HOW TO USE YOUNG AND MORGAN'S 1987 *THE NAVAJO LANGUAGE*

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1 Introduction

Navajo is a Dene (Athabaskan) language spoken on the Navajo reservation in Arizona and New Mexico. Despite their wide geographic dispersion across North America, the Dene languages remain closely related. The languages, mostly spoken in small isolated communities, have been stable over at least a millennium. The Dene languages are closely related, with a common morphological structure; they belong to a distinct morphological type common in North America, with a rich and unusual verbal morphology. A Navajo verb can stand alone as a proposition.

First of all, the Navajo lexicon is primarily verbal. A Navajo verb word is an inflected complex of morphemes having propositional content. The verb stem is the rightmost element, preceded by a series of morphemes that are often characterized as prefixes. Lists of these prefixes are culled from fully inflected word forms, and they are organized into slots or 'positions' that perform a prosthetic role, the positions oversee the ordering of the proposed morphemes. These slots are numbered; this is the position class template (Y&M:g38). We will discuss the template in (Section 2.1). Connected to this fact, because of the richness of the inflectional and derivational morphology in a Navajo verb (or any Dene verb), for a given verb form, that verb is deeply embedded in a very dense neighborhood of related forms. Equally, the system of word formation is highly constrained. Simply listing the morphemes that occur in words and using this as a word formation device results in forms that far outstrip in number and form the actual word forms.

Young and Morgan's (Y&M) *The Navajo Language* (1980, 1987) is a complex and extraordinary opus on the structure of the lexicon of the Navajo language, in particular on the structure of the morphologically complex verb. Both of these volumes actually each contain two volumes: a grammar and a separate dictionary which is inter-related and cross-referenced to the grammar. The goal of this paper is to introduce the reader to the 1987 volume and provided enough grounding to understand the ingenious word formation system that Y&M use that allows an entry to be linked to the paradigms and inflectional class that word appears in.

Navajo word formation is parsimonious, and Navajo words are inflected in regular ways. The lexicon is structured to handle these patterns. Navajo children learn Navajo. Given one form, a Navajo speaker 'knows' how that verb is inflected. It becomes part of the grammar to account for this knowledge. The Y&M opus accomplishes this. Independent of any theory a person may hold, understanding how this system works is valuable.

This paper lays out the model that Y&M use, an ingenious system of an interrelated set of word forms, and their units, and associated paradigms and inflectional classes that predict well---formed Navajo words and the inflectional classes they belong to.

In (1) are some randomly chosen examples of Navajo verbs from the Y&M dictionary. The stem is the final syllable in the verb word and is phonetically and phonologically prominent (McDonough 2003). The stem is preceded by apparent prefixation, though as we will see, Y&M structure word formation is more structured. The smallest verb is the final two syllables. Material to the left of that element adds aspectual meaning, agreement marking and other elements that add to a rich meaning.

(1) Navajo verbs

yishdlóósh		I creep along on all fours
yish	d-dlóósh	
ØIPFV.1	VL-creep on all fours.IPFV	
haasháah		I climb up
ha- ish	øgháah	
'up'-IPFV.1	VL-walk.IPFV	
na'ashgo'		I poke around
na- 'a- ish	łgo'	
'around'-3I.OBJ IPFV.1S	VL-fall.IPFV	
baa nídíníishdáah PROLON		I keep after him to do (something)
baa ń díní ish	d-ghaah	
'him' REP-INCT- IPFV.1S	VL-walk.IPFV	

The 'content' morphemes, the stems, both nouns and verbs, are closed class; new words are verbal. To demonstrate the structure of nouns, in (2) are examples of verbal nouns, from Young and Morgan, 1987.

(2) from Y&M 1987:g6

bee'atsidí		'hammer'
bee	'atsid[1]	-í
with it	something is pounded	NOML

[1] The spacing speaks to another interesting aspect of the verb word. The *bee* and *bá*, disjunct morphemes, are loosely attached. When there are morphemes in the disjunct domain, the left edge of the word is not always clearly defined, while the right edge of the word is very clear (this is true for speakers). In fact, the main differences in the number of position classes in the template occur at the left edge. Y&M 1987 has three fewer disjunct positions than the 1980 version.

bee'adinídíní		'lamp'
bee	'adinídíín	-í
with it	there is light	NOML
bá'ólta'í		'school teacher'
bá	'ólta'	-í
for him	reading is done	NOML

There are a limited number of noun stems in Navajo, primarily words that are old, such as kinship terms, body parts and animals. While noun and verb stems have similar phonotactics (along with the post-positional stems that appear in the verbal complex), they are distinct entities; verbal stems and noun stems are not interchangeable. Y&M is mainly concerned with verbs, and their structure and inflectional patterns. As such, Y&M is an interrelated grammar and dictionary of a highly inflected, primarily verbal, polysynthetic language with a prefixal morphology. Apart from its documentary importance, it is a tremendous typological resource.

To demonstrate the structure of the grammar and dictionary, the discussion in this paper will focus on the structure of the dictionary entries and two related Appendices, what they are, how they are constructed, and the system of word formation they use. The dictionary entries provide an important key to understanding the way the Y&M volumes work, their interrelationship, the structure of the grammar and of the verb. The volumes are, at heart, a model of the mental lexicon of a Navajo speaker, and by extension of a morphologically complex language. Each dictionary entry in Y&M is listed as an inflected full word form.

Each word form is linked to its inflectional class, i.e. the conjugations that the word is inflected. Once familiar with the way the dictionary entries work, the reader can use this knowledge to investigate other parts of the grammar, such as the rich aspectual system and the classificatory verbs and verb types, and the morpho-syntactic and -phonemic patterns.

The paper is organized as such. The first section is a brief description of the Y&M opus. This is followed by a discussion of the structure of the grammar and dictionary of the 1987 volume. In this discussion we will focus on three sections in the grammar relevant to the dictionary entries, the position class template (g38-38) and the Base Paradigms in section 2.4, and two Appendices to the grammar: the Model Paradigms and the Root / Stem / Theme Index in section 3 The fourth section turns to the structure of the dictionary entries themselves, and how they link a word form to its complete paradigm sets, or inflectional classes. Three distinct types of entries are examined in this section, from the simple minimal or core verb of two syllables, to two examples of increasing length and complexity. The goal of this section is not to exhaust the types of verbs found in the dictionary, but instead to allow the reader to move with enough familiarity through the entries that they are able to see how the entries work and to understand their interrelatedness to the grammar. Section 3.3 discusses important Athabaskan terminology, linking it to the grammar. The fifth section is a summary.

1.1 The Young and Morgan Grammars

Young and Morgan's opus on the Navajo language (Young and Morgan 1943, 1946, 1951, 1976, 1980, 1987, Young, Morgan, and Midgette 1992, Young 2000) spans sixty years of collaboration, and they set a very high bar on the construction of grammars and dictionaries across the board;

these are an enormous intellectual achievement. Young & Morgan 1980 and 1987 are the final two volumes and represent the benchmark reference grammars for Navajo, and indeed as a model of the structure of any of the Dene languages. These volumes were followed by two others, *An Analytic Lexicon of Navajo* (Young, Morgan, and Midgette 1992), which is a root dictionary, set up for linguistics and non-native speakers who might find the dictionary, with its fully inflected entries, difficult to use, and *The Navajo Verb System: An Overview* (Young 2000).

Young and Morgan met when Young was working for the Bureau of Indian Affairs (BIA) in the 1940's, living on the Navajo reservation near William Morgan's hogan. They discovered a mutual fascination with the language. Neither Young nor Morgan held academic positions during their working life; it was not until Young retired in 1971 from the BIA that he took a position at the University of New Mexico as an adjunct professor. *The Navajo Language* was published in 1980, and a revision in 1987. The two volumes differ slightly from each other, this is discussed elsewhere (McDonough 2015b). We refer to the 1987 volume as Y&M, as the standard reference.

The Navajo Language is remarkable for its structure and the robustness of its documentation. It is comprised of two key parts, a grammar with appendices and a dictionary, interrelated by an ingenious system of cross-referencing. Because Navajo is a polysynthetic language with a rich verbal morphology, a fully inflected word is a complex entity. In accordance with the wishes of native speakers, the dictionary entries are fully inflected form; each word is capable of being inflected in a number of different ways, determined by use and by principles that are not entirely understood. Their system links the dictionary entries to the conjugations and paradigm patterns that that particular word may appear in, thus reflecting a native speaker's knowledge and providing a map of morpheme distribution and co-occurrence restrictions. The dictionary thus stands as an implemented model of a polysynthetic lexicon, while at the same time providing robust documentation of the language. In addition to this, each and every entry contains examples of the inflected word, as it is used, in full utterances, effectively presenting an etymology of a given word, as well as documentation of the Navajo language as it was spoken in the mid-twentieth century.

1.2 The Grammar Section

It will be helpful to have a copy of the *Table of Contents* on hand to keep oriented to the sections in the grammar, as the text is dense and the sections are not well marked. The grammar section is divided into two principle parts, the main grammar and the Appendices. The 1987 volume starts with a brief preface on the phonology and orthography of the Navajo language, running pages x-xv. For a fuller description of the sound system, see in particular McDonough (2003). The grammar proper begins by covering nouns, pronouns, adjectivals, adverbs and enclitics; this section runs only 36 pages. The rest of the grammar, around 400 pages (including the appendices), concerns the structure of the verb. We will discuss four sections of the grammar: the position class template (g39–39) and Base Paradigms (g200–201) in the main grammar and two Appendices: *Appendix I: the Model Paradigms* and *Appendix V: Root / Stem / Theme Index*, and their role in the dictionary entries and identification of well-formed Navajo verb forms.

2 The Main Grammar

The main grammar has two principle parts: on verbal morphology and on mode and aspect

marking. The verbal morphology covers pages (g37-g139), beginning with a layout of the position class template and the assigned morphemes. Mode and aspect are covered in pages (g140-g205). The last half of the grammar consists of the 8 Appendices (Section 3).

2.1 The Position Class Template

In one common view of Dene word structure—the template view—the verb is a composite form from about 18-23 distinct morpheme positions. This results in an enormous degree of freedom. The resulting forms need all types of constraints to mimic actual occurring Navajo forms. Likewise, the template does not provide any information on several crucial aspects of word formation, such as the constraints on combinations, the inflectional classes for a given word, or any insight into the rich aspectual system.

