tools used, as well as the means whereby the texts analyzed were validated both in form and meaning.

## Chapter 4

### 4.1 Introduction

The previous chapter examined how speech is segmented on-line by speakers during naturally occurring uninterrupted streams of speech. The criteria used to define an intonation unit (IU), various types of IUs, as well as the amount of information contained within these units was also examined. Furthermore, the correlation between an IU and a GU was explored in addition to the “centrality of clauses,” and the “IU storage hypothesis,” all of which are related to intonation chaining whereby speakers exhibit a tendency to connect IUs which are interrelated.

Additionally, the functions of IUs were examined based on various prosodic cues and semantic signaling, which can also include presupposed or understood information among interlocutors in addition to revealing information about both the communicative act itself and the speaker’s attitudes and beliefs.

### 4.2 Overview of the Chapter

The focus of this chapter is to outline the methodology and procedures employed in this study. Included will be information about the number of texts examined, how they were chosen, how they were segmented into IUs, how they were coded and why, as well as the available demographic information about the speakers.

In addition, the concept of linguistic proficiency, the various genres represented, and the materials used will also be reviewed. With regards to procedure, a step by step description of the transcription and translation processes and measure of inter-rater reliability will be reported.

### **4.3 Study Objective**

One of the objectives of this study was to establish a criteria for examining Navajo discourse larger than that of a single verb, specific syntactic unit (i.e., clause structures), or the behavior of specific morphemes as they relate to constituency function (i.e., argument role switch).

In order to accomplish this, several samples of spoken Navajo were needed both for examination which also included the establishment of set parameters for analyzing the monologic data which was performed, for lack of a better term, by a variety of Navajo speakers.

The examination of the data obtained and the subsequent results of the analysis revealed several patterns among speakers related to how they segment their speech online which will aid in the objective of establishing a viable method in which to analyze Navajo discourse.

### **4.4 Navajo Corpus**

There were several challenges with regards to this endeavor. First and foremost, a corpus of the Navajo language that is a reasonable reflection of current use by speakers does not, in fact, exist. In comparison, for scholars studying English there is an abundance of resources like that of the Santa Barbara Corpus of Spoken American English, the BYU Corpus of Contemporary American English and even Michigan Corpus of Spoken Academic English, each of which contains hundreds of thousands of entries of a variety of data including words, phrases, lectures and conversations, which offer researchers more than ample data for analysis.

There are likely a multitude of reasons for the lack of a corpus of Navajo; however, a few that appear to be self-evident include: 1) there has not been an attempt made to compile a corpus of Navajo discourse, which may be due to the fact that the focus of Navajo linguistic study to date has largely been centered on the structure of the language (i.e., verb structure or syntax), rather than on how the language is realized in everyday use, 2) there is the issue of the boarding school effect where older Navajos who were sent to boarding schools as young children were forbidden from speaking their first language, and if caught they were often the recipients of corporal punishment, which resulted in some becoming mainly monolingual speakers of English and others choosing not to pass their linguistic knowledge of their heritage language down to their children, and thereby diminishes the number of fluent speakers, and 3) there are some who do not believe Navajo should be documented and especially not recorded, possibly due to the traditional beliefs regarding cultural values which hold that language is sacred and treated with respect and deference, and therefore they would not partake in such a study or survey of the language.

#### **4.5 *YouTube***

There is, however, abundant material of Navajo discourse available on the Internet, with one of those sources readily available to the general public at large on a worldwide scale with access to the internet via *YouTube*. The material available includes hundreds of recordings of instructional videos, joke telling, language lessons, monologues, narratives, singing, storytelling, as well as personal testimonials.

#### **4.5.1 Single Speaker Text**

Some may question whether data involving a single speaker is valid for analysis. However, the aim of this body of work is to first establish a method in which to analyze discourse. Therefore, it would be logical to begin with the most basic type of discourse. By analyzing referential discourse, the intention is to provide some standard of measure that can be later compared to other forms of discourse (i.e., conversation).

While some would argue that discourse can only be analyzed when one takes into account overlapping speech, speaker change via interruption, as well as the negotiation of turn taking, there are prohibitions in traditional Navajo culture that discourage both finishing another person's sentence and talking over another's speech. Many Navajo speakers also consider interruptions a violation of accepted and expected politeness rituals of communication, so it is not unusual for long uninterrupted streams of speech in Navajo like the texts that were analyzed. The use of single speaker text is also supported by Lovick and Tuttle especially if "there are no previous claims regarding the realization of intonation in the language" (2012: 310).

As Swerts and Geluykens suggest, certain types of speech, such as instructional monologues, provide evidence that speakers may, albeit unconsciously, naturally segment their speech to facilitate communication and comprehension (1994). Additionally it has been suggested that the use of monologic text is ideal as it is the purest representation of information flow not impacted, impeded or hindered by conversational factors such as turn taking (Swerts and Geluykens 1994).

#### **4.5.2 Text Requirements**

Due to the variety of speech genres readily available that met the study's main requirement of analyzing naturally occurring uninterrupted speech, dozens of samples were initially listened to for exploratory purposes, in order to determine what types and genres of speech were well represented. Eventually ten audio samples were chosen, totaling 22:12 minutes of audio for analysis based on several requirements explained below.

First, the recordings needed to be sufficient in length in order to obtain approximately 50 IUs per speaker to ensure an adequate amount of material was available to reveal the various individuals' natural speech patterns desired for analysis. The audio samples ranged from just under two minutes to two and a half minutes in length. There were two samples that yielded less than and more than the desired IUs. They were included because the content was different than any of the other text.

Another requirement was to obtain samples of naturally occurring, uninterrupted speech in order to try to initially assess the both the seemingly conscious and unconscious cognitive functions of the speakers that possibly influenced the segmenting of their speech into IUs in addition to trying to determine the functions of IUs in the communicative act in terms of poetics and performance.

The final requirement was to compile a variety of texts representative of a number of differing monologic genres (i.e., joke telling, narratives, storytelling, and personal testimonials), which may ultimately impact speech behavior, save those of language lessons and singing.

Audio recordings not only sanctioned by but also initiated by subjects may be more representative of a speaker's natural speech style than those of directly elicited texts since the subject has a goal in mind directly related to the performative act and the message they wish to convey to the listener.

Furthermore, from decades of personal experience interviewing a wide range of subjects under a variety of circumstances as a journalist, obtaining natural representations of a person's actual speech can be quite challenging. There are numerous issues that can arise when interviewing people even under ideal circumstances.

There are the natural physical responses or an overall nervousness that can occur in many people when they are being recorded. This nervousness can be realized in various ways that affect their normal speech, including a change in the rate of speech (speeding up or slowing down), an increase of disfluencies (false starts or use of fillers), change in vocabulary (use of more complex words), as well as change in breath control (pauses, exhalations, and inhalations), which can be related to a change in heart rate, generally an increase due to the effects of anxiety.

#### **4.6 Demographics**

The ten audio samples selected from *YouTube* feature the speech of ten Navajo adults, who shall be referred to as 'speakers' for the remainder of this work. The speakers were comprised of four adult men and six women whose specific speech performance genres were analyzed in terms of how they naturally segmented their discourse into IUs as defined by Chafe (1994), cf. Chapter 3.

Demographically, the speakers ranged in age from the late 20s to the mid-to-late-70s. Some of the speakers, at some point, overtly stated their age, while other speakers'



ages were estimated based on other circumstances such as a specific title held or other references made during the recordings that alluded to their age. The speakers collectively represent three generations of Navajo speakers, with a generation being understood as that of a twenty year period.

#### **4.6.1 Speaker Fluency**

The assessment of fluency among speakers could be debated, and cannot unequivocally be quantified as there is no set standard for defining fluency in any language. However, the texts analyzed were chosen based on the demonstration of mastery of spoken Navajo with regard to the overall flow and structure including the adherence to syntax inside and outside the verb.

Of the three generations of speakers, the oldest of the speakers would likely have learned Navajo as their first language and may have been monolingual speakers for several years before learning English to varying degrees of proficiency.

Taking into consideration the enforcement of mandatory education among the Navajo, the speakers representing the middle generation, those between the ages of fifty and seventy, may be the best examples of “balanced bilinguals,” equally proficient in both Navajo and English. Among this generation of speakers there are likely an equal number who are first language Navajo speakers and others who learned Navajo and English simultaneously due to acceptance and enforcement of mandatory education.

Based on the linguistic trend of the diminishing use of Navajo among speakers over the past forty to fifty years (cf. Chapter 2.6.1), it is reasonable to suggest that the speakers of the two older generations, and especially the oldest generation are much more fluent than younger speakers.

Among the speakers there were not only speech style differences related to overall fluidity of production but also structural differences that may be related to age of the speakers and their level of proficiency in the language and the interference or influence of English language structure. The issue of speaker fluency will be explored further as it relates to the results and discussion of this study in the next two chapters.

#### **4.7 Materials**

The ten audio samples chosen for this project were all analyzed electronically using the European Distributed Corpora Project Linguistic Annotators (ELAN) version 4.6.2, which was developed at the Max Planck Institute for Psycholinguistics in the Netherlands. ELAN is an annotation tool where one can create, edit and visualize both video and audio data. It is specifically designed for the analysis of language, both spoken and written.

Additionally ELAN allows for an unlimited number of annotations that can be used to both visually and audibly delimitate intonation units with accompanying transcriptions. These transcriptions can be stacked in tiers and hierarchically connected to represent the individual intonation units showing their distinctness via the wave form as well as their unity as they are related in conveying general thoughts, concepts or ideas that may be spread across multiple IUs.

Microsoft Excel was also used in order to organize the data in order to show certain trends in the data to include types of words, type of syntactic unit, completeness of the syntactic unit, number of words, words per IU, number of sentences, words per sentences, and the types of IUs.