Young and Morgan do not actually use the template in their word formation algorithm.

On (g38) is a chart of the position class template and the morphemes that are associated to each of the positions. They list seventeen separate positions (Table 3). This template is closely related to the Base Paradigms of the Mode conjugations, given on (g200) and the Model Paradigms of Appendix I (g206-437). The template differs from the paradigms in how they treat morpheme concatenation and morphophonemics, particularly the conjugation markers of Pos. VII and the subject pronouns of Pos. VIII. Specifically, the subject pronouns are treated as exponents on the four mode morphemes resulting in conjugational paradigms of the mode marked for person and number (section 3). Forms from these paradigms are one of the two principle parts of Y&M's lexicon and word formation model, and they are critical in the dictionary's ability to link a word to its inflected forms (section 4).

With respect to verb structure, the three principle domains in Navajo (and Dene) verb are called the 'disjunct', the 'conjunct' and the stem (3); these domains names are uncontroversial and widely used, though not defined.

(3) The three morphological domains in the Dene verb:

$$[\ \text{Disjunct}\ \#\ \text{Conjunct}\ \text{-}\ \text{Stem}\ ]_{\text{WdVerb}}$$

The position classes of the template are divided up into these three domains, numbered left to right. The positions are numbered by roman numerals in Y&M, in Table (1) below; the numbering system is Y&M's. Y&M comment that the main difference between the conjunct and disjunct morphemes is in their 'relative transparency'. The disjunct morphemes are more separable than the conjunct.

Table 1. The template of Y&M: g37-38 divided into three domains

Disjunct	Conjunct	Stem
0 Ib Ia Ic Id II III	IV V VIa VIb VIc **VII VIII IX**	**X**

In table (2) are a list of the position classes and the types of morphemes found in each position. Y&M list morphemes assigned to each position on these pages (g38-38). Note that there are many homophonous morphemes, especially in certain positions (Pos. I and Pos. VI). The homophony is unsurprising, since the syllable structure in the pre-stem morphemes is CV and the inventory of

sounds used (apart from the 'post-positional stems' of Ia) is much smaller than the full inventory (McDonough, 1990, 2003). One key reason for listing different versions of the same morpheme is to separate the morphemes out as they appear in word forms with different meanings (section 4). This can also mean that a given morpheme may undergo a different alteration pattern from a homophonous one. For example, Pos. VIA morpheme *di-* has twelve variants, they do not all share the same alternation patterns or appear in the same verbal types. Y&M handle this as a kind of morphophonemic variation laid out in the Model Paradigms of Appendix I, discussed more fully in section (3.1). It is very important to note that the last 4 positions (VII-X) make up the core verb and are present in every verb form, even in the case that these forms are null.

Table 2. The position class template with the types of morphemes in each position.

KEY (from left to right):

0	*Direct object of postposition.* *Possessive prefix with nouns.*	**Disjunct**
Ia	Null postposition	
Ib	Adverbial – Thematic ('postpositional stems')	
Ic	(Reflexive)	
Id	(Reversionary)	
Ie	(Semeliterative)	
II	(Iterative)	
III	(Distributive Plural)	
IV	Direct Object Pronouns	**Conjunct**
V	Deictic Subject Pronouns	
VIa	Adverbial – Thematic	
VIb	Adverbial – Thematic	
VIc	Transitional / Semelfactive Aspect markers	
VII	Modal - Aspectival Conjugation markers	
VIII	Subject Pronouns	
IX	'Classifier'	
X	Stem	**Stem**

The template is problematic on several levels, and Y&M do not use it in the grammar except as a point of reference, for which it is an excellent device. One of the most problematic aspects of the template is found in the derivation of the fully inflected forms from the concatenation of morphemes of these positions (basically a process of backformation, since the morphemes are derived from the fully inflected forms in the first place). However, our goal here is to demonstrate the word formation processes used in the grammar and dictionary rather than argue for a morphological or phonological analysis. Thus note that, in Y&M, morphemes are identified by their assigned position in the template (ex: *di-*[12] Pos. IVa), for identification and reference purposes alone, not for use in word formation. As we will see, instead, Y&M make brilliant use of paradigms to lay out the alternation patterns of the morphemes and link related words together.

2.3 Components of the Minimal or 'Core' Verb

An important concept in the Navajo or Dene verb structure is the minimal or core verb, that is, the morphemes that carry the minimal morphosyntactic specification that is necessary for a well-formed verb. The core verb is an elegant and generative structure.

The core verb is comprised of the four morphemes bolded in Table 1, basically the last two syllables in verb word form. They appear in every verb. These syllables containing the minimal morpho-syntactic specification of the verb, from right to left are: the stem (X), valency (the 'classifier')[2] (IX), subject pronouns (VIII) and Mode conjugations (VII). These syllables also represent the two major components of word formation, the Base Paradigms of the mode conjugations, and the verb stem with the 'classifier' prefix. Morphemes that constitute these two components are addressed in two of the Appendices: the base paradigms + prefixes in *Appendix I: The Model Paradigms* and the 'classifier'+stem alternation patterns, the 'stem sets' of the *Appendix V: Root / Stem / Theme Index*. I will discuss each of these Appendices and then we will return to the dictionary entries to see how they are implemented in the word formation process.

2.4 The Base Paradigms

Note, for clarity, the *Base and Extended Paradigms* (g200-201) are part of the grammar section. They are not part of *Appendix I: The Model Paradigms*, although the Model Paradigms incorporate them and build on them.

First of all, Y&M 1987 consider the subject markers of Pos. VIII as inflection on the Pos. VII Mode conjugation morphemes, that is mode (there is no tense in Navajo) is inflected for person and number. These inflected morphemes constitute the Base Paradigms, listed under the *Base and Extended Paradigms* on (g200-01). The *Base Paradigms* are the 1st-3rd person singular and dual forms of a given mode. The *Extended Paradigms* of the *Base and Extended Paradigms* include distributive plurals and the agentive passive. In Navajo, 3rd person is semantically rich: 3rd singular plus 3o, 3a, 3i, 3s, for animate, inanimate and space (for discussion of use and meaning, see Y&M g46-111). The modes constitute several conjugations, discussed in the next paragraphs. In this section we'll take up the structure of the critical Base Paradigms.

Y&M observe that the Base Paradigms (g200-201) cover sixteen basic mode conjugation patterns basic to word formation: four imperfective modes (*ø, ni, si*, and *yi*), eight perfective modes *(yi, ni, si,* and *ø*) and the progressive, future, and optative modes. The basic conjugations, however, are found in the set of imperfective (IPFV)[3] and perfective (PFV) modes. One set of imperfective and two sets of perfective modes exist. The PFV's (as opposed to the IPFV's) are divided by the 'classifiers' they appear with; 1) those associated with the null (ø) and *ɬ* classifiers, and 2) those associated with the *d-* classifier ([*d, l*]; the *l*-classifier is a combination of [*d* + *ɬ*]). The 'classifiers'

[2] The use of the term 'classifier' for these morphemes is distracting, since there are classificatory morphemes in the language –the stems- and these are not them. I will either put this name in quotes 'classifier', or use the term 'valence' (= VL) since they appear to mark attributes of argument structure like transitivity.

[3] The Leipzig glossing rules will be used whenever possible, in glosses, to orient and link people unfamiliar with the abbreviations used in Y&M, which are specific to those volumes and common across the Athabaskan literature. When quoting examples from Y&M, their abbreviations will be used. This is straightforward in most cases. In the cases of possible confusion, explanations will be offered.

are part of the *stem sets*; the stems sets are handled in the Appendix V, and we take this up in section xx. The modes have meanings, for discussion of the meaning and use of each mode, see the section on the modes in the grammar (g164-205). Y&M refer to these paradigmatic Base patterns as 'verb inflection', the inflection of the modes for person and number. To demonstrate, in table 3 are the forms of the four primary conjugations in the singular forms of the IPFV, (*ø, ni, si*, and *yi*), and one of the perfective conjugations, the *si* perfective (SPFV) from Y&M (g200-201). I have removed the parentheses used in Y&M. We will refer to these as the Base Paradigms. These Paradigms serve as the base of the Model Paradigms, the Model Paradigms of Appendix I are one of the two parts of the core verb.

Table 3. Base (1ST, 2ND, 3RD SING) and Extended (3O, 3A, 3I, 3S) Paradigms from Y&M 1987:200 for all the 4 IPFV modes and for the two versions of the SPFV mode.

	I. IMPERFECTIVE				II. PERFECTIVE	
PERSON	Ø	NI-	SI-	YI-Ø	SI	
sgl.					Ø - Ł	D - L
	(1)	(2)	(3)	(4)		
1.	yish	nish	shi	yiish	sé	sis
2.	ni	ní	sí	sii	síní	síní
3.	yi	yí	-	yii	si	yís
3o.	yi	yí	-	yiyii	yiz	-
3a.	ji	jí	-	jii	jiz	jis
3i.	'a	'í	-	'ii	'az	'as
3s.	ha	hó	-	hwo	haz	has

These forms comprise the first (rightmost) of the two core units in the verb. They are the base on which all further prefixation occurs, that is the base of attachment of prefixes in the Model Paradigms of Appendix 1.

The mode conjugations are thus a form from a given Mode inflected for person and number. Thus Y&M do not treat the subject as an independent pronominal prefix as the template does. The mode and subject are merged into a single form. Subject marking is an exponent on mode, in a canonical paradigmatic structure of person, number for each Mode. In the Model Paradigms, these Base Paradigms are a portmanteau of the Pos. VII and VIII morphemes, glossed as in (4) as *ØIPFV.1s*. For the meaning of the distinct Modes, see Y&M (g202-204). For the purpose of discussion, the ØIPFV (1st column) is the default or most common Mode conjugation. Many verbs conjugate in this mode, as will be seen in Appendix I.

In the following example (4), *yish-* is the 1st singular form of the øimperfective mode (ØIPFV.1S), from the paradigm in table 3. The 'classifier'+stem (d-dlą́)constitute the final syllable, the second of the two obligatory elements in a verb. The stem is DLĄ́ in its imperfective form, continuative aspect (IPFV.CON). We will take up the 'classifier'+stem unit in section 3.3. These two elements constitute the core verb and are present in every verb[4]

[4] Although the 'classifier' prefix, (position IX) appears as a prefix on the stem, it incorporates into the onset of the stem in most cases, maintaining the integrity of the stem syllable, and causing consonant mutation and alternation patterns in the stem onset, the so-called 'd-effects' and ł-classifier mutations. See McDonough (2001) for a discussion of the history of the phonology of this prefix.

(4) yishdlą$_{CON}$ 'I drink it' (g206)

(y)ish	d-dlą	
ØIPFV.1S	VL-stem.IPFV	]$_{CON}$
VII/VIII	IX - X	

In (5) are the forms of the core verb as they map onto the template.

(5) The forms used in the dictionary and grammar for word formation as they map onto the position class template.

DISJUNCT		CONJUNCT	STEM
0 Ib Ia Ic Id II III	IV V VIa VIb VIc	**VII.VIII IX**	**-X**

mode.subject	'Verb base'
(y)ish	*d-dlą́*
ØIPFV.1S	VL-stem.IPFV

Thus, while Y&M may classify a prefix by its template position, they systematically use the inflected forms of these Base Paradigms conjugations as the foundation of the verbs throughout the grammar and the dictionary. Because all forms in Y&M are built on these two elements, i.e. the inflected forms of the Base Paradigms and the 'classifier'+stem base, understanding their role in word formation is a key to understanding both the structure of the verb, and the grammar and dictionary.

2.4.1 Null Morphemes

Before we turn to the two Appendices, one clear example of the different predictions of word formation of the template versus the paradigms relates to the use of null morphemes and the so called 'peg element' or 'pepet vowel'. These later terms refer to the use of null or zero morphemes for obligatory morphosyntactic markers in the template model. In the template, null morphemes are proposed in all (and only) the obligatory positions -except the verb stem- (i.e. VI, VIII and IX), an example is in (6). The first syllable *yi* is a default in the case that the morphemes from these positions are null.

(6) *yicha*

ø-	ø-	ø-	cha
Mode-	subject-	classifier-	stem
VII	VIII	IX	

These null morphemes represent default specifications—respectively, the ø-imperfective or ø-perfective for the Mode position (Pos. VII), 3rd person for the subject position (Pos. VIII). Thus in the case that the verb is in the ø-imperfective 3rd singular (ØIPFV.3) or perfective 3rd person singular (ØPFV.3 (*d-l*)), the template version requires use of a default specification for the 3rd subject, as in

(6, 7). The terms ‘pepet vowel’ or ‘peg element’ refers to the default vowel/i/ (for Navajo), used to fill out the minimal verb requirement for the Mode and subject in the case that these required morphemes are null, as in (7).

(7) *yicha*
ø- ø- ø-cha → *(yi)cha*

yiłcha
ø- ø- ł-cha → *(yi)łcha*

In the conjugations of the Mode Paradigms, the morpheme *yi*, is part of the paradigm. It is the form in the 3rd singular cell of the ø-imperfective and ø-perfective (*d-l*) conjugations (3). The difference between these analyses is the insight that this morpheme carries morphosyntactic information (specifying mode and its exponent) and furthermore identifies the conjugation of the word form. The ‘null’ morpheme is a property of the Mode Conjugations and not of the word form. We will return to this structure in the discussion of the dictionary entries in section 4.

2.5 Summary

The concept Base Paradigm refers to the sets of inflected forms of the mode morphemes (Pos. VII) by the subject marking (Pos. VIII). There are 4 basic Base Paradigms, ø, ni-, si-, yi- in the imperfective and perfective Modes. The perfectives split each Mode into two, by ‘classifier’ sets, ø~ł and d-l. In addition to these, there are three other modes in the Base Paradigms: the progressive (PRG), future (FUT) and optative (OPT). These are listed on pages 200-201. Forms from these paradigms serve as a *base of attachment* for all the prefixation. The combination of the prefixes to Base Paradigm forms are covered in Appendix 1. Forms from the Base Paradigms (with prefixes) are separate entities from the ‘classifier’+stem element. The Base Paradigms form the foundation of the Appendix I: Model Paradigms.

Now we turn to the Appendices to the grammar.

3 The Appendices

The 1987 grammar has eight appendices (the 1980 version has 3). These Appendices are at the heart of the structure of the grammar. The Appendices appear at the end of the grammar section, before the dictionary, and run over 200 pages (g205-436), more than half the length of the grammar. The appendices are:

Table 4. Appendices to Young and Morgan 1987, grammar section.

1	Word order	205-205b
2	**Appendix I**: *The model paradigms*	206-250
3	Appendix II: *The Classificatory verbs*	251-263
4	Appendix III: *Comparative Athapaskan Root inventory*	264-301
5	Appendix IV: *Stem Index*	302-317
6	**Appendix V**: *Root/ Stem/ Theme Index*	318-356
7	Appendix VI: *Noun Inventory*	357-435
8	Appendix VII: *The Adjectivals*	436-437

The Appendices provide explicit information, in the form of paradigms, charts and indexes, about the shapes of the morpheme alternations and concatenations as they occur in Navajo verbs (Appendices I, II, III, IV and V), the nouns and adjectivals and the classificatory verb system. I will discuss two of the appendices critical to the structure of the dictionary entries, *Appendix I: Model Paradigms* and *Appendix V: Root / Stem / Theme Index*. These two lay out the inflectional patterns of the two obligatory morphemes in the verb and the prefixes to these forms and link the verb entries to their inflectional classes.

3.1 The Model Paradigms of Appendix I

The Model Paradigms of *Appendix I* incorporate and build on the Base Paradigms by listing patterns of prefixation by the disjunct and conjunct morphemes from Pos. 0 – VI to these forms (Recall that the Base Paradigms are mode inflected for subject person and number.) As it is organized, the Appendix consists of paradigms charts for each of the mode conjugations listed on pages 200-1 and all possible combinations of prefixes (conjunct and disjunct) that appears with a given mode, starting with the ø-Imperfective/Usitative + Disjunct Prefixes. The first column in every section is the bare (unaffixed) Base Paradigm.

The *Appendix I: The Model Paradigms of the Verb* is one of the most important charts in the grammar, representing important documentation of the paradigm patterns available nowhere else. The information is essential to understanding the lexical patterns, and their role in the relatedness of verbs.

First, the structure of this Appendix: it consists of tables of numbered columns headed by a particular mode, such as ø-imperfective or ni-perfective. The columns are organized into mode groups as in Table 4.[5] Each column presents a distinct paradigm pattern. Each mode group begins with the bare Base Paradigm associated with that mode, to which a series of prefixes are added, starting with the left edge disjunct prefixes. At the bottom of each page are lists demonstrating full word forms for each column, see (8).

The series' columns, numbered by the mode categories, give us key information about the distribution of the modes and prefixes in the lexicon. For instance, there are 143 columns for the

[5] The perfective columns are divided into two sections by classifier: ø/ɬ and d/l. The iterative is the øimperfective + ná (II), the iterative morpheme from Pos. II, a disjunct morpheme. The iterative base is the same paradigm that is found in column 8 under ØIPFV. It is included as a separate set of paradigms presumably because this is a productive prefix; it appears in all the imperfectives. Most prefixes do not have such wide distribution, a fact that many template analyses miss.

imperfectives (g206-219) which cover all 4 imperfectives (ø, n, s, yi). The greatest number of mode paradigms, in the whole of the Appendix, are the ø-imperfectives (ØIPFV) with 96 columns, the least are the s-imperfective (SIPFV) with a bare 6 columns (#121-126). This gives meaning to the observation that the ØIPFV is the most common mode. Whatever their distribution in natural conversation, for which there is no Navajo corpora, other than what is available in Y&M, the ØIPFV and ØPFV conjugations take the greatest variety of prefixes and concomitantly show the most alternation patterns, a fact worth observing.

Table 5. The Modes of the Model Paradigms of Appendix I.

Modes	*Y&M names*	*column numbers*	*page numbers*
Imperfectives			
ØIPFV	ø-imperfective/usitative	1-97	g206-213
YIPFV	yi-ø-imperfective	97-120	g214-215
SIPFV	si imperfective	121-126	g216
NIPFV	ni imperfective	127-143	g216-217
Iterative ITER		1-24	g218-219
Perfectives			
ØPFV	yi perfective	1-41a	g220-226
ØPFV	yii perfective	42-58	g227-229
ØPFV	ni-perfective	59- 76a	g230-233
ØPFV	si-perfective	77-115	g233-239[6]
Progressive PRG		1-21	g239a-240
Future FUT		1-56	g242-245
Optative OPT		1-60	g246-250

In Appendix I each column represents a unique set of alternations. Through the patterns of these paradigms, regularities may emerge that may be explained by consistent and governed phonological processes, such as somewhat pervasive tendency of vowel merger (a+i → e), or the differences in the phonological patterns of disjunct versus conjunct prefixes. The reader is left to investigate this. Also significantly, the Base Paradigms (recall mode inflected for person and number) is the *base of all affixation*. The Base Paradigms themselves are not prefixes; in this sense they are like stems, a base of attachment.

Given below are column 1 - 5 (g206), the first 5 columns in the series of the Appendix I, taken from Y&M 1987. This is the section for the imperfectives, entitled the Ø-IMPERFECTIVE/USITATIVE + DISJUNCT PREFIXES. (The relationship between imperfective and usitative is taken up briefly in section 3.3 on Appendix V, and is related to the verb base or 'classifier'+stem unit; otherwise a discussion of aspect is not taken up in this paper.)

The set-up is simple. In column 2 and 3 the disjunct prefixes labeled *'a-* and *'á-*[3] are attached to the base; the results are listed in these columns. It is clear that the concatenation is not regular. In column 2 is 'a+ish → 'iish, but in column 3 'á+ish → 'ásh. So, they are listed separately. A great deal about the regularities in the Navajo verb can be learned from perusing these paradigms.

Also note that Y&M abandon the pepet/peg vowel in favor of the paradigm. The 3rd person singular forms are treated as *yi*, as the ØIPFV.3S in column 1 and throughout. One way of understanding this is to see the 'pepet vowel' phenomenon as a property of the Base Paradigm and not the word form.