## 4.8 Procedure

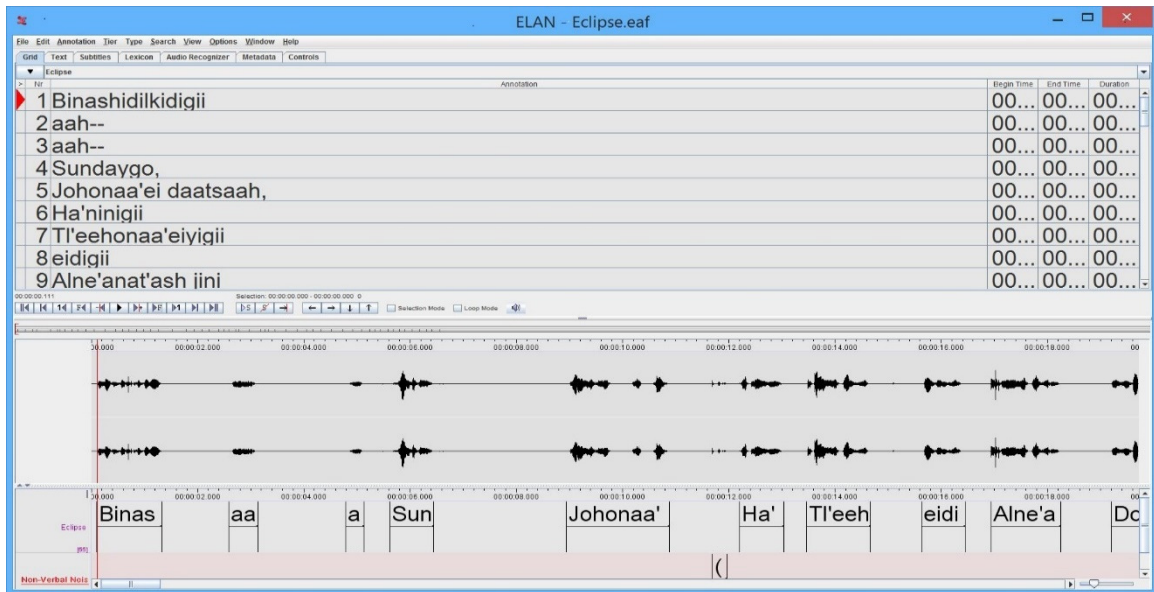
The ten audio samples were first listened to several times to ensure they met the requirements mentioned above in 4.5.2. The primary method for delimiting IUs was first based purely on audible perceptions of the intonation contours which required playing the samples three to four times, listening for pauses, changes in the tempo of speech, lengthening of a word and falling pitch before a pause. The audio was then transcribed in Navajo and then further translated into English. The samples were then converted from their original format to Waveform Audio File Format (.WAV) files and then imported into ELAN.

Once imported into ELAN, the files were listened to again in their entirety. Following that, depending on the length of the audio available, annotations were either started at the beginning of the audio, or on some instances depending on the genre (i.e., personal testimonials and storytelling), up to several minutes into the audio after formalities such as the introduction of the speaker, as well as traditional Navajo personal introductions, had taken place.

By using ELAN, the accuracy of demarcating IUs was confirmed visually by the waveform graphs. The graphs confirmed the reset of pitch level at the beginning of and the falling contour at the end of an IU. Finally, the accompanying annotations in Navajo were added with each numbered tier representative of an IU.

Figure 5 below shows how the audio file Eclipse is displayed in ELAN with noticeable pauses in the waveform graph.

Figure 5: ELAN Dialogue Window: Eclipse Data

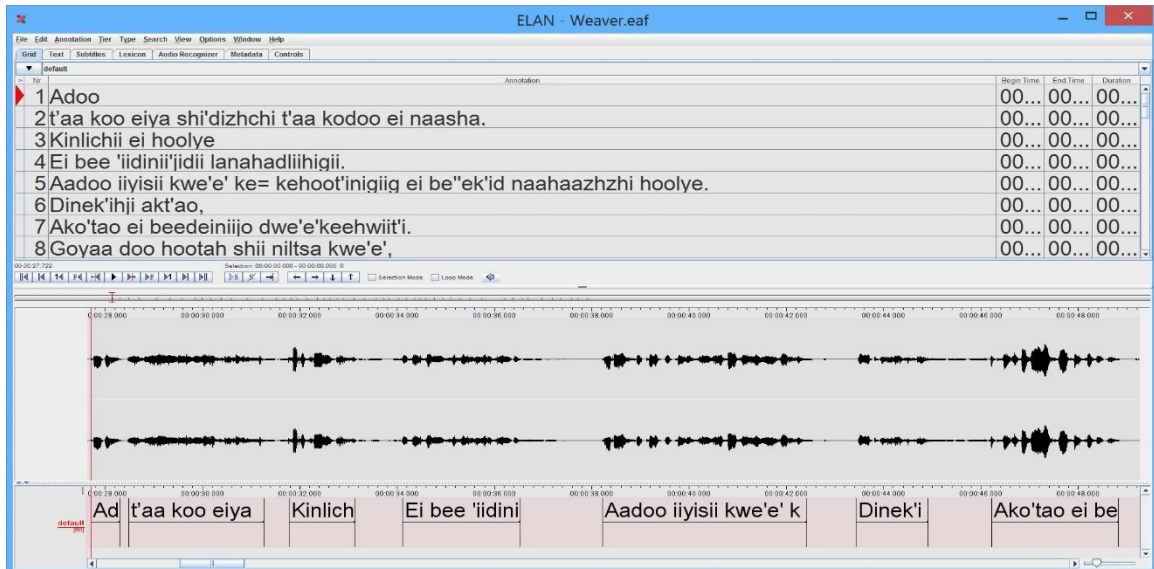


This particular wave file has two tiers, one for the verbal annotations and the other for non-verbal sounds on the recording, which were few and far between and did not detract from the quality of the audio being analyzed.

Each of the numbered lines in both Figure 5 and Figure 6 represent a single IU which has been segmented by bars on either side of the IU in the annotation tier below the wave form. The compressed text in the annotation tier does indeed correspond to the numbered lines at the top of the figure.

Figure 6 is another example of the text coded using ELAN which, in comparison to the ELAN dialogue box of the 'Eclipse' data above. It reveals a much different style of speech, in that this speaker has a somewhat faster pace speech style with fewer and less length pauses.

Figure 6: ELAN Dialogue Window: Weaver Data



The overall data for each speaker, including length of the audio sample in minutes and seconds, approximate age, total number of words, number of IUs, and words per IU was then compiled into a data table, which revealed a great deal of variation of length of IUs among speakers. While none of the speakers came close to matching the average of 6 to 7 words per IU that English speakers exhibit (Chafe and Danielewicz 1987), the differences could be attributed to several factors such as age, genre, and age of acquisition of Navajo, which will be discussed in detail in Chapter 5. As seen from the data in Table 9 below, while all the speakers produced fewer words per IU, they did produce a variety of IU lengths ranging from 2.09 to 3.67 words per IU.

Table 9: Data Summary by Speaker

Text Name	Age Range	Length	# of Words	# of IUs	Words / IU
M Navajo	20s	1:28	160	54	2.96
Chiiłchin	30s	2:22	133	53	2.53
N Twins	30s	2:00	150	51	2.91
Lambing	40s	1:56	86	41	2.09
Tséyi'	40s	2:34	142	56	2.53
Testimony	50s	2:08	175	52	3.36
N Joke	60s	2:00	178	67	2.65
Eclipse	70s	1:58	130	53	2.54
String Game	70s	2:34	158	48	3.29
Weaver	70s	2:10	180	49	3.67

#### 4.8.1 Coding the Navajo Intonation Unit

Once the Navajo data that had been segmented into IUs and translated they were then further analyzed. In accordance with the parameters outlined by Chafe (1994) and DuBois et al. (1993), each of the ten data samples chosen was listened to again and IUs were marked, according to the guidelines in Table 10, to indicate continuity, interrelatedness which revealed some distribution patterns among IUs.

Table 10: IU Coding Notations

- ‘- -’ a double dash for a truncated unit where the projected contour is not complete,
- ‘ , ’ a comma indicating continuation of speech
- ‘ = ’ an equal sign to show lengthening of the word of final sound.
- ‘ . ’ a period for finality of completion of the IU.

The data was then placed in a Microsoft Excel spreadsheet and each IU was examined in terms of the number of words contained within each unit, word types, such as parts of speech, which can sometimes be ambiguous if the context is not taken into consideration when coding due to specific types of constructions such as postpositional noun compounds. Furthermore the data was also categorized into syntactic unit and IU type (i.e. substantive, regulatory, and fragmentary).

Additionally IUs were examined in accordance with of the ‘one new idea’ constraint (cf. Chapter 3.6), and whether the IU was syntactically complete or if intonation chaining was occurring where these units were being conjoined in various ways resulting in the utterances of the speaker’s focus of consciousness (i.e. intended message) being spread across multiple IUs as seen in Tables 11—13.

Table 11: IU Analysis: Canyon de Chelly

#	Navajo IUs	Word Types	English Translation	Type of IU	Transition	Syntactic Unit
2	Tséyi' góyaa éi t'óó ch'inilí,	N, PP, V, Adv., N	Down in Canyon de Chelly water flows out horizontally,	Substantive	period	Clause
3	éi bitsaádóó éi,	PP	from that, that one,	Regulatory	comma	PPP
4	Ch'inilí hosiýí.	N, V	Ch'inilí is the name of the area of water.	Substantive	period	Clause
5	Tséyi' góne'é=,	N, PP, Rel Enc	In the canyon,	Substantive	comma	PPP
6	shíí= --	Adv	probably--	Regulatory	truncated	Adv
7	yéego hodiýin.	Adj, N	it is a really holy place.	Substantive	period	Clause
8	Diyin níłch'i dóó Diyin Diné'é shíí hóló.	N, Conj., N, Adv, V	The Holy Spirit and the Holy People probably exist.	Substantive	period	Clause
9	Hane' dóó sodizin,	N, Conj, N	Stories and prayers,	Substantive	comma	NP
10	dóó haatał,	Conj, V	and songs,	Substantive	comma	NP
11	bee hadadiilyaa.	PP, V	by means of, the area was constructed.	Substantive	period	Clause