[6] The page following (right-side) 239 in the grammar has no page number; the next page –on the right-hand side- is numbered 240 and all right-side pages are even after this.

The columns are ordered starting from the outermost disjunct prefixes working in towards the conjunct prefixes. None of the information in these paradigms is available from template concatenations. (This fact points out the principle failure of the template in word formation; it does not address and cannot predict lexical patterns.)

Table 6. First 5 columns from the Model Paradigms from *Appendix I*, for the ØIPFV Mode (Y&M:g206); the 'C' refers to any consonant.

	Ø–IMPERFECTIVE/USITATIVE + DISJUNCT PREFIXES				
	1	2	3	4	5
PERSON/NUMBER SINGULAR	BASE PARADIGM yi- ~ w-peg	BASE PARADIGM + 'a-Ib	BASE PARADIGM + 'á-^{3}Ib	BASE PARADIGM + Ca-Ib	BASE PARADIGM + Cáá = Ca-Ib + ná-Id
1.	yish	'iish	'ásh	Caash	Canásh
2.	ni	'ani	'ání	Cani	Cáání/Canání
3.	yi	'ii	'á	Caa	Caná
3o.	yi	'ii	'íí	Cai	Canáí
3a.	ji	'aji	'ájí	Caji	Cáají
3i.	'a	'e'e	'é'é	Ca'a	Cáá'á
3s.	ha	'aha	'áhá	Caha	Cánáhá
DUO-PLURAL					
1.	yii(d)	'ii(d)	'íi(d)	Caii(d)	Canéii(d)
2.	wo(h)	'oo(h)	'ó(h)	Caa(h)	Cáná(h)

At the bottom of each page in a separate section called 'LEXICAL EXAMPLES' are listed fully inflected word forms associated to the paradigm forms for each column, exemplifying the patterns of that column combining a form with a verb base (= 'classifier'+stem). These are fully inflected verb forms; they are conjugated in the pattern of that column and are a critical piece of the structure of the dictionary entries (section 4). In table 6 are the forms listed for the first 3 columns from the 'LEXICAL EXAMPLES'. The forms are given in the 1st person singular.

Table 7. Demonstration of fully inflected forms taken from Y&M's (g206) *Appendix I: Model Paradigms*, LEXICAL EXAMPLES.

(ø) – – (D) Stem Classifiers (Ł) – – (L)	LEXICAL EXAMPLES
1. yishcha (ø)(vi): cry weep	
yishdlą́ (d)(vt): drink it	
yishchin (ł)(vt): smell it	
yishdeeł (l)(vt): eat PlO (berries)	
2. yah 'iish'nééh (d)(vi): crawl inside	
yah 'iishteeh (ł)(vt): carry AnO inside	
naa'iishch'ish (ø)(vt): saw it down (tree)	
naa'iishgeeh (ø)(vi): fall over	
3. 'áshłééh(ø)(vt): make it	
'ásht'í (ø)(vi): be, act, do	
'áshdįįh (ø)(vi): disappear	
'áshdįįh (ł)(vt): get rid of it	

Adding the ’classifier’+stem unit (i.e. *øcha*) to the paradigm entry (*yish -, ‘iish -, ’ásh -*) gives us a fully inflected word. Glosses of some forms are given in (8) for convenience. Note that the ‘classifier’+stem is an element that is attached to the forms from the Model Paradigms (meanings for the prefixes are not glossed).

(8) Glosses for some example forms from columns 1-3 in Appendix I, Y&M:g206

column	*example*			
#1	*yishdlą́*			I drink it
	(y)ish		d-dlą́	
	ØIPFV.1S		VL–stem.IPFV.CON	
#2	*yah ‘iish’nééh*			I crawl inside
	yah	‘a.ish	d-nééh	
	‘into an enclosed space’-		‘a.ØIPFV.1S	VL–stem.IPFV.CON
#3	*’áshdį́į́h*			I disappear
	’á.ish		ø-dį́į́h	
	‘a.ØIPFV.1S		VL–stem.IPFV.CON	
	’áshdį́į́h			I get rid of it
	’á.ish		ɬ-dį́į́h	
	‘a.ØIPFV.1S		VL–stem.IPFV.CON	

Notice that the transitivity and intransitivity (the valence) of the verb is only present when the ’classifier’+stem unit is attached. The ‘LEXICAL EXAMPLES’ provides the valency of the verb and its ‘classifier’+stem shape (see section 3.3.3): it is a property of the word form. Valence is not a property of the Model Paradigms. Also note for the column 1, the examples provided include all four ‘classifiers’. This leads us to Appendix V, *The Root/Stem/Theme Index*, which addresses the patterns of these stems sets or ‘verb bases’.

Note that there are modes present in the Model Paradigms that are not listed Base Paradigms. However, these modes too are built on the Base Paradigms. The Iterative is an example. In the conjugational patterns in the Appendix I and in the paradigms in the dictionary, the iterative is present as a separate conjugation. In the Model Paradigm the first column in the Iterative is listed in (9).

(9) The Iterative mode in Appendix I (g218)

	ITERATIVE MODE (= ná-II + the corresponding ø- or yi-ø Usitative paradigm.)				
	1	2	3	4	7
PERSON/NUMBER SINGULAR	BASE PARADIGM	BASE PARADIGM + Ci-Ib (including ni-~ ná)		BASE PARADIGM + 'a-IV	BASE PARADIGM + di-VIa
1.	násh-	Cinásh-		ná'ásh-	ńdísh
2.	náni-	Cináni-		ná'í-	ńdí
3.	ná	Ciná		ná'á	ńdí
3o.	néi-	Cinéi-		----	néídi-
3a.	ńjí-	Cińjí-		ń'jí-	ńzhdí-
3i.	ná'á-	Ciná'á-		ná'á-	ń'dí
3s.	náhá-	Cináhá-			náhodi-
DUO-PLURAL					
1.	néí(d)	Cinéí(d)		ná'ii(d)	ńdii(d)
2.	ná(h)	Ciná(h)		ná'o(h)	ńdo(h)

The iterative is based on the Base Paradigms for the *ø-* or *yi-* paradigms plus the disjunct prefix *ná-* which they note is a repetitive form from Pos. II. The alternations are not completely transparent, though they contain regularities (by this time, the reader is unsurprised). They also note this form is related to Pos. Ib *ná-*. Observe that Pos. Ib also contains a single prefix, the revisionary *ná-* with the same alternations as the other two prefixes. This redundancy is a problem for the template and the principle reason why the paradigms exist. The redundancy presumably has to do with ordering of this prefix and its presence in a verb's meaning. The paradigms lay out the patterns, which the template as a formal device is not designed to do.

As we will see in section 4, these paradigms patterns are ingeniously integrated into the dictionary and allow us to see conjugation classes for given words.

Finally, excluded from these paradigms are the neuter verbs. These verbs, as stated by Y&M:g203, do not have a time dimension, they are not marked for distinct mode and are conjugated in 'a single' imperfective or perfective conjugation. I quote Y&M's paragraph on neuter verbs (g203):

> The Imperfective Neuter Verbs include the Adjectivals, the Verbs of Being, and certain types of Directionals; the Perfective Neuters include the Positionals. No time dimension attaches to the Neuter verbs, nor are they distinguished for Mode beyond the single Imperfective or Perfective paradigm.

3.2 Summary 2

Appendix I lays out all the paradigms for the combinations of any given Base paradigm (say ØIPFV) and the prefixes that attach to this base. They are listed in numbered columns, one for each prefix or prefix group. As with the Base Paradigms (off which the Model Paradigms are constructed), The Model Paradigms are independent of the 'classifier'+stem element. These paradigms serve two purposes: they lay out the forms that prefixes take when attached to a given

Base Paradigm, and 2) they provide access to generalizations about types and distribution of prefixes to the different Modes that occur in Navajo.

At the foot of each page are full word forms numbered to correspond to the columns as examples of that Model Paradigm form with a 'classifier'+stem element.

Here we turn to Appendix V, on the *verb bases*, the 'classifier'+stem elements.

3.3 Appendix V: Root / Stem / Theme Index

Appendices III, IV and V are on the Navajo roots and stems. Appendix III (g264-301) is a comparative index of Navajo verb roots to Proto and Pre-Proto Athabaskan, informed by the work of Leer and Krauss. Appendix IV is a stem index, "designated to facilitate identification of specific stems with the roots from which they are derived" (Y&M 1987:g302). Appendix V, on the other hand, starts without an introduction and is one of the most important sections of the grammar.

Stems exhibit sets of internal alternations, called *stem shapes*. These sets of stems are types of paradigms., the alternations are classified by aspect and marked for valence. Sets of these stem shapes for any given stem are called *stem sets*. In this Appendix, these stem sets are laid out with their attendant 'classifiers'. Each entry begins with the ROOT, and then defines all the stem shapes and 'classifiers' sets associated to that stem, in groups of categories defined by mode and aspect, we will demonstrate this structure in this section.

There are two types of aspectual marking in Appendix V: 1) the aspect of the 'classifier'+stem sets, 2) the aspect of the whole word form that this stem sets appears in. We refer to this 'classifier'+stem shape as a *verb base*, a term from the Athabaskan literature, as discussed in this section. That is, the aspectual marking of the whole word form is a combination of the aspect of the verb base, plus the aspect of a form from the Model Paradigm conjugations that attaches to this unit.

(10) $Model\ Paradigm_{(Mode.person.number)} + Verb\ Base_{(VL.mode)} \rightarrow$ a fully inflected verb word$_{(Mode.Aspect)}$

We will address this core strategy of Navajo (and Dene) the verb base in word formation in this section and in the dictionary section. The reader is warned that a full demonstration of the Y&M aspectual system will not be undertaken in this paper; our focus is on word formation. A forthcoming *How to Use Young and Morgan 1987: Part II* will concern the construction of the Navajo aspectual system in the grammar.

Y&M refer to Leer's (1979) characterization of the stems as emerging from the ROOTS through a process of "regular phonological modification." (Y&M 1987:g302). However, this regularity has never been satisfactorily described; it is, in effect, not so regular, though there are patterns present (Hardy 1979, Eddington and Lachler 2006). In understanding the irregularity of the stem alternations, Y&M make an appeal to the competence of native speakers, to which Young and Morgan are essentially oriented (Y&M 1987:g302):

> [the stem shapes] constitute a fundamental resource on which native speakers draw subconsciously to elicit the multiple stem shapes required by various modes and aspects in which a given verbal root is expressed.

With respect to the stems and their roots, there are three things to keep in mind: 1) the ROOTS

are in CAPS, they are abstractions across the stem patterns (i.e. LEXEMES) (2) the stems are sound forms that appear as sets of stem internal alternations marked for aspect, 3) those alternations are associated with 'classifiers' in Appendix V. A fourth point, related to the third, is unnecessary, it's the one made throughout; these patterns are culled from fully inflected word forms.

3.3.1 Stem Sets and the Verb Base

Three important terms in the Athabaskan literature are *verb base, verb theme,* and *stem sets*. The following section is an orientation to these terms.

The term *stems sets* is basic, it refer simply to the alternation patterns the stems undergo with respect to their association with specific 'classifiers'. The 'verb base' is simply the 'classifier' + stem combination. These units are not productive; they need to be listed. You can see this in any entry in Appendix V. In (12) are the six of the twelve entries, six of twelve stem sets, listed under the root *TAAŁ* (g342), demonstrating the structure of these entries. This is a particularly rich set of stems, though not an uncommon one. All stems appear in five different modes (11). Note these modes are slightly different than those of the Base Paradigms.

(11) The 5 modes that all verb bases are marked for throughout Y&M

imperfective (I)	repetitive (R)	perfective (P)	future (F)	optative (O)
IPFV	REP	PFV	FUT	OPT

This root *TAAŁ* appears with all four 'classifiers', *ø, ɬ, d,* and *l* (= *ɬ+d*) as in (12). The last column is the aspect of the whole word form. How this works is taken up in a and forthcoming paper on the structure of Y&M.

(12) The verb bases under the entry for *TAAŁ* 'act with the feet move feet quickly' (g342)

IPFV	REP	PFV	FUT	OPT	Asp
ǿtaaɬ	ǿtal	ǿtááɬ	ǿtaɬ	ǿtaaɬ	MOM
ǿtaɬ	ǿtal	ǿtaɬ	ǿtaɬ	ǿtaɬ	SEM
ǿtaɬ	ǿtal	ǿtááɬ	ǿtaɬ	ǿtaɬ	REP
ɬtaaɬ	ɬtal	ɬtááɬ	ɬtaɬ	ɬtaaɬ	MOM
dtaaɬ	dtaɬ	dtáál	dtaɬ	dtaɬ	REP
ltaɬ	ltaɬ	ltáál	ltaɬ	ltaaɬ	CON

These are lists of verb bases. There are two things of interest. First, the unique forms of this root *TAAŁ* are listed in (13) ; there are five different forms. The richness of the entry in (12) comes from the 'classifier'+stem unit *plus* its aspectual specification (final column). The stem variants that appear with a given classifier for a given aspect do not appear to be fully predictable for any of the stems or any of the verb bases (Lachler & Eddington 2012).

(13) tal taɬ tááɬ táál taaɬ

Thus the need for Appendix V, the root, stem and theme index.

The second point of interest is found in the final column, the aspects associated with the stem base, here, MOM, SEM, REP and CON. These, and other, aspectual forms are associated with the *whole word forms*, in particular, with the combination of the verb base ('classifier'+stem) and the mode conjugations (ø, n, s, yi) and any other aspectual forms and prefixes that may be in the verbal complex. (It is not the case that the mode of the Pos. VI prefixes and the stem must agree, as is sometimes stated.) Thus we will gloss ***øtaał*** as FUT.MOM, and so forth. The necessary combination of 'classifier'+stem + aspect reduces what at first appears to be mere redundancy of forms in (12) considerably.

These examples also point out another important aspect of word formation. The stem shapes are not separate from the 'classifiers', and conversely, the 'classifiers' are not independent of the stems, despite some transparency.

This brings us to a discussion of verb theme.

3.3.2 Verb Theme

The term 'verb theme' refers to the morphemes that make up the meaning of a verb word form. It consists of a verb stem, a 'classifier' and any prefixes that make up the meaning of a verb. This is not a technical term and Y&M do not use it in word formation. The notion likely arises from the fact that the verb complex is not compositional, the meaning of the verb cannot be constructed from its parts.

The meaning unit can be seen in verbs with prefix groupings. The 'verb base' and a conjugation form from the Model Paradigms constitute a minimal verb, such as the one in (25) (*yish* is ØIPFV.1S + *øcha* is IPFV.CON 'cry'). Note the form *bi'dishnéé*h :

(14) `bi'dishnéé*h*`
`'to give it to him (a disease), to infect him with it' d213`

The meaning of this verb form includes the ØIMPFV.1s *ish,* plus the prefix *bi'd-*. The prefixes *bi-* and *'a-* are agreement markers but they are part of the meaning. *The remaining prefix is di-*. Y&M gloss this as *d-*[2] 'an extension'. There are over twelve entries for *d-* in the template (g38), each with its own meaning. These meanings are derived (by necessity) from full word forms in which this morpheme is found, and are thus associated to particular verb form(s).[7] See section 4.4 on regulars. We will return to this issue below when we look at more complex verb forms involving disjunct prefixes and their relationship to the Base and Extended Paradigms (g200ff).

Thus the 'verb theme' is a unit that includes a verb base and Model Paradigm form, the Base Paradigm plus other morphemes that make up a particular meaning unit. 'Verb theme' thus addresses the question of the non-compositional or non-transparent nature of many of the combinations of morphemes found in the full verbs.

3.3.3 The 'Classifiers' and Valency

The four 'classifier' prefixes (*ø- d- ł- l-)* to the verb stems are often considered valence markers

[7] I put aside the classification of the individual morphemes as derivational or inflectional, to avoid the problematic classification based on a translation of the individual morphemes into English.

because of their association to functions that manipulate arguments of the verb, such as specifying verbs as transitive, passive, medio-passive or reflexive. Y&M note that the 'classifiers' stand in a 'complementary' relationship to each other, *ø ~ d, ɬ ~ l (d + ɬ)*. However, Y&M also note that their functionality as valence markers falls into two areas, *valency*, where they mark argument structure, and *theme*, where they do not (Y&M:117).

For example, they note that the *ɬ*-classifier is often considered a transitivizer or causativizer, as in (15), from Y&M.

(15) A productive alternation pattern with the ø and ɬ classifiers

ROOT	VERB BASE	VERB FORM		
BÉÉZH g319	øbéézh	yibéézh$_{CON}$		it's boiling
		yi	øbéézh	
		ØIPFV.3S	INTRANS-'boil'	
	łbéézh	yiłbéézh$_{CON}$		he's boiling it
		yi	łbéézh	
		ØIPFV.1S	TRANS-'boil'	

In fact, this *ɬ* 'classifier' does appear in many transitive constructions. However, it does not function as productive for three reasons. In (16) the verb form is not derived from an intransitive form with a ø-'classifier'. Its transitivity function is limited, and it is not predictable where it may occur.[8]

(16) Ł-classifier in a non-derived transitive construction

ROOT	VERB BASE	VERB FORM		
CHÓÓSH g321	łchozh	yíłchozh$_{CON}$		I ate it (leafy matter)
		yi	łchozh	
		YPFV.1S	'eat leafy matter'.PFV	

Second, this *ɬ-* prefix may also appear in intransitives and neuters, an example in the Neuter in (17). (Examples are taken from Y&M:g119, roots are taken from Appendix I).

(17) Neuter imperfective (NI) with ł classifier

ROOT	VERB BASE	VERB FORM		
YEEŁ g321	łhił	diłhił$_{NI}$		it's dark colored
		di	łchozh	
		'relates to color'	'become dark'.PFV	

And third, the classifier is not independent of stem sets. This is a more complex demonstration. An example of this dependency is demonstrated in the three sets of verb bases listed for the root DLĮ́Į́H 'to drink' in (18). While there are four forms of the root, (dlį́į́h, dlą́, dlį́į́ɬ, dlą́ą́'), the verb base ('classifier'+stem shape) is the organizing principle.

[8] Readers are warned off depending on English translations of morphemes and words to build generalizations about the function of morphemes in Navajo.

(18)

VL	IPFV (I)	REP (R)	PFV (P)	FUT (F)	OPT (O)	ASP
d-	*dlíį́h	*dlíį́h	*dląą́’	*dlíį́ł	*dląą́’	MOM
d-	*dlą́	*dlíį́h	*dląą́’	*dlíį́ł	*dląą́’	CON
ł-	*łdlą́	*łdlíį́h	*łdląą́’	*łdlíį́ł	*łdląą́’	CON

The importance of the stem shape and verb base can also be seen in the differences in aspect, such as the related forms for ‘to drink’: the imperfective (*dlą́) , usitative (*dlíį́h) and terminative (*łdlíį́h) verb forms in (19) (Y&M g648): three distinct verb bases for these aspectual differences, the ‘classifier’ plays a role in this that is not captured by simple valency.

(19)

yishdlą́ CON	nidlíį́h MOM	ninishdlíį́sh MOM
yish d-dlá	ni d-dlíį́h	ni-nish ł–dlíį́h
ØIPFV.1SG.SBJ VL- IPFV	ØIPFV.2SG.SBJ VL-IPFV	CESS-NIPFV.1SG VL-IPFV
I drink it	*you always drink it*	*I finished drinking it*

The ‘classifiers’ thus vary in the transparency and in distribution. Y&M note that 41% of verb bases have ø- ‘classifier’, and these may be either transitive, intransitive or neuter. They also note that the d- ‘classifier’ appears to have a more predictable function as a kind of ‘passivizer’ noting, however, that only 18% of the verb bases have *d-* classifiers (Y&M:g120).

This is by no means a complete discussion of the function of this ‘classifier’ prefix and its relationship to the stem shape. However, for these prefixes, while they may be related to valency marking, the relationship is complex, tied to both the stems shapes they appear with (as in 18) the verb bases (Appendix I) and the aspect of the whole word form (19). This is not to say that there may not be clear lexical patterns present, only that more work on verbal structure and patterns needs doing before any clarity emerges on how the ‘classifier’s work. Appendix V captures the variation of verb bases in paradigms of mutations associated with classifiers and their aspectual specifications.