Table 12: IU Analysis: Lambing Season

#	Navajo IUs	Word Types	English Translation	Type of IU	Transition	Syntactic Unit
21	Dibé yázhí la',	N, Adj, Quan	Some lambs,	Substantive	comma	NP
22	bimá,	NP	their mother,	Substantive	comma	NP
23	doo dabiniizii da.	Neg, V, Neg	doesn't want them.	Substantive	period	VP
24	Ákot'íigo éi abé',	PP, Sub Enc, Ref, N	For that reason milk,	Substantive	comma	Sub Clause
25	naalyéhé bá hooghandéé'ígíí,	NP, Rel Enc	that one from the trading post,	Substantive	comma	Rel Clause
26	bá'injiil'iih leh.	V, Part	is made for them.	Substantive	period	VP
27	Eí tósiz,	Ref, N	The water bottle,	Substantive	comma	NP
28	abe' bii jizi'.	N, PP, V	the milk is poured in it.	Substantive	period	Clause
	Áádóó,	Conj	And then,	Regulatory	comma	Conj
29	dibé yázhí bi'jiilt'oh.	N, Adj, V	one feeds the lambs.	Substantive	period	Clause
30	Díigi at'ée go,	Det, V, Enc	This is the manner,	Regulatory	comma	Sub Clause
31	hodibé yázhí,	NP, Adj	the lambs,	Substantive	comma	NP
32	baa ahojiilyáago,	PP, V, Enc	how one takes care of them,	Substantive	comma	Sub Clause
33	nitsxaaz daaleeh.	Adj, V	and they grow up.	Substantive	period	Clause

Table 13: IU Analysis: Navajo Twins

#	Navajo IUs	Word Types	English Translation	Type of IU	Transition	Syntactic Unit
24	Ashiiké naakií,	NP	The two boys	Substantive	comma	NP
25	shíí,	Adv	probably,	Regulatory	comma	Adv
26	t'áadoo hodina'í nooséél jíní.	PP,V,Nom Enc,V,V	grew up quickly they say.	Substantive	period	Clause
27	T'áadoo hodina'í,	PP, V, Nom Enc	Very soon,	Regulatory	comma	AdvP
28	náníkeeh silíí',	V, Past	they were sitting,	Substantive	comma	Clause
29	dóo nikidiina' jíní.	Conj, V, V	and they were crawling they say.	Substantive	period	Clause
30	Áádóó,	Conj	And then,	Regulatory	comma	Conj
31	t'áadoo hodina'í nikidii'áázh jíní.	PP, V, Nom Enc, V, V	very soon they were running they say.	Substantive	period	Clause
32	Wónáásdóó t'óó'góó,	Adv, N, Loc Enc	Finally outdoors,	Substantive	comma	NP
33	ch'ínáhi' nilchééh jíní.	VP, V	they were running they say.	Substantive	period	Clause
34	Ákót'éego shíí Yé'íitsoh álchíní nábikéé'go yiyiiltsá.	Adj, Part, N, NP, Sub Enc, V	This is how Giant saw children's footprints.	Substantive	period	Clause
35	Sháa' álchíní doo hólloq da dadohní,	Adv, N, Neg, V, Neg, V	Well you all said there were no children,	Substantive	comma	Clause
36	ní jíní Yé'íitsoh.	V, V, N	he, Giant, said they say.	Substantive	period	Clause
37	Kóqó álchíní nábikéé'ígú shá' háájí?,	Adv, NP, Rel Enc, Part, Adv	Why are there children's footprints here?,	Substantive	comma	Clause
38	níigo nahódiłkid jíní.	Adv, V, V	he questioned, they say.	Substantive	period	Clause
39	Háádisha' nidahodool'íí? ní jíní.	Adv, VP, V, V	Where did you hide them", he said, they say.	Substantive	period	Clause

The data revealed by the texts analyzed was initially translated and demarcated into IUs by the author, were then verified by a native Navajo speaking consultant. The speaker who is in his 30s learned Navajo as his first language and has a linguistics background, lent his expertise and aided in verifying both the Navajo separation into IUs and the subsequent translation into English.

#### **4.9 Cohen's Kappa**

In order to ensure the accuracy of the segmentation of IUs in addition to both the initial auditory and visual confirmation of the waveform graph, half of the data was independently coded by two native speakers of Navajo. The native speaking consultant, having been trained on the IU criteria, listened to five of the ten audio samples, marking a typed text for intonation unit boundaries as he perceived them purely from an auditory standpoint.

In order to assess the reliability of the coding procedure, the results of the consultant's observations, were then compared to mine using Cohen's Kappa; as this formula is thought to be a more compelling measure of inter-rater agreement than a simple percentage agreement since it factors out the element of random chance among observers.

Cohen's Kappa is a statistical measure that is used to assess the reliability of inter-rater agreement of two observers classifying or coding of categorical or qualitative variables. This measurement is used to determine the agreement of the observers when assigning data by attempting to remove the random chance of agreement between the observers (Carletta 1996). The kappa  $k$  measurement is given by:

$$= \frac{(Pr(a) - Pr(e))}{1 - Pr(e)}$$

where Pr(a) is the agreement among the observers and Pr(e) is probability of chance agreement. To develop the probabilities for the above equation we start by generating a table of the observations. In this example, there were a total of 681 possible locations for IUs. I found 250 IUs and the consultant found 255 IUs. While the consultant and I did find the exact same 250 IUs, he found 5 more than I did. However, I did not find any additional IUs than the consultant as revealed in Table 14 below.

Table 14: Contingency Table for IU Coding

		Native Speaker #1	Native Speaker #1
		Yes # IUs	No # IUs
Native Speaker #2	Yes # IUs	250	5
Native Speaker #2	No # IUs	0	426

Now given that the consultant and I both agreed on the location of 250 IUs and concurred that 426 potential locations did not have IUs associated with them, the agreement among the observers  $Pr(a) = (250 + 426)/681 = 0.9927$ .

To calculate Pr(e), note that: the consultant found 255 IU locations and 426 non IU locations, thus the consultant's IU locations is  $255/681 = 0.3745$ . Whereas, I found 250 IU locations and 431 non IU locations; therefore, my IU locations is  $250/681 = 0.3671$ .

Now the probability that both the consultant and I would randomly find the same IU location is  $0.3745 \times 0.3671 = 0.1375$ .

Likewise, the probability that both of us would agree on non-IU locations is  $(1 - 0.3745) \times (1 - 0.3671) = 0.3959$ .

Therefore, the total probability of random/chance agreement  $Pr(e)$  is  $0.3959 + 0.1375 = 0.5334$ . Now we apply the formula above to get:

$$= \frac{(0.9927 - 0.5334)}{1 - 0.5334} = 0.9844$$

This translates into a 98.4% agreement on IU location which is significant and affirms the validity of the methods used for segmenting speech into IUs.

#### **4.10 Summary**

This chapter outlined the methods used in this study addressing the lack of a Navajo corpus and the use of existing audio samples from YouTube, the reasoning for choosing monologic speech samples, as well as the need to first examine referential discourse to establish a standard for Navajo discourse analysis. Additionally speaker demographics, materials used including ELAN linguistic annotation tool, and Microsoft Excel were also explained. Furthermore, the procedure from converting audio files to segmenting and coding them in terms of words per IU, types of IU, and Syntactic Unit were revealed. Inter-rater agreement was also addressed by use of Cohen's Kappa for the categorical assessment of IUs based on criteria outlined by Chafe (1994) and DuBois et al. (1993).

In the next chapter, the results of the analysis will be revealed. Included in this will be a breakdown of the types of IUs, clauses and words per IU, which will reveal that typological differences in how languages affect the way in which speakers think about and package information they wish to communicate as well as their function in discourse.

Furthermore, the way in which IUs function in the communicative act will also be revealed by the way in which speakers utilize them to foster information flow and shape discourse for a variety of reasons some of which promote specific ideologies and reveal personal beliefs.

## Chapter 5

### 5.1 Introduction

The previous chapter outlined the methodology and procedures used in this body of work. The problem of the lack of a Navajo Corpus from which to select text for analysis was presented along with a reasonable and accessible solution by using materials available to anyone with internet access via videos in the Navajo language posted on *YouTube*.

In addition to the criteria outlined for selection of audio samples, speaker demographics and the issue of fluency, and the ambiguity of potential definitions of fluency were addressed as well. Furthermore the step by step procedure for analysis of the selected texts, including the conversion of files, use of ELAN as an annotation tool, as well as the assistance of a Native Navajo speaker as a consultant were also detailed. Finally, the reliability of the data was addressed using inter-rater reliability formulae, which was explained in detail to include the mathematical calculations of the statistical measure using the Cohen's Kappa coefficient.

### 5.2 Overview of the Chapter

To briefly reiterate, the goal of this body of work was twofold. The first objective was to suggest a sensible form of measurement, the IU, to serve as the building block for analysis of naturally occurring discourse in Navajo from a functional or usage based approach, which to date, has not been done. Secondly, based on the initial data obtained from the analysis of spoken Navajo, it was necessary to examine how speakers naturally segment their speech as well suggest possible motivations of why speakers, consciously or unconsciously, demarcate their speech during referential discourse.

It should be noted that while one cannot unequivocally understand or even speculate as to the exact motivation of speakers during the communicative act, the very performative act can itself point toward speaker intent via word choice and phrasing in terms of IUs. What is of particular interest is the examination of how speakers seemingly appear to effortlessly manipulate these IU as related to fostering, constructing and managing information flow during discourse which can result in 'double voiced' discourse allowing for the expression and validation of indigenous voices in addition to revealing multiple levels of meaning within a single speech act.

### **5.3. Navajo Research**

Here is a quick recapitulation on the main body of works on Navajo to illustrate the need for the method adopted for this body of work. To date, there has not been an analysis of referential discourse in Navajo. There has been limited research on prosody in the language and claims that Navajo does not have predictable intonation compared to other languages; for example, those who use intonation to indicate differences between declarative and interrogative statements.

While Navajo is one of the best, if not the best documented indigenous language of North America, and has largely been analyzed strictly in terms of grammatical structure, with the central focus of a large portion of the literature being devoted to understanding the subtleties of the verb complex and overall verbal structure (Young and Morgan 1987, Young 2000, Young, Morgan and Midgette 1992, Faltz 1998, Neundorf 1983, and Kari 1973).

Other syntactic structures have also become favorites among topics for analysis such as the relative clause (Platero 1974, Perkins 1974, Willie 1989, Sandoval and



Jelinek 1989) as well as the argument role switch, more commonly known as the “yi-/bi-“alternation (Hale 1973, Creamer 1974, Perkins 1978, Speas 1990, Hale and Platero 1996, Horseherder 1998, Willie 2000a, Aissen 2000, and Saxon 2001).