3.4 Summary of Verb Bases

This is a complex appendix, because of what it encodes, but the topic is one of the two essential parts of the verb. The appendix is constructed on the idea of *verb base*, the term for the ‘classifier’+stem element, the final syllable in the verb (though the classifier shows some interesting but systematic phonological behavior;[9] it sometimes appears in the coda of the preceding syllable). The classifier and stem form an element that results in sets of stem internal alternation patterns, basically stem mutations, marked for aspect, and paradigmatic in nature. These stem sets are listed in Appendix V, which lists the stems by a related root. Like the

[9] This falls under the domain of the ‘classifier effects’. The classifiers cause mutations on the stems. The classifiers will appear in the coda of the preceding syllable if that coda position is empty, and if it has not first been incorporated into the onset of the stem,

paradigms of Appendix I, these mutation paradigms contain a great deal of information about the nature of the Navajo verb and study of these verb base patterns in conjunction with the aspectual specifications of the full word are a worthy use of time.

The idea verb theme is a looser notion that simply refers to the elements in a full word that are related to its lexical meaning, usually excluding agreement marking.

4 Word Formation in Y&M: the Dictionary

4.1 Fully Inflected Entries

Each verb entry in the dictionary is a fully inflected form, complete with agreement specification. In this rich a morphology, how does this work?

The Model Paradigms of Appendix I and the root entries in Appendix V are the basis in the dictionary entries. To start off, a dictionary entry for a verb form can be split into 4 parts (color coded below). In (20) is the dictionary entry somewhat randomly chosen to represent a common entry for a verb form, here *hánísht'ááh* "I arrived (via piloting a plane) to get (something)", reproduced from Y&M. The form is a fully inflected verb in the imperfective, 1st singular subject (IPFV.1S); the speaker is the pilot.

(20) Dictionary entry from Y&M 1987:d415 for *hánísht'ááh*

```
    hánísht'ááh(I), hánásht'ah(R), háníłt'a'(P), hádeesht'ah(F),
      háosht'ááh(O) (ł), to fly it after it (a plane), (i.e. to arrive
      flying it for the purpose of getting it). Ha'át'íishą' chidí
      naat'a'í háníłt'a', what did you come after?/ Bił hánísht'ááh, to
      take him after it by plane, to accompany him after it (with the
      subject of the verb as pilot).
      Naat'áanii ba'ałchíní  Hoozdodi bił hánísht'ááh ńt'éé  k'asda chídi
      naat'a'í łá nihídeezgoh, I took the superintendent to Phoenix after his
      family and another plane nearly ran into us./
(414) (*łt'ááh: to cause to move flying.) (há-.)
```

The first two lines are the first part of the entry (blue): this is the 1S forms of the 5 modes that all active verbs are conjugated in, IPFV, REP, PFV, OPT and FUT, repeated as follows in (21). The initial part of the entry also gives the verb form's meaning: to pilot a plane in order to go get something.

(21)
```
hánísht'ááh(I), hánásht'ah(R), háníłt'a'(P), hádeesht'ah(F),
háosht'ááh(O) (ł), to fly it after it (a plane), (i.e. to arrive
flying it for the purpose of getting it).
```

Considerable variation is present among these 5 forms, predominantly in the last two syllables. The variability, however, is constrained, structured and easy to follow, and identified in Appendices I and V.

In the second part of the entry (red) is found examples of that verb form as they appear in real utterances. In this case Y&M have given us three utterances. In the first sentence, the verb is *háníłt'a'* the NPFV.2S, in the second and third, NIPFV.1S form. I have separated out the three

sentences, and italicized the English translation for readability in (22).

(22) Ha'át'íishą' chidí naat'a'í háíníłt'a', *what did you come after?*

Bił hánísht'ááh, *to take him after it by plane, to accompany him after it (with the subject of the verb as pilot).*

Naat'áanii ba'ałchíní Hoozdodi bił hánísht'ááh ńt'éé k'asdą́ą́' chídí naat'a'í łá nihídeezgoh, *I took the superintendent to Phoenix after his family and another plane nearly ran into us.*

Almost every entry in both the dictionary and grammar have this type of example sentences. These sentences are a tremendous resource, wholly under-utilized at present. Y&M 1987 contains thousands of these example sentences: almost every entry in the grammar and dictionary contains them. They would constitute an important corpus of Navajo if made accessible.

The third part (green) is the last line. It identifies the verb base ('classifier'+stem) ***łt'ááh,*** and the prefixes to the Base Paradigms present in this verb; in this case the prefix *há*.

(23) (*łt'ááh: to cause to move flying.) (há-.)

These forms allow us to identify the verb base in the Root Stem Theme index, Appendix V (under T'ÁÁH 'to fly' (g344)). We see the root has four stem sets (verb bases) and this entry is associated with the third one. We can search for the prefix *há* in the dictionary. This prefix is found listed on the preceding page (d414) as *há-*[4]*,* reproduced from the dictionary in (24).

(24) há-4 : Ib. há-, Pos. Ib, for, after (to get)

Note that this prefix and verb base, while they provide a solid base of meaning, do not constitute the 'verb theme' of the verb, despite the use of this concept in Athabaskan literature. What is missing from this concept is the mode and aspect morphemes. In other words, 'verb theme' *per se* does not play a role in word formation in the dictionary and grammar. This fact is related to the role of the Mode and the Model Paradigms in word formation. What is gained is access to the inflectional paradigms that a given verb is conjugated in.

The fourth part of the entry (purple) is fundamental to the structure of the dictionary; it identifies the conjugation paradigms for a given verb. The paradigms for this (and other verbs) appear on the preceding page, identified in the entry by the number at the bottom of the entry '(414)'. All entries that have this number conjugate in the same way. It is in these paradigms that the Model Paradigms and the inflectional classes for this verb are identified. This paradigm table identifies this verb as being conjugated in the *ni-*imperfective (NIPFV), the *ni-* and *si-*perfectives (NPFV, SPFV) and the FUT and OPT.

Note that there is no mention of the template in these entries. No association to the template or positions in the template is given, because the template cannot give us this information.

Instead Y&M use the paradigm charts from the Appendixes.

The verb words are given in the 1st person imperfective form (IPFV.1), as the default form of an entry for a word. If not this, then they are given in the 3rd person imperfective (IPFV.3). This means that for any given form of a verb, a speaker must be able to access and produce the dictionary form of the verb, which is an ability characteristic of a fluent or near fluent speaker. That is, they 'know' the lexical patterns. The paradigm are a principle of organization that

demonstrates them. Thus the dictionary can be problematic for less fluent speakers, or linguists, who are unfamiliar with its structure.

To see the way the dictionary links forms to conjugation patterns, take the dictionary entry for the word form *yishcha* (p779) 'to cry' (translated in the infinitive form in English) in (25).

(25) `yishcha (DI), náshcha (R), yícha (P), deescha (F), wóshcha (O)`
`(ø) (*øcha: 'to cry, weep'.)`

This form *yishcha* is the ØIPFV.1 of the verb. The verb is two syllables long, the minimal or core verb; these two syllables contains all the obligatory morphosyntactic marking needed in a well-formed Navajo verb. The *yish,* the ØIPFV.1 form, is a very common morpheme, as can be seen in Appendix I. Many, many verbs are conjugated with *yish-* in the dictionary, but with different verb bases. That is the words that being with *yish* differ in the verb bases they take. In this instance there are over 20 pages in the dictionary of verbs that begin with *yish (yis)* as the 1st person imperfective. This, however, unsurprising, is not a fully productive system. How does one know which verbs appear in this form?

Y&M provide some insight into the structures at play.

Another entry for a minimal verb: *yisdiz* (774) 'to twist it (yarn)' The entry tells you this verb has the verb base **ødiz* 'to twist'. But what if you hear the form *náhádis*, or *yiyíídiz*? How do you reconstruct the 1st person imperfective form? What does the dictionary tell you about this word? What other conjugations does this word appear in? Someone familiar with the language may recognize the *náhá-* as a 3rd person iterative form, and the *yiyíí-* as a form of the yi-perfective, but what is the verb base? What is the shape of the stem? What other combinations can this verb word appear in? If word formation proceeds from left to right, how are these processes, since much of the common inflection is at the left edge? The position class template, for all its value, tells us nothing about these issues, though they are at the heart of fluency. The dictionary does.

Conversely, if you have the form *yisdiz,* what conjugations does it appear in? Can it take the ni-conjugation? Is *nisdiz* a well-formed Navajo verb? Is *nisdiz* part of the same paradigm as *yisdiz*? Does it have a related meaning, is this transparent or productive? Would *nizdiz* have its own dictionary entry? Can the meaning of a *nisdiz* form, should it exist, be guessed from the *yisdiz* form plus the meaning of *ni-* morpheme, that is *how productive are the morpheme concatenations?*

The short answer is 'not very', a not uncommon property of most word formation.

Look at the entry for the root DÍÍS 'to twist' in Appendix V (p324). Under DÍÍS, there are 9 separate verb bases for this root, each with its own set of prefixes, aspects and meanings. (This relates to the 'Theme' part of the Root/Stem/Theme index.) The form *yisdiz* is found in the second entry under DÍÍS (p324). The first line and the last line of this entry in the Appendix V is reproduced in (26).

(26) `*ødiz(I), *ødis(R), *ødiz(P), *ødis(F), *ødis(O) (Con.)`
`(Yisdiz, to be spinning it - - yarn)`

This entry tells us the variants of that verb base (for which yidiz is an example) in the 5 different 'modes' that every stem is inflected in: (I) IPFV, (R) REP, (P) PFV, (F) FUT, and (O) OPT.

The entry also tells us that this word form has a Continuative (CON) aspect. The Continuative (listed in the table of contents) "describes a verbal action that extends over an indefinite period of time…" (Y&M:173). It is important to note that the continuative is a property of the word form, not the stem; it concerns the meaning of the full word. This notation (CON) gives us an idea of the

conjugations that the word will appear in. For instance, it is unlikely that the verb word will be appear in the n-conjugations (the ni- imperfective and perfectives), as these are associated to meanings that involved goals and end points. Indeed, returning to the lexical entry in the dictionary for *yisdiz* it is cross-referenced to the paradigms listed on p d775; these are the paradigms that this word—and words like it—are inflected in: the ø-imperfective, iterative, the *yi* and *si* perfectives, and the future and optative.