#### **5.4 Results of the Study**

The results obtained from the evaluation of the variety of speech genres supports the initial proposition behind this approach, that there is a need for a way in which to analyze Navajo discourse, and that this particular method reveals a great deal about the communicative act related to the ongoing cognitive processes of speakers, which are influenced both by cultural knowledge and the very structure of the language itself.

The results obtained may be beneficial to educators teaching the language trying to teach students how to converse in the language naturally by attending to what actually occurs when speakers actually speak, rather than having them memorize formulaic sentences that are only useful in a limited number of settings. Also, the information may be beneficial to academicians interested in learning more about the structure of language as it is used in real time.

The methodology which included both quantitative and qualitative examination of the proposed IU as a means of evaluating discourse resulted in a much better understanding of the ‘chunking’ of information speakers do online, which in turn revealed some compelling trends among speakers and how they use IUs to promote and shape successful communicative acts.

The analysis of the data revealed quantitative information about the length of IUs in Navajo in terms of words per unit, as well as how much information can be contained

within these units, in addition to whether these units of measure correspond to grammatical units.

The qualitative examination of the data reveals certain trends among speakers related to the purposeful and even calculated manipulation of IUs for a variety of reasons including strategic elements such as sequencing of events, emphasis and creation of suspense as well as others that will be explored in detail in section 5.9.

#### **5.4.1 Quantitative Analysis of Data**

The first data table was compiled to give an overall picture of the total word count, number of sentences and the words per sentence as revealed by analysis of the 10 speech samples. The results of the examined Navajo texts show a much lower rate with speaker producing just 6.53 words per sentence compared to the average of 18 words per sentence for English speakers as revealed by Chafe and Danielewicz (1987: 104-105). The words per sentence difference between the two languages can be largely attributed to the typological differences between Navajo and English. Due to the fusional nature of the language, Navajo speakers can potentially, and do appear, to convey the same if not much more information using fewer words than English speakers.

Table 15: Words per Sentence

Words	Sentences	Words per Sentence
1489	228	6.53 average (range of 1-14 words)

While the words per sentence number is an average, there is sometimes significant variation among speakers and even within a single text. These results obtained from the examination of the Navajo data are quite comparable with those



collectively produced by the speakers which were then demarcated reliably into 523 IUs (cf. Cohen’s Kappa, Chapter 4), resulting in an average of 2.84 words per IU. In contrast, in English IUs “typically contain about 5 or 6 words” (Chafe 1987: 22).

The Navajo data results once again support the hypothesis that polysynthetic languages, due to their potentially high information content conveyed most often in nominalized nouns, post-positional phrases as well as verbs, would exhibit fewer words per IU than a more analytic or agglutinative language such as English.

The numbers for words per IU in Navajo as revealed in Table 16 are much closer to those established for other Athabaskan languages where such an analysis has occurred, such as Dena’ina, for which Lovick and Tuttle found an average of 3.00 and 3.17 words per unit in the two narratives they examined (2012: 299). Additionally this also supports Chafe’s findings of 2 words per IU in Seneca (1994:14) using the same type of analysis and criteria for segmenting speech into IUs.

Table 16: Words per IU

Words	IUs	Words per IU
1489	523	2.84 average (range of 2.09 to 3.67)

Interestingly, the Dena’ina (Lovick and Tuttle 2012: 299) and Navajo results obtained from this study, in terms of words per IU, could possibly be even lower if naturally occurring interactional conversation were to be analyzed. Several factors that occur conversationally such as interruptions and turn-taking would likely impact the number of words per IU.

For example, the results of a study which examined conversational Mandarin, which is a more isolating language than English, may be indicative of those interactional factors; the quantitative analysis of that language reveals speakers average 3.5 words per IU according to Tao (1996:53). Despite Mandarin being quite different typologically than either Navajo or Dena'ina, the use of interactional conversation in addition to the fact that the Mandarin language has numerous compounds regularly used by speakers are likely the reason for the lower number of words per IU.

### **5.4.3 IU Length Variation**

Another trend revealed by the data was variation in the length of the IUs among speakers in addition to showing a great deal of variation of words per IU within a single text as well. There are a couple of feasible reasons for the variation which are tied to both speaker fluency and genre. The speakers of the middle and oldest generation for the most part exhibited more words per IU with two of the oldest speakers averaging 3.67 and 3.29 words per IU, while two of the younger speakers averaged just 2.45 and 2.09 words per IU.

There are a couple of possible explanations for these generational differences in speech patterns among the younger speakers who: 1) may not have learned Navajo as their first language and are naturally not as fluent as an older speaker who may have initially been a monolingual Navajo speaker for the first several years of their life, 2) and they likely are tasked with having to attend to different thought processes as they relate not only to expressing themselves in English but also in Navajo, being mindful of the entrenched Navajo cultural norms, but also with regards to the structural differences in

the formulation of words and phrases in Navajo which more than likely impacts performance in some way.

Example (57) is an IU produced by one of the younger speakers and exemplifies a simple sentence. In this particular instance, the speaker strays from Navajo SOV word order and resorts to speaking Navajo while using an English SVO word order. As an instructor of Navajo, this type of attempt at restructuring of Navajo by using the well-known English structure is quite common among younger speakers who are used to thinking in English. The patterns of the speaker's first language, English, appear to be guiding construal in the second language, Navajo (Brown and Gullberg 2011). This type of anomaly, speakers apparently inadvertently using English SVO construction while speaking Navajo, occurred more than once during one speaker's text, but not so much that it was a distraction nor did it render the overall message as ambiguous. However, as more and more speakers are either learning Navajo at the same time as English, or learning it as a second language, the trend of English structure creeping into Navajo discourse is a real possibility.

(57) *Díí óolyé ts'aa'.*

S	V	O
Díí	óolyé.	ts'aa'.
This	3 <sup>rd</sup> sg-it is called-IMP	Navajo wedding basket-N

“This one is called a Navajo wedding basket.

(<http://www.youtube.com/watch?v=bMmz1A4950E>)

Although the age of language acquisition and resulting level of proficiency can affect the number of words per IU, genre type also seemingly appears to have an impact on the amount of information contained within an IU regardless of the speaker's age.

For example, one of the speakers in the middle generation (40—60 years of age) whose first language was Navajo, exhibited a lower than expected average of just 2.56 words per IU. This particular speaker’s lower word per IU average is likely related to both the genre as it relates to the cognitive efforts associated with the recollection of and retelling of a joke, in order to effectively execute the performative act and most important of this type of genre—the successful delivery of the punch line. This speaker exhibited some disfluencies realized as both truncated and fragmentary IUs as seen in example (58) below.

(58)

30	<i>Áko =,</i>	So,
31	<i>amásání shíí éí ‘ah bitah doo hats’íidgóó,</i>	grandmother was sick,
32	<i>“íishjáá shíí amásání azee” ál’íigóó doo.</i>	probably the grandmother should go to the hospital.
33	<i>Doo --,</i>	--
34	<i>doogáát.</i>	She should go.
35	<i>Bił- -,</i>	With--,
36	<i>“Bił diikah,</i>	We will go with her,
37	<i>akóó bi’di’nóol’iit.</i>	so she can get looked at.

(<http://www.youtube.com/watch?v=IkQL3sy10Pc>)

This particular type of disfluency can most likely be attributed to the cognitive efforts related to organization of information required in attempting to keep the events of the humorous story in order; however, the speaker proved to be quite proficient for the majority of the recounting of the joke.

## 5.5 Types of IUs

Another interesting trend revealed by the data is that of the prevalence of a particular type of IU. The average for the number of substantive IUs for the ten text samples analyzed was 85.2%. This number is in stark contrast to Chafe's research, which revealed 60% of the IUs examined in English were substantive. Substantive IUs, which are the most salient of IUs, convey "ideas of events, states, or referents" (1994: 63). The higher number of substantive IUs in Navajo could be attributed to differences in typological structures of the languages, with a prevalent factor in Navajo being extensive compounding in addition to the use of inflectional and derivational morphemes which attach to the verb root.

Table 17: Types of IUs

Substantive	Regulatory	Fragmentary
446/523	59/523	18/523
85.2%	11.28%	3.4%

As mentioned in Chapter 4, the Navajo data was also coded for syntactic units in order to determine whether clausal IUs were the more prevalent type of IU. All of the speakers regularly used consecutively with one IU followed by another IU that completed the message. Example (59) is indicative of the overall data, where speakers begin a new line of thought which is then carried over to the next IU for completion.



- (59) 30 *Áádóó bit'aa' deilbée=zhgo,* (Sub. Clause)  
 áádóó bit'aa' deilbéezh -go,  
 and then its leaves 3<sup>rd</sup>dist/pl-boiled-PERF while  
 Conj Adv Poss N V Sub-Enc

“And then its leaves are boiled”,

- 31 *azee' ádeile'.* (Clause)  
 azee' ádeile'  
 medicine 3<sup>rd</sup> dist./pl-they make  
 N V

“and medicine is made with it”.

“And then its leaves are boiled to make medicine”.

(<http://www.youtube.com/watch?v=bMmz1A4950E>)

Additionally, (60) also exemplifies the relationship between prosody and syntax both within the verb and within structures larger than the verb (i.e. clauses) as the specific parts of the verb are marked for person and number while the auxiliary information, when overtly stated, is also indicative of person and number involved in the action or event.

- (60) 35 *Nihich'iyáán á'té,*  
 Nihi ch'iyáán á'té.  
 PossPro-our N-food 3sg-it is-IMP

“They are our food”,

- 36 *dóó= bighaa'*  
 dóó= bi- (a-)<sup>12</sup> ghaa'  
 Conj-and Poss-his/her/its wool-N

“and their wool”,

<sup>12</sup> The /a-/ is a prefix that indicates something indefinite. When a prefix such as /bi-/ indicating possession by 3<sup>rd</sup>sg or 3<sup>rd</sup>dual is added to the NP, the /a-/ indefinite prefix deletes as it is replaced by the new /bi-/ prefix indicating possession.

37 *dó' ch'odel'í.*  
*dó' ch'odeiil'í.*  
 Adv-also 1<sup>st</sup>dist./pl-use-CONT-IMP

“we make use of it also”.

“They are our food and we also use their wool”.

([http://www.youtube.com/watch?v=GuP2\\_gWE6ik](http://www.youtube.com/watch?v=GuP2_gWE6ik))

Substantive IUs were also then broken down further to illustrate which syntactic units were more prevalent. As Table 18 shows, clauses make up more than 56% of the IUs and when the three types of clauses are combined they make up 66.52% of the substantive IUs. The pervasiveness of clauses in the texts reveals that while, the verb certainly central to the Navajo language, speakers do much more with their speech than just constructing and uttering single verb-word sentences. Another interesting element, considering the wealth of literature dedicated to verbal structure, is the prevalence of lone NPs in the data, accounting for nearly 15% of the substantive IUs, which would suggest NPs are quite productive in the communicative act. The prevalence of stand-alone NPs is also a cross-linguistic phenomenon (Croft 1995).

Table 18: Substantive IUs

NP	Clause	Sub Clause	Rel Clause	VP	PP	Adv	Adj	Conj
78/523	293/523	39/523	16/523	4/523	4/523	4/523	4/523	2/523
14.91%	56.02%	7.45%	3.05	.76%	.76%	.76%	.76%	.38%

### **5.5.1 Centrality of Clauses**

The numbers revealed above in Table 16 also point to Halliday's (1989, 2004) promotion of the clause as the basic unit of speech, which appears to be a cross-linguistic universal based on research of other typologically different languages. The data also affirms the 'centrality of clauses' hypothesis suggested by Matsumoto (2001) where the clause is the "prototypical" IU type (2001: 518). The figures for the predominance of clauses in Navajo is quite comparable to those found in other languages according to percentages presented by Croft for clausal IUs: English 47.8%, Wardaman 50.3%, Mandarin 47.9%, Japanese 57%, and Korean 55.8% (2007: 12). Based on all those numbers, the clausal IUs appears to be the favored syntactic unit across languages.

### **5.5.2 IUs approximate GUs**

The findings for Navajo also affirm the concept that the GU (grammatical unit) relation to the IU is, in fact, both rule-governed and grammatically independent (Croft 1995; 841). The results of data support the argument presented earlier (c.f. Chapter 3) that IUs are almost always GUs as well.

The vast majority of the IUs in the Navajo data, 97%, were syntactically complete, containing a full set of complements (Croft 1995: 845-847). The data clearly reflects that almost always IUs are full GUs. Additionally, 94% of the IUs consisted of GUs with a full set of complements such as NP, prepositions and various types of clauses as seen by example (61) and (62) below. These results are also in line with those of Croft in the examination of the interrelation between intonation and grammatical structure in which he proposed both a strong correlation and overwhelming equivalency between the IU and GU leading to the "IU storage hypothesis; GUs found within a single IUs are

“stored syntactic structure” that are used to build more complex structures and are “usually broken across IUs” (Croft 1995: 875).

(61)

8 <i>Díí Naabeehó éí aní,</i>	The Navajos say,
9 <i>lódahdi sọ́ ‘ sinilígíí Mą́’ii=,</i>	those stars up there, coyote=,
10 <i>mą́’ii át’í jini,</i>	coyote did it they say,
11 <i>adeeghaz jini.</i>	he threw them up it is said.

(<http://www.youtube.com/watch?v=7lkif6EmvDA>)

(62)

17 <i>Yé`iitsoh shíí náánádzáągo,</i>	When Giant returned,
18 <i>Azdzáą’Nádleehí doo yiltsáągóó yiyiiltsá.</i>	he saw Changing Woman was not pregnant.
19 <i>Yé`iitsoh shíí aní,</i>	Giant said (emphatic),
20 <i>Háájí awéé’?</i>	‘Where are the babies?’
21 <i>Awéé’ doo nihee hólóq da shíí,</i>	‘We have no babies’, (emphasis)
22 <i>dabijini.</i>	they all said, it is said.

(<http://www.youtube.com/watch?v=UqTWSvrhjFI>)

The concept of the IU  $\approx$  GU equivalency theory is also closely associated with the ‘one new idea’ constraint which was also not violated by any of the speakers in the data examined.

## 5.6 One New Idea Constraint

The analysis of the 10 samples of Navajo text also revealed an overwhelming adherence to Chafe’s proposed “one new idea” constraint, which suggests cognitive limitations related to the speech production. The way in which speakers segment their speech into cognitively and physiologically manageable units confirms there is a

restriction as to the amount of information contained within an IU as revealed by examples (63) through (65). The following IUs are representative of the overall data which reveals there is a limited amount of information, only one idea or concept contained within each IU, and again that constraint was not violated by any speaker in any of the IUs they produced. This was discovered simply by listening to the entire text in context as well as looking at the written break down of IUs including both the Navajo transcriptions and English translations

(63)

- 5 *T'óó Diyin God Bizaad baa hane' ha'nóo.* I heard there was a revival.  
 6 *Áádǫ́' deesháát nisqo.* I wanted to come.  
 7 *T'áadoo shá bííghah da nádleeh.* But I wasn't able to.

(<http://www.youtube.com/watch?v=AXdj2HARRRs>)

(64)

- 49 *Chiitchin ájiléehgo,* When one makes Sumac berry pudding,  
 50 *áatsé éí=,* first they (sumac berries)=,  
 51 *tsé daashjée' bee jik'ááh.* must be grinded using a grinding stone.  
 52 *Hwee ádingo éí= uhm,* It you don't have one,  
 53 *gohwééh bee yik'ánígíí chóhool'ííh.* a coffee bean grinder can be used.

(<http://www.youtube.com/watch?v=bMmz1A4950E>)

(65)

- 32 *Íídáá' ho--,* Then,  
 33 *íídáá' éi daha'niilch'ad t'áá éidi 'aghaa'.* we were always carding the wool.  
 34 *Bee nihi yaa dahoo'a'.* That's how we were raised.

(<http://www.youtube.com/watch?v=Hscu4nLFUQw>)

Even while speakers were disseminating a great deal of information and producing complex and lengthy constructions, the ‘one new idea’ constraint (Chafe 1994), was not violated either. In those particular instances of the aforementioned constructions, the information was then, as Croft (1995) suggested distributed across multiples IUs.

### 5.6.1 Intonation Chaining

The systematic division of information across into multiple phrases uttered under a single prosodic contour shows interrelatedness between IUs resulting in ‘intonation chaining.’ The text analyzed supports the notion that Berez (2011) suggested in that IUs are not produced individually as entities, but are strung together in a cohesive fashion to further the flow of information. Intonation chaining occurred regularly in Navajo as seen by examples (66) through (68).

(66)

6	<i>Niléíq sọ' lódahti siniligíí Jó Diyin God éí,</i>	Those stars way up there, those one, God,
7	<i>éí, éí sọ' ayíílaa.</i>	(He), filler made the stars.
8	<i>Díí Naabeehó éí aní,</i>	The Navajos say,
9	<i>lódahti sọ' siniligíí éí mą'ii,</i>	those stars up there, coyote,
10	<i>mą'ii át'í jini.</i>	coyote did it they say.
11	<i>Áadeeghaz jini.</i>	He threw them up it is said.
12	<i>Hazhó'ógo nizhónigo dah naznil.</i>	Carefully he placed each of them neatly.

(<http://www.youtube.com/watch?v=7lkif6EmvDA>)

(67)

- |    |                                     |                                    |
|----|-------------------------------------|------------------------------------|
| 7  | <i>Dibé ła' haigo nida'iitciih,</i> | Some lambs are born in the winter, |
| 8  | <i>ts'idá deesk'aaz.</i>            | it's really cold,                  |
| 9  | <i>dóó,</i>                         | and,                               |
| 10 | <i>daníchiil,</i>                   | snowing,                           |
| 11 | <i>góne',</i>                       | during (this time),                |
| 12 | <i>dibé biyáazhí dahaleeh.</i>      | the lambs are born.                |
| 13 | <i>Tł'éé'go,</i>                    | During the night,                  |
| 14 | <i>da ła' nidahachiih,</i>          | some are born,                     |
| 15 | <i>ayóo deesk'aazgo,</i>            | it is very cold,                   |
| 16 | <i>éi ła'.. dibé yázhí,</i>         | some lambs,                        |
| 17 | <i>t'óó ında hadlooh leh.</i>       | they just freeze to death.         |

([http://www.youtube.com/watch?v=GuP2\\_gWE6ik](http://www.youtube.com/watch?v=GuP2_gWE6ik))

(68)

- |    |   |  |
|----|---|--|
| 13 | <i>Áádóo kódóo sitilí,</i>  | And as my little brother,                                    |
| 14 | <i>shaa ch'inooní'á Rock Pointdégé' ni,<br/>aoo' áádégé naashá.</i> | I am from Rock Point he said,                                |
| 15 | <i>dóo ááji,</i>  | and over there,  |
| 16 | <i>yah anéijah ałdó'.</i>   | we also have meetings/services                               |
| 17 | <i>Rock Point,</i>  | Rock Point,  |
| 18 | <i>naalyéhé bá hooghan dóo wóháyahijioo,</i>                        | the trading post and past it,                                |
| 19 | <i>ááji nihichurch si'á, ááji yah anéijah.</i>                      | That's where our church is and we<br>have meetings/services. |

(<http://www.youtube.com/watch?v=AXdj2HARRRs>)

Furthermore, the manner in which speakers string together IUs is of particular interest as the patterns established reveal the various and quite diverse functions of IUs in referential discourse.

## **5.7 Qualitative Analysis: IU Functions**

The previous sections evaluated the data from a quantitative approach with the emphasis being on a statistically based analysis of the data. The text examined revealed a congruity between the Navajo data and the established cross-linguistic research on IUs in other languages including those classified as polysynthetic. While those statistical numbers are significant, the other area of interest are the qualitative results that may influence and impact the approach to teaching Navajo, where very examination of the IU may serve to stimulate different pedagogical approaches that promote and foster spontaneous conversation.

The focus of the remainder of the chapter is based on the qualitative analysis of the data. The following sections and subsections will deal with the observable trends and their interpretations as they relate to the overall study.