Note that *all the words that conjugate like yisdiz* are referenced to this inflectional class, by a number in parenthesis at the foot of the entry. These paradigms have as their base the Model Paradigm of Appendix I, in this case the bare ØIPFV, and do not include verb bases.

Another example of a dictionary entry, using a more complex form, with prefixes that are built onto the ØIPFV Base Paradigm of Appendix I (g206) follows. We will continue to refer the ØIPFV conjugation in these examples.

4.2 Word Forms with Complex Prefix Groups

Complex prefix groups are listed in the dictionary in a way similar to the simpler ones. What may be puzzling to a non-fluent speaker are words that begin with very commonly occurring prefixes. How productive are these prefixes? What are the constraints on productivity?

One of the most common prefixes in the language the form *bi-* 3rd person singular agreement marker; there are several hundreds of different forms that begin with this morpheme in the dictionary; this is easy to see by looking for a word that begins with *bi-* in the dictionary. Here is one, with the first and last lines of the entry: *bi'dishnééh* (d212) in (27).

(27) bi'dishnééh
'to give it to him (a disease), to infect him with it' d213
(*łnééh: 'to cause to move - - - a disease') (bi'di-)

The last line of the entry tells us that the 'classifier'+stem element, the verb base, is **łnééh* ; the stem is related to the root NÉÉH for 'to fall - - -a flat flexible object' in Appendix V. The mode forms for this word are given in the first line of the entry, each is a fully inflected word in a different conjugation:

(28) bi'dishnééh (I), béé'dishnah (R), bi'dííłna'(P), bi'dishnééh (F),
bi'dideeshnah (O)

We can see the mode-related variation in the stem shapes of this word (*łnééh, łnah, łna'*). This verb base **łnééh* is listed under the root NÉÉH in the root-stem dictionary (g338). The stem set for **łnééh* 'to give it to him – a disease', appears as the 5th entry (p339) under this root.

On the preceding page of the dictionary entry (d212) is the gloss for prefix group for *bi'dishnééh;* the prefix complex *bi'di-*:

(29) bi'di-[2]: bi- Pos. Ib, ind. obj. pron., at him +'(a)-, Pos. IV, 3i obj.
pron., something, + di- Pos. VI, extension.

The forms of this morpheme complex are the indirect object marker *bi-* and the 3rdi marker *'(a)-* 'something' (*bi'd-*) and *di-*, noted in Y&M as 'an extension' (it is one of twelve different di-

forms listed.)

(30) bi'di-
bi - ' - d-
3INOBJ 3DOBJ 'extension'

The conjugation pattern for this verb word form is also found on the preceding page of the dictionary entry (d212). This tells us that the *bi'di-* prefix group and the verb words that take it, conjugate in the ØIPFV and si-perfective (SPFV) (g200). Since the iterative, future and optative are similar in all conjugations, for demonstration, in (31), from Y&M, the ØIPFV and SPFV forms for the *bi'di-* prefix group is reproduced, and thus for the word *bi'dishnéél*.

(31) bi'di-[2]

PERSON	IMPERFECTIVE Ø	SI-PERFECTIVE Ø-Ł
1	bi'dish-	bi'dé-
2	bi'dí-	bi'díní-
3	yi'di-	yi'deez-
3a	bizh'di-	bish'deez-
3i	bi'di-	bi'dees-
1	bi'dii	bi'dee-
2	bi'doh	bi'disoo-

What is missing from (31), to make a full verb form, is the verb base **łnéél* and the shapes that element takes in the different modes. These shapes, the stem sets, are listed in the 1st line of the dictionary entry.

Other verb bases that take this same prefix group *bi'di-* and conjugate in the same way are annotated in the dictionary with reference to this paradigm, in (32)

(32)

	verb word	*verb base*	
1	bi'dichí	*øchí	to be born
2	bi'di'niih	*d-niih	to be told
3	bi'dilzį́į́h	*lzį́į́h	to be blessed
4	bi'diłzéél	*łzéél	to get a shave
5	bi'diłniih	*łniih	to be cured
6	bi'dishch'áál	*øch'áál	to trick him
7	bi'dishłeeh	*øłeeh	to defraud him

Again, there is nothing in the template that provides this organization; it is the paradigm and conjugation patterns that do this. Additionally, of interest are two facts: the *bi-*, the first syllable in the entry, is the 3rd person indirect object marker, an agreement marker, one of three in this verb form (indirect object, direct object and subject). This is a very common prefix, yet it is included in the entry. Thus such the forms are fully inflected.

Second, the prefix complex is *bi'd-;* this form is prefixed to the inflected components of the Base Paradigm. To follow this point, in (33) is the ø imperfective and si-perfective Base Paradigms as given in Y&M (g200-201). Listed are the singular imperfective forms of the four principle

conjugations, ø-, ni-, si-, and yii- (or yi-ø-), and the dual si- perfective. The modes that this verb *bi'dishnéé́h* are conjugated in are bolded in (33).

(33)

	I. IMPERFECTIVE				II PERFECTIVE	
PERSON	Ø	NI-	SI-	YI-Ø	SI	
sgl.					Ø - Ł	D - L
	(1)	(2)	(3)	(4)		
1.	**yish**	nish	shi	yiish	**sé**	sis
2.	**ni**	ní	sí	sii	**siní**	síní
3.	**yi**	yí	-	yii	**si**	yís
3o.	**yi**	yí	-	yiyii	**yiz**	-
3a.	**ji**	jí	-	jii	**jiz**	jis
3i.	**'a**	'í	-	'ii	**'az**	'as
3s.	**ha**	hó	-	hwo	**haz**	has

In this way, the prefix group *bi'd-* combines with the ø-imperfective and the first column of the dual si-perfective (the verb base contains the *ł*). The paradigms in the dictionary account for any alternations that arise *due to prefixation*. Here this occurs in the *si*-perfective forms. One might expect the ill-formed *bi'disé-*, if prefixation were regular. In fact, this is not an uncommon alternation pattern for the si-mode, a generalization that can be gleaned from perusing the s-Modes in the Appendix I.

To see this, in (31) are the forms from *Model Paradigms* that lay out the shapes of the prefix group *bi'di-* when attached to the øimperfective Base Paradigms. On (g207), in the Model Paradigms, the paradigm in column 24 gives the forms of the øimperfective conjugation with the *d-* prefix from Pos. VIa. In this case the *d-* is a prefix on the øimperfective Base Paradigm forms, in a governed manner, *for the imperfective*, as in (34).

(34)

Ø-IMPERFECTIVE/USITATIVE + CONJUNCT PREFIXES	
	24
PERSON/NUMBER	BASE PARADIGM + DI-VIA
1.	dish
2.	dí
3.	di
3o.	yidi
3a.	jidi
3i.	'adi - 'di
3s.	hodi

This regularity is not always the case, as one can see in the following column in this series: column 25, also is a *d-*, prefixed to the forms of the øimperfective conjugation. This form is to all purposes phonemically identical to the previous *d-* in column 24—except for its patterns. The combination of this column 25 *d-* is not regular even in the øimperfective. The rules that might produce these forms from the combination of the *d-* and *ish* are thus simply rewrite rules, derived from the full forms to regulate the output laid out here and are specific to this verb form. The example given for the pattern in column 25 is the word form *dishní,* 'to say', an irregular form, as Y&M note at the top of the column. This is highly common word form.

Irregular forms are irregular because they do not follow the 'typical' patterns. So, what are these patterns?

4.3 Irregular Patterns and Some Insights into the Aspectual Prefixes

Some words do not follow a regular pattern. These are handled inside their individual entries in the dictionary.

An example of an irregular patterns are the entries *sod'niiszįįh* and *sodiszin* relating to prayer (d689) glossed in (35a, b). First observe the different shapes of the stem. In both forms the stems are related (root ZĮĮH), the 'classifiers' are the same (*l*), and the prefix group *sod-* are the same (35). They are different from each other in the stem shape (*zin* vs *zįįh*) and in the prefix groups they use (*sod'nii-* vs *sodi-*). In translation, the different between the forms is quite simple, 'praying' vs 'start to pray'. How is this coded in Navajo? How is this irregular? Does this provide any insight into the aspect system? Yes, to that last question.

(35a) sod'niiszįįh 'to start to pray,' (d689)

so-	d-	'(a)ni-yi	is	*l-*zįįh*
'relates to prayer'	'oral'	3O.INCH	IPFV.1S	VL-'pray'.IPFV.MOM
Ib	VIa	VIb.VIc	VII.VIII	

(35a) sodiszin 'to pray, to say a prayer' (d689)

so-	d-	is	*l-*zin*
'relates to prayer'	'oral'	IPFV.1S	VL-'pray'.IPFV.CON
Ib	VIa	VII.VIII	

In Appendix V, the root *ZIN* is listed as 'think, want', with a cross-reference to the root ZĮĮH 'to think, want, be aware, keep, ...have faith', etc. (g354). There are thirteen verb base sets under the root ZĮĮH; this root appears with all four 'classifiers'. Four stem sets show with the *l* 'classifier', including two related to praying, *lzįįh* and *lzin*, listed below in (36). Note that they are associated with distinct aspects, MOM vs CON.

(36) ZĮĮH 'to think, want, be aware, keep, ...have faith' (g354)

IPFV	REP	PFV	FUT	OPT	Asp
lzįįh	lzįįh	lzin	lzįįł	lzin	MOM
lzin	zįįh	lzin	lzįįł	lzįįh	CON
		lzįįd			

The only example given with *lzįįh*, is a single word *sodi'niiszįįh*, 'to start to pray'. A single word also is associated with *lzin,* the second stem set in (36), the word form for 'pray, be praying' *sodiszin.* Y&M indicate these conjugations by lay them out *inside* the entries.