The qualitative findings deal with results which can be generalized with regards to patterns that emerge and the possible motivations for repeated occurrences of specific patterns as well as use of particular prosodic cues within the communicative act. Humans are creatures of habit and this extends to language as well and further to its structure in specific types of discourse. The acknowledgement of this connectivity may, in turn, allow for both the recognition and the examination of specific speech behavior patterns offering insight into the thought processes as they are tied to and influenced by the linguistic structure, which, in turn, is influenced by the motivation and intent of the speaker during the communicative act.

## **5.8 Information Flow**

The first area of interest in the functions of IUs in referential discourse is from that of ‘intonation-as-information-flow’ approach (Couper-Kuhlen 2005) and how ideas



move into and out of active, semi-active and inactive states of consciousness (Chafe 1994).

The data most often associated with this approach is the same type examined for this body of work which tend to be monologic and of a particular genre (i.e., narratives and instructional monologues—Couper-Kuhlen 2005). In accordance with this approach, the functions of IUs are thought to be manipulated by speakers for organizational purposes in terms of the sequencing of ideas or events within a story, moving them from active to semi-active and finally inactive, which then reveals an inter-unit continuity among the information contained within a stand-alone IU as well as those instances where the message is spread across multiple IUs. This linear structure is revealed in instructional monologues as example (69-70) whereby the speaker's intent is to convey specific information in a progressive manner.

(69)

14 <i>Shiigo éi chiitchin nábóbééh,</i>	During the summer you pick the berries,
15 <i>áádóó tááji=gis=,</i>	and then one washes them,
16 <i>dóó bikéé=dóó,</i>	and following that,
17 <i>t'áá bini'dii náłtsih.</i>	they are left to dry on their own.

(<http://www.youtube.com/watch?v=bMmz1A4950E>)

(70)

32 <i>Chiitchin ájiléehgo díi bit ájiil'íih.</i>	This is what one uses to make Sumac berry pudding.
33 <i>Chiitchin,</i>	Sumac berries,
34 <i>dóó áshíih tikan</i>	and sugar,
35 <i>dóó= ak'áán,</i>	and flour.

(<http://www.youtube.com/watch?v=bMmz1A4950E>)

The use of IUs for fostering information flow was found by examining the sequential organizational structure of each of the texts. The deliberate ordering of the communicative act by organizing the information into chunks of speech was found in all genres examined; each of the speakers' monologues had an unmistakable beginning, middle, and end.

## **5.9 Prosodic Cues**

All of the speakers made use of a variety of prosodic cues, which are “systematically based in conventionalized patterns” (Gumperz 1982: 104). Prosodic cues can be thought of as discourse strategies employed by speakers for specific purposes including emphasis, making a narrative more lively or more like natural conversation and even for the creation of suspense (Lovick and Tuttle 2012). These prosodic cues include changes in pitch, loudness, stress, phrasing, and lengthening, repetition, and overall shifts in speech register. Not all prosodic cues were activated by all the speakers, but certain ones appeared to be favored over others.

### **5.9.1 Lengthening**

In the text examined, there was also marked evidence of syllable lengthening by all of the speakers, which, in some cases, appears to be deliberate for stylistic purposes. Other instances of lengthening could reasonably be attributed to a variety of factors such as the cognitive efforts required in terms of searching for a specific word to losing one's train of thought.

In one of the narratives, the speaker is talking about a solar eclipse and there are certain behavior expectations associated with this type of celestial occurrence within the Navajo culture, so the speaker uses lengthening at the end of one IU both for emphasis

and to cue the listener that important information is going to be revealed in the next IU as seen in IUs 13 and 14 in example (71) and in IUs 5—7 in (72).

- (71)
- |                                     |                                 |
|-------------------------------------|---------------------------------|
| 12 <i>Áádóó baa nááhwilzhizhgo,</i> | And when that time comes again, |
| 13 <i>ákóhgo=,</i>                  | During that time,               |
| 14 <i>dahozdisingo.</i>             | you are very respectful.        |

(<http://www.youtube.com/watch?v=7lkif6EmvDA>)

- (72)
- |                         |                            |
|-------------------------|----------------------------|
| 5 <i>Tséyi' góne'é=</i> | In the canyon,             |
| 6 <i>shíí=,</i>         | probably,                  |
| 7 <i>yéego hodiwin.</i> | it is a really holy place. |

(<http://www.youtube.com/watch?v=AJk5f9YvG60>)

In other instances, lengthening that occurs IU finally could be indicative of the cognitive processes related to some type of recollection difficulty as revealed by example (73).

- (73)
- |                                  |  |
|----------------------------------|--|
| 7 <i>Chiitchin étyáhá=,</i>      | Sumac berries are,                     |
| 8 <i>nanise' Kii' wolyéhígí,</i> | plant Kii' the one which it is called, |
| 9 <i>bááh náhádleeh.</i>         | it grows on it.                        |

(<http://www.youtube.com/watch?v=bMmz1A4950E>)

Another possible function of lengthening at the end of an IU is that of “proleptic signaling” (Gumperz 1982: 117) in which one refers to an event prior to the current period such as in (74) where a 75-year-old woman is recounting events from her childhood.

- (74)
- |   |                           |
|---|---------------------------|
| 40 <i>T'áa altso' shí dóó Elsie dóó=,</i> | All of us, me, Elsie,     |
| 41 <i>dóó nimáhqá=,</i>                   | and your mom that passed, |
| 42 <i>Annie bimahqáda=,</i>               | Annie's mom that passed,  |
| 43 <i>da da altsoh da'iitlódéjé.</i>      | we all became weavers.    |

(<http://www.youtube.com/watch?v=Hscu4nLFUQw>)

## 5.9.2 Repetition

Yet another way in which speakers manipulate IUs is through repetition of certain informational elements to emphasize to the listener the particular information contained within the IU is significant or of importance and should be heeded as seen in (75) through (77).

- (75)
- |  |  |
|--|--|
| 16 <i>Áádóó koji sq' ta' nináánéini 'á jini.</i> | And then he put another star on this side it is said.    |
| 17 <i>Díí éí sq' bidee'i doo noo' jini.</i>      | He said this is going to be the star's horns it is said. |
| 18 <i>Áh sq' bidee'i ánáhiidlaa jini.</i>        | So he made the star's horn they say.                     |

(<http://www.youtube.com/watch?v=7lkif6EmvDA>)

- (76)
- |   |                            |
|---|----------------------------|
| 15 <i>Ahą sódazdilzin.</i>              | You pray for one another.  |
| 16 <i>Diné bá sódazdilzin t'áá hwó.</i> | You pray for other people, |
| 17 <i>Ach'i'.</i>                       | and yourself.              |

(<http://www.youtube.com/watch?v=7lkif6EmvDA>)

- (77)
- |                                       |  |
|---------------------------------------|--|
| 1 <i>Dibé nida 'iilchiihgo,</i>       | During the time the sheep give birth,        |
| 2 <i>dibé nida 'iilchiihgo ayóó=,</i> | during the time the sheep give birth really, |
| 3 <i>baa naalnish hasin.</i>          | it is a lot of work.                         |

([http://www.youtube.com/watch?v=GuP2\\_gWE6ik](http://www.youtube.com/watch?v=GuP2_gWE6ik))

In addition to the possible functions already discussed, speakers in some instances may use IUs to make a narrative more lively by create suspense, or make the narrative

more natural. For example speakers employed the use of different “voices” (Dinwoodie 1999) which then allowed the narrator to take on several roles within a text including narrator, subject(s), and even audience member. Example (78) is an excellent illustration of this in which the speaker is recounting a joke in which the narrative is accompanied by the running dialogue between story participants and is performed more like that of an ongoing conversation.

(78)

38 <i>Ha'át'íí náát'i? bi'doo'niid.</i>	'What will be done? She was told.
39 <i>Kóódi la'adaadin,</i>	So it happens here, there is none
40 <i>di--</i>	di--,
41 <i>bilagáanaa doo yidiits'a'i da"</i>	no one understands English.
42 <i>Aah= "ata' halne'é la' ádaadin,"</i>	'There is no translator',
43 <i>bi'doo'niid jini.</i>	she was told, they say.
44 <i>Nit'éé' shíí ashkii yázhí hatsóí yázhí shíí ólta'go.</i>	Then there was a little boy little grandson who was going to school.
45 <i>"Nihitsóí shíí ch'ééh ajólta',</i>	Our grandson is going to school,
46 <i>éi bilagáanak'ehjí aah--,</i>	the language of the white people aah-
47 <i>shíí--,</i>	probably,
48 <i>baa ajólta',</i>	he is studying about it".
49 <i>"Éí shíí nihá ata' hodootniih", bi'doo'niid jini.</i>	"He will probably translate for us", she was told, it is said.

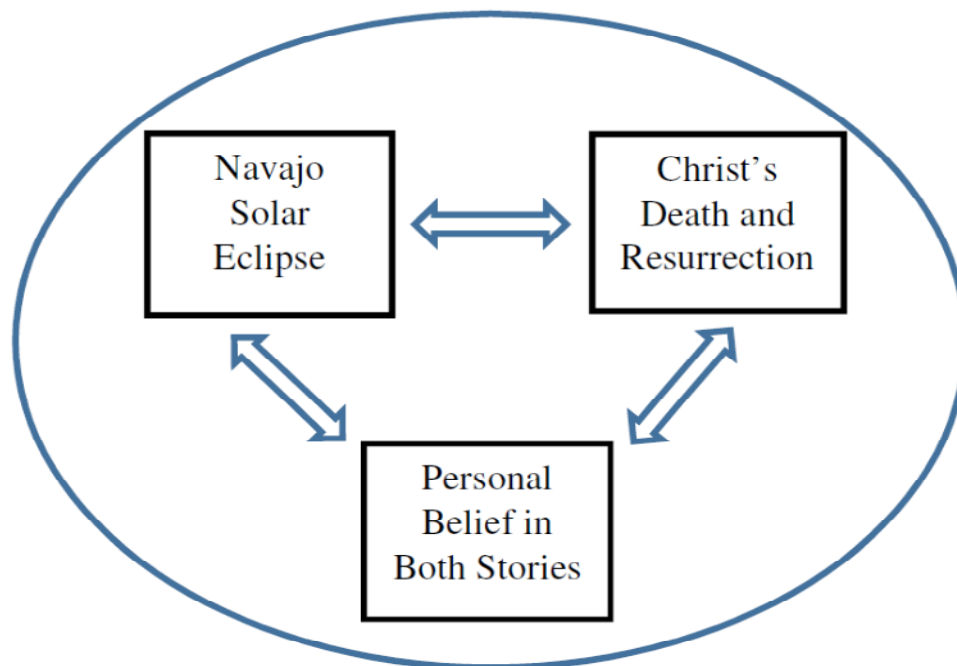
(<http://www.youtube.com/watch?v=IkQL3syl0Pc>)

### 5.9.3 Multiple Modality

In addition to all the previously mentioned functions of IUs, some of the texts were structured in a particularly creative way that allowed the construction of the communicative act to be realized as a whole via multiple internal story lines, much like threads woven together as part of the overall performance.

Speakers used the IU to not only frame the speech act as a singular entity that could stand on its own, but, as Figure 7 demonstrates, via manipulation of the IUs, a skillful speaker can afford themselves of multimodal expressions, sometimes by taking on different roles within a monologue, such as narrator, subject, and even audience member by artfully interrelating multiple stories within the larger story.

Figure 7: Eclipse Story Frames



This type of “double voiced” discourse (Gumperz 1982) was employed by several speakers as a means of recounting significant events related to traditional cultural beliefs as well as revealing the merging of ideas with contemporary Christian ideologies, thus allowing for multiple “voices” (Dinwoodie 1999) to be heard and validated.

The following examples (79) through (81) are portions of an analogous recounting of the traditional Navajo cultural beliefs and Christian beliefs, which the speaker then tied together with the expression of personal belief in both stories being

told. In examples (79) and (80) the elderly speaker explains the solar eclipse and expected behavior during the event from a traditional Navajo point of view.

(79)

1 <i>Sungdaygo=</i> ,	On Sunday=,
2 <i>Jóhonna'éi daatsaah</i> ,	the 'dying sun', (what is known as)
3 <i>ha'nínígíí</i> ,	how they talk about it.
4 <i>Tł'éhonaa'éiyígíí</i> ,	The moon, that one,
5 <i>éidiyígíí=</i> ,	that one, which,
6 <i>atne'anát'ash jini</i> .	they travel behind each other it is said.
7 <i>Doo shíí daatsaah da</i> .	It probably doesn't die.
8 <i>Hááhályíh jini akwé'é</i> .	There it rests, it is said, right there.

(<http://www.youtube.com/watch?v=7lkif6EmvDA>)

(80)

13 <i>ákohgo=</i> ,	During that time,
14 <i>dahozdísingo</i> .	you are very respectful.
15 <i>Ahá sódazdilzin</i> .	You pray for one another.
16 <i>Diné bá sódazdilzin t'áá hwó</i> .	You pray for one's self,
17 <i>Ách'í'</i> .	to yourself.

(<http://www.youtube.com/watch?v=7lkif6EmvDA>)

The speaker then transitions to traditional Christian ideology, revealing allegiance to those beliefs as well by particularly emphasizing the point with the last IU of example (81).

- (81)
- |  |                              |
|--|------------------------------|
| 22 <i>K'ad nihi ah,</i>                    | Now all of us that ah,       |
| 23 <i>oodlqaani daniidlinigii=,</i>        | that are believers,          |
| 24 <i>Diyin God Bizaad dii t'aa aanii,</i> | The Holy bible this is true, |
| 25 <i>jo dadii'ni.</i>                     | we all say that.             |
| 26 <i>Shido' ahodishni.</i>                | Me too I say that.           |

(<http://www.youtube.com/watch?v=7lkif6EmvDA>)

The speaker then recounts Jesus Christ's resurrection in example (82) and then relates it to the events of the solar eclipse in example (83).

- (82)
- |  |   |
|--|---|
| 39 <i>Haashii nihazji ti'hooznii' doo<br/>dine dayiisxi.</i> | For some time He suffered and the<br>people killed Him. |
| 40 <i>Nidi doo daastsaa da.</i>                              | But He's not dead.                                      |
| 41 <i>Azhane'e'</i>  | Even though,  |
| 42 <i>t'oo tsenideiistji nidi.</i>                           | they put Him in a cave,                                 |
| 43 <i>aaade'e' hahasdaq.</i>                                 | He came back from there.                                |
| 44 <i>Hanalyi,</i>   | He had rested.  |
| 45 <i>aaadoo inda anaadza'</i>                               | and then He went back,                                  |
| 46 <i>ei k'ad ei hiina.</i>                                  | He is alive now.  |

(<http://www.youtube.com/watch?v=7lkif6EmvDA>)

- (83)
- |                       |            |
|-----------------------|------------|
| 47 <i>Akot'e,</i>     | Like that, |
| 48 <i>t'ehonna'ei</i> | the moon,  |
| 49 <i>hahnalyih.</i>  | it rests.  |

(<http://www.youtube.com/watch?v=7lkif6EmvDA>)

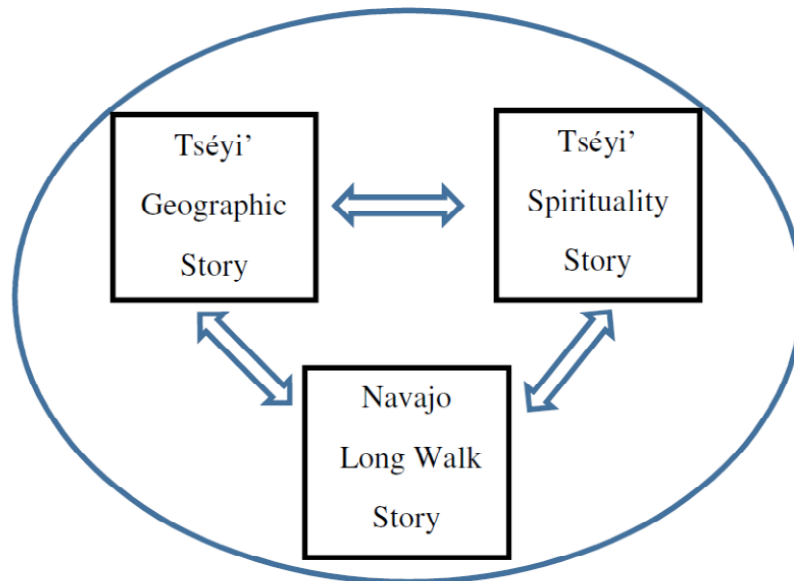
By employing this technique of weaving together different story threads, the speaker is sending a message to the audience that traditional belief and western beliefs are both valuable. The artful way the speaker relates each point of view by use of



analogy speaker also demonstrates a way to reconcile the two belief systems, illustrating they are complimentary while still maintaining identity as a Navajo.

More than one speaker made use of this particular performance technique of interlacing multiple stories (i.e., spiritual, cultural, and historical) within the larger one. As Figure 8 shows, the traditional Navajo story of Canyon de Chelly near Chinle, Arizona is more than just a recounting of the geography of the area, but also includes the spiritual aspects associated with the area as well as the historical significance of the area to the Navajo people.

Figure 8: Tséyi' Story Frames



The following examples demonstrate the way in which the speaker manipulates IUs to reveal the interrelatedness of the three story frames within the larger story about Canyon de Chelly. The speaker first begins with the geography in example (84) then the spirituality associated with the area in example (85), moving on to the historical

significance of the area for the Navajo people in example (86), and then, finally transitions to Navajo mythology in example (87) to give a diverse, yet complete account of the significance of the area to the Navajo people.

(84)

1 *Baa hodeeshnihígíí éí Tséyi'.*

The story I'm going to tell is about Canyon de Chelly.

2 *Tséyi' góyaa éí tó ch'iníłí,*

Down in Canyon de Chelly water flows out horizontally.

3 *éí bitsqádóó éí,*

from that um,

4 *Ch'iníłí hoosye'.*

Chinle is the name of the area of water.

(<http://www.youtube.com/watch?v=AJk5f9YvG60>)

(85)

8 *Diyin nilch'i dóó Diyin Diné'é shíí hóló.*

The Holy Spirit and the Holy People probably exist.

9 *Hane' dóó sodizin,*

Teachings and prayers,

10 *dóó haatał,*

and songs,

11 *bee hadadiilyaa.*

by means of (those) the area was constructed.

(<http://www.youtube.com/watch?v=AJk5f9YvG60>)

(86)

19 *Alk'idááq nihiDiné Hwéeldigóó,*

A long time ago our people went to Ft. Sumner,

20 *nidabidineesdzood yéédáq'=',*

they were all herded there long ago,

21 *shíí lq',í.*

probably many.

22 *Diné Tséyi' góyaa nidadeestííh.*

Inside the canyon the people hid.

23 *Hónáásíí,*

Finally at last,

24 *bibéesh danineezí hooghan dóó dá'ák'eh.*

the soldiers went to the houses and fields.

25 *Altsó'*

First,

26 *adeedeskáá' dóó naaldlooshiiyéé' altsó' nideestseed.*

they burned (the homes) and killed the animals.

- 27 *Ákó'téego nihiDiné'é,* That is how we Navajos,  
 28 *hachobá'igo, Tséyi'déé'* sadly many Navajos were herded  
*ch'ibidiniidzood dóó lą'í,* away from Canyon de Chelly  
 and many,  
 29 *nidabi'diistseed.* they were killed.

(<http://www.youtube.com/watch?v=AJk5f9YvG60>)

(87)

- 46 *Ha'a'aahjigo éi Tsé Na'ashjéé'i ú'á.* To the east is Spider Rock standing  
 there.  
 47 *Éi, éi,* (reference to Spider Rock) is,  
 48 *Na'ashjéé'i Asdzáán,* Spider Woman,  
 49 *bits'ąą'dóó bízhi' ályaa.* there she got her name.  
 50 *Hane' bił naazti'ígíí,* The story which we refer to her,  
 51 *éi,* is,  
 52 *haigo t'éiyá baa hane'.* only told during the winter.

(<http://www.youtube.com/watch?v=AJk5f9YvG60>)

This weaving together of differing stories as it relates to topic continuity highlights not only the speaker's creativity but their deft linguistic skills, which allows them to define the communicative act in their own terms, revealing and validating cultural knowledge, making it relevant to the current times as well as stating their personal beliefs resulting in the making the speech act into an artful performance.

### 5.10 Summary

This chapter has revealed both the results of the quantitative and qualitative analysis of the 10 samples of Navajo text analyzed for this body of work. The results were examined in terms of how native Navajo speakers in two different, yet complimentary ways: naturally segmented into IUs as well as determining how, with regard to motivation of a successful communicative act, they purposefully wield those units in terms of overall performance to enhance the referential discourse.

The quantitative data confirmed the initial hypothesis that a more morphologically complex language would have fewer words per IU. The results presented are inline are in accordance with the other scant data on polysynthetic languages, such as Seneca and Dena'ina, regarding the number of words per IU (Chafe 1994, Lovick and Tuttle 2012).

The discrepancy in the number of words per IU is as Chafe and Danielewicz (1987), hypothesized is most likely due to the fusional nature of polysynthetic language that exhibit a high morpheme to word ratio as compared to English, which is more of an agglutinating language. Polysynthetic languages can convey information in a single word that is equivalent to a complete sentence in English.

The percentages revealed by the coding and analysis of substantive IUs was in concert with the results Chafe obtained (1994) which then affirmed the “centrality of clauses” hypothesis, with clauses being the favored type of IUs and specifically the prevalence of clause comprising substantive IUs.

Furthermore, the analysis revealed there is, in fact, a strong correlation between IUs and GUs, affirming the suggestion which states that the vast majority of IUs approximate GUs (Croft 1995). Additionally, of the more than 500 IUs analyzed that speakers, regardless of their linguistic proficiency in Navajo, did not violate the ‘one new idea’ per IU constraint. Moreover, the data revealed IUs to be contiguous and interrelated and even dependent on one another in order to convey the full intended meaning of the communicative act via ‘intonation chaining’ (Chafe 1994).

The qualitative results affirmed the notion that speakers manipulate IUs to perform various prosodic functions. The various functions of IUs are largely related to discourse purposes in terms of signaling of various nuances related to both semantics and pragmatics, which ultimately impacts information flow.

Lengthening at the end of an IU as well as repetition of a portion or the entire IU, was also used by several speakers for a variety of reasons including 1) in some instances to compose

their thoughts in preparation for the information to be uttered in the following IU, 2) for emphasis as a cueing mechanism to alert the addressee of new information, and 3) to stress the overall importance of the information that was being disseminated.

Additionally, the way in which speakers manipulated IUs in terms of semantic signaling to include proleptic motivation, as well as employing multiple modalities in the construction of multi-layered referential discourse where various frames were constructed as part of the overall communicative act which through creative and skillful use of IUs, allowed for a rich and full-bodied display of the possibilities of speech acts.

The next chapter will evaluate the findings of this body of work, including the potential uses for the information revealed as well as suggestions to further this line of research in an effort to preserve and revitalize the Navajo language.

## Chapter 6

### 6.1 Introduction

This study set out to propose a method to investigate Navajo discourse from a generative approach by using the intonation unit (IU) as both a discreet and practical measure by which to analyze naturally occurring, uninterrupted speech.

One of the objectives was to provide insight into the communicative act related to the unconscious and conscious phrasing employed by speakers and the way in which these units are managed in order to facilitate communication in a deliberate manner to obtain specifically desired results culminated in the effective transmission of the intended message.

While Navajo is one of the best documented indigenous language of North America, to date there has not been a comprehensive study of actual spoken Navajo. This study offers a valid and fruitful procedure for analysis of the spoken Navajo and may lead to new areas of inquiry in the area of discourse. Up until now, the focus of the majority of the literature has been centered on the structural analysis of the prefix morphology of the verb and specific clausal constructions using generated sentences.

In addition to highlighting the need for the need for a way in which to examine discourse, use of the intonation unit as a measure was recommended as a means of analyzing spoken Navajo beginning with the examination of referential discourse in order to establish a measure that could be used both as a procedural guideline and as a measure of comparison of results in subsequent studies on other varieties of discourse.

Several factors impacting the communicative act were also explored, specifically the connection between the interdependence of thought and language related to culture, cognition, and conceptualization, which is entrenched in linguistic structure.

Furthermore, the cognitive constraints that affect speech production were examined including the various functions of IUs as related to the theories of poetics and voice when viewing the communicative act in relation to the concept of performance.

## **6.2 Analysis**

The lack of a corpus of Navajo prompted the use of audio recordings of spoken Navajo available to the general public via *YouTube*. Following a lengthy selection process that involved listening to hours of potential texts for analysis, 10 samples were selected to reflect a variety of genre (i.e., instructional narratives, personal testimonials and storytelling), speaker age, and linguistic proficiency levels.

The analysis of audio recordings produced by 10 people, four men and six women, who typify three generations of speakers are representative of a cross-section of a variety of speech styles among Navajo speakers, revealed certain patterns and characteristics allowing for both general and specific observations about linguistic behavior related to referential discourse production.

The texts were examined electronically using a standard linguistic annotator (cf. ELAN Chapter 4.7) and then segmented into intonation units based on criteria set forth by Chafe (1994). To ensure the reliability of the demarcation and subsequent transcriptions and translations, another native speaker also listened to half of the audio recordings and reviewed the translations of the text. Based on the results of the independent examination of the verbal texts, a statistical measure of inter-rater agreement was calculated, revealing a 98.4 % agreement on IU location (cf. Cohen's Kappa Chapter 4.9).

## 6.3 Findings

The analysis produced two types of results. The quantitative results are the focus of this section while the qualitative results will be reviewed in the next section.

### 6.3.1 Quantitative Data

The quantitative results affirmed the theory that speakers of Navajo naturally segment their speech into discrete, comprehensible units in addition to producing fewer words per IU than are typically produced by speakers of English (Chafe 1994), which is directly related to morphologically complex structure of the language. The results obtained for Navajo are comparable to the results of IU analysis of other polysynthetic languages such as Dena'ina and Seneca (Lovick and Tuttle 2012, Chafe 1994).

Linguistic proficiency and genre also appeared to be another factor affecting the length of IUs. The oldest and most fluent speakers consistently produced quite complex and extended IUs compared to the youngest speakers. In addition to the younger speakers producing shorter IUs, some exhibited instances of structure switching by speaking Navajo while adhering to English syntactic structure.

In addition to exhibiting fewer words per IU, none of the speakers violated the 'one new idea' per IU constraint (Chafe 1994), validating the suggestion that there is a cognitive limit as to the amount of information contained within an IU, which can be attributed to cognitive processes involving the movement of ideas from the active, semi-active and inactive states of consciousness on behalf of the speaker (Chafe 1994), as well as comprehension constraints of the addressee.

IUs were also examined in terms of specific type with the majority being *substantive* which speakers use to convey thoughts, ideas, states, or events. Further



analysis revealed the substantive units were also overwhelmingly made of up clauses (including subordinate and relative clauses) which, in many instances were realized across multiple IUs. The prevalence of clauses also supports both the ‘clause centrality hypothesis’ and the correlation between IUs most often corresponding to GUs was also evident. Furthermore, all the speakers exhibited intonation chaining via the natural production of multiple IUs which are interrelated and connected to one another semantically.

### **6.3.2 Qualitative Analysis**

The qualitative analysis of the IUs explored the various functions and the ways in which speakers manipulated the units when the communicative process is viewed as both verbal art and performance.

From the intonation-as-information flow approach, IUs exhibit a linear function which speakers regularly utilize in relating sequences of events or an array of instructions and grouping them either as singular or multiple IUs in a clear and almost methodical manner that affords the listener an opportunity to comprehend the message.

Speakers also used a variety of prosodic cues including lengthening at the end of an IU as well as the partial or in toto repetition of the previous IU, which were then linked together in different ways by speakers in order to convey certain specific semantic information including emphasis of topic, focus, and speaker beliefs.

Additionally speakers framed their discourse using multiple modalities in “double voiced” discourse (Gumperz 1982) enabling deft speakers a means to weave together several threads including traditional cultural knowledge, contemporary Western

knowledge, and personal tenets which were encompassed within the larger performative act allowing for multiple voices to be both heard and validated.

#### **6.4 Future Work**

The focus of spoken Navajo analyzed for this body of work was limited to referential discourse in order to establish a procedure which could be used in the analysis of various other types of discourse.

Future work should include the analysis of naturally occurring conversation between two participants in addition to a comparative study of discourse involving multiple participants which then could be compared to the results obtained from this initial analysis ultimately advancing the knowledge of discourse practices among Navajo speakers.

Of particular interest in this suggested direction is that of turn taking and the negotiation of turns which may yield very interesting results compared to other languages due to the communicative competence of Navajo speakers related to the accepted norms and standards of culturally acceptable linguistic behavior that traditionally discourages interruption in order to force a switch in speaker roles.

Additionally another area for future research should include conversational analysis of bilingual speakers in an effort to gain a better understanding of the role of code switching in conversation by analyzing both when and how speakers employ this particular discourse technique since it cannot be directly elicited and often is activity driven.

There is also growing interest in whether notable differences in the production of speakers who possess a mastery of two structurally and conceptually different languages,

like Navajo and English, is realized due to the different thought processes required for speaking the typologically different languages. As Pavlenko suggested (2005), the effects of linguistic relativity may only be truly experienced by bilinguals.

## **6.5 Conclusion**

This body of work has provided a method to successfully examine spoken Navajo by using the IU as a means of segmenting and analyzing naturally occurring discourse. The results obtained have provided valuable insight into advancing the understanding of the speech process beginning with the nexus of thought, language, and culture, which are realized in different conceptualizations and construals embedded within linguistic structure, ultimately shaping the way speakers of a polysynthetic language like Navajo package information.

In addition to the quantitative results, the qualitative analysis revealed that speakers deliberately use IUs to cultivate information flow via sequencing. Moreover, speakers employ prosodic cues for a variety of semantic purposes and consciously frame discourse which allows speakers the opportunity to purposefully arrange and link multiple messages within a larger text and thereby, shape the verbal art of discourse into performance.

Analysis of naturally occurring speech can be a useful tool for Navajo educators trying to teach the language to learners of all ages by illustrating the various aspects that comprise communicative interactions. The hope is this knowledge could potentially lead to the creation of relevant contexts for classroom interactions via the development of simulated speech events that mirror real-life discourse, thereby enabling the language

learner to experience and practice relevant instances of communication, which ultimately will have a positive effect by facilitating language preservation and revitalization efforts.

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