Why is this the case? If we examine the paradigms, we can see that their conjugation patterns are irregular. In (37) are the forms, as Y&M give them, for the word *sodiszin,* but laid out in an (easier to read) paradigm form. This is the inflectional class for this word, the full set of inflected forms of this verb in the five modes, in the continuative aspect they appear in. These forms, which include the *l* 'classifier' from the verb base in an empty syllable final position (a phonologically governed pattern), are attached to the appropriate stem shape for the aspects listed in the entry,

also above in (36).

(37) Partial inflectional paradigms for the word *sodiszin* –including the 'classifier' but minus the verb stem *zin* (d689).

	IPFV	REP	PFV	FUT	OPT
1	sodis	sońdís	sodees	sodidees	sodós
2	sodíl	sońdíl	sodííníl	sodidííl	sodóól
3	sodil	sońdíl	sodool	sodidool	sodól
3	sozhdil	sonízhdíl	sozhdool	sodizhdool	sozhdól
1	sodiil	sońdiil	sodadool	sodidiil	sodool
2	sodoł	sońdół	sodazhdooł	sodidooł	sodooł

Those listed as perfectives are not a canonical perfective for any of the Modes in the Model Paradigms, and the future for this word form is built off this perfective.

This is also the case for the forms of the related verb *sodi'niiszįįh*, as one can observe by laying out those forms, which the reader may do at their leisure. Note that irregularity is in the pattern of the perfective forms, they are not built on any of the perfective forms of any of the Base Paradigms.

Furthermore, there is a lot of good information in these two entries about Y&M's strategies for word formation and structure. To see this, note that both entries reference an entry for the prefix complexes; these entries appear above and below the main entry on the same page, reproduced in (38).

(38) `sodi'nii-: (Ib. tsodi'nii-.) so- Pos.Ib, thematic, relating to prayer + di- Pos.VIa, oral + 'nii, inchoative, start to. Cf. 'inii-, bi'nii-.`

`sodi- (Ib. tsodi-.): so-/tso- Pos.Ib, thematic, relating to prayer + di- Pos.VIa, oral`

Separating out the *sodi-* group common to both, glossed in (38), note the differences in the aspect markings between the two forms. On consideration of these differences, the beginnings of insight into the aspectual system of Navajo may emerge. In the entry for the *sod'inii-* prefix group, in (38) reference is made to the form *'inii-*. On (d469) this entry for *'inii-* is found an 'inchoative', which Y&M gloss *'(a)-* '*Pos. Ia 3s obj. pron.*' plus two Pos. VI prefixes, Pos. VIb, *ni-* and Vic, *yi-*.

(39) *'inii-*
'a- ni -yi
Ia- Vib -VIc

Position VI is an aspectual prefix group attaching directly to a Base Paradigm (recall: Pos. VII.VIII in the template). The *ni-* is a kind of terminative and the *yi-* a 'transitional' or 'semelfactive' (denotes a momentary or punctiliar action) according to Y&M. These prefixes are a compounded aspectual prefix which indicates the inchoative, the beginning of an activity. This compound prefix *nii-* thus marks a point in the transition of an activity, interpretable as an inchoative.

In (36), we see that the verb bases differ in their stem variations, one set for the CON

(continuative) and the other for the MOM (momentaneous). The inchoative prefix group appears with the set labeled the MOM. In this way, the specification for aspect is a property of the *whole word form*, not found in either the Model Paradigms or verb bases, but in their combination. Right now, in our present knowledge of this system, this is not predictable information; it must be listed. It is not found in the template nor is the template set up to encode this. This is an important point: the template is a fine device, but it is not a reflection of a speakers' knowledge; it has never worked as a word formation device.

Also note that in this entry for the prefix *'inii-* (g469), Y&M lay out the paradigm pattern and identify the Base Paradigms for this prefix group as the ØIMPV and SPFV (as for *bidi'ni-*). Therefore, what is different about the 'prayer' verbs is found in their perfective, optative and future paradigms. Therein lies the identification of irregularity. The reader may lay out these patterns and see the differences.

4.4 A Further but Brief Observation about Regularity and Aspect

The future (FUT) is a mode marked on both the Base Paradigms and the verb bases; its characteristic morpheme is *di-*. This lends insight into regularity and the role of the paradigms. Y&M state this morpheme as *di-*^{12} Pos. IV morpheme, "probably identical" to *di-*^{3} 'extending in time and space'. They term this *di-*^{12} as an 'inceptive that combines with the Progressive Mode to form the Future paradigms' (g38). All future forms have this *di-* morpheme. Thus, even while identifying morphemes by their template position, Y&M make explicit reference to the paradigmatic structure of the words.

Of importance in these examples is the idea of irregularity: they are irregular because they do not follow the usual patterns. It a worthy use of time to figure out and note what the usual patterns are. They are explicitly found in the regularities of the listed paradigms.

4.5 Summary 3

There are several ways to look up a form. It is most helpful to know what the IPFV.1S form of a verb is. All dictionary entries are given, if possible, in this form. If a verb does conjugate in the 1st person, then it is given in the 3S. When it is not conjugated in the IPFV (in the case of neuters), it is marked as such. For information on and examples of the neuter verbs see the grammar section 'Neuter Verbs' (1987:g189-98.)

If you do not know what the IPFV.1S form of a verb is, then there are a couple of ways to approach the dictionary. One is to go to the Appendix V and look up the stem. The stem is more easily identifiable (thus the volume Young, Morgan and Midgette, 1992); it is the last syllable in the word, barring enclitics.

5 Summary: The Paradigms

The Navajo verb word form in Y&M is a composite of forms from one of the Model Paradigms (from Appendix I, which are extensions by prefixation to the Base Paradigms) and a verb base (a set of 'classifier'+stem shapes, as laid out in Appendix V). Knowing which verb base can be

combined with which Model Paradigm (and vice-versa) is at the heart of the lexicon of a Navajo speaker.

(40) [*Model Paradigm*$_{(Mode.person.number)}$ + *Verb Base*$_{(VL.mode)}$] verb word$_{(Mode.Aspect)}$

Y&M attempt to encapsulate this knowledge through the set-up of the dictionary. For any verb in the dictionary, its entry is a fully inflected form, given, in the default case, in the 1st person singular øimperfective mode, the most common mode. This information is accessible by perusing Appendix I. Knowing the default form, the reader can easily learn which are the non-default modes for that verb word form. Dictionary entries also provide information for verbs that do not conjugate in the default, for instance verbs that do not appear in the 1st person forms (*yi-* and *yí-* entries in the dictionary), or verb stems that are plural (KÁÁH to walk, 3+actors) or word forms that are simply irregular. Any licit well-formed verb in the dictionary can be constructed in this (40) way, knowing the Base Paradigm and its prefixes (aka the Model Paradigms), and the correct form of the verb base. This full form can then be linked to any related conjugational forms in Y&M. It is likely that this is a good model for the lexicon in all Dene languages.

One widely used model of the Navajo (and Dene verb) uses the position class template (Table 2) as a basis for word formation. This is a notoriously problematic approach. The template is important and useful, but it is not a suitable basis for Dene word formation. With it, the morpheme concatenations need extensive and customized re-write rules, there is no way to link related word forms to each other in an organized way (it has no predictive value), the morphemes themselves are abstractions culled from full word forms, the morpho-phonology is stipulative, the model massively overgenerates forms, and the model does not allow insight into patterns in the lexicon. This template has never successfully worked as a model of word formation (the word formation problems laid out in Kari (1990) have never been successfully addressed in any Dene language).

The use of paradigms by Young and Morgan has been treated as incidental, a descriptive convenience, rather than as a valid model of a morphologically complex verb. This is due no doubt to the role paradigms have played in linguistic theory.[10] On the contrary, as Y&M demonstrate, it is fruitful to take the paradigms as a key strategy in word formation. In the Y&M view, the paradigms are organizing devices in the lexicon, as psychologically real morphological entities. As we have seen the model does not preclude prefixation; the Base Paradigms are a base for prefixes. The paradigms link full word forms to their conjugation patterns, also a good source of the study of lexical patterns in these types of languages. The alternation patterns in the Model Paradigms of Appendix I are quite rich, but there are clear phonological patterns. As such the Model Paradigms are a good basis for studies of the morpho-phonology. This will require figuring out what the conjugation patterns are (see Cox on Tsuut'ina). Understanding the role of aspectual categories like Momentaneous and Continuative (which appear to belong to full word forms) and the 'classifier'+stem shape unit may lead to a better understanding of the patterns that exist among the stem shapes

An examination of the structure of the dictionary and grammar lead to the insight that the lexicon of a language with a complex morphology is paradigmatic: paradigms play an important role in the organization of the lexicon. Additionally, the structure in (40) does not preclude syntactic analyses or models such as Stump's Paradigm Function Morphology because these models tend to be indifferent to the elements of morphological structure.

[10] The role of the paradigm is not under discussion here. See the literature on Word and Paradigm morphology; Blevins and Blevins is a good start.

Appendix: Leipzig Glossing Rules Correspondences

Linguists working within a language family often develop special terminology for phenomena in those languages that may be unique to this specific literature. Such is the case also in Athabaskan. In this Appendix, correspondences between Leipzig Glossing Rules and Y&M annotations are listed.

There are three tables: General, Mode, Aspect. General is for the general terms used in the dictionary. The Mode is for the main categories of Mode such as imperfective and perfective, repetitive, future, optative, that verbs are conjugated in, the last is the table of aspect, terms used in the grammar for the rich sets of aspectual categories, such as semelfactive and inchoative, that arise in the combinations of the stems and mode conjugations.

The first two columns are for Y&M terminology, they may use two forms, one an abbreviation of the other, as in *imp.* and *I* for imperfective. A full list of their abbreviations, many of which are not included here, and from which this is drawn is in YM 1987:g14.

The 3rd column is the Leipzig glossing rules (LGR) annotation, used in the glosses. The last column is the meaning.

General terms

Y&M	**Y&M ABBREV.**	**LGR**	
classifier	cl	VL	valence
stem		STEM	
root		ROOT	
	Pos.		position/slot in template
disjunct		DSJ	
conjunct		CNJ	
	vt	TR	transitive
	vi	INTR	intransitive
		DU	dual
		RECP	reciprocal
		REFL	reflexive
		DISTR	distributive
	3a	3A	3rd person animate
	3i	3I	3rd person inanimate
	3s	3S	3rd person space
	S	SUBJ	subject
sing.		SG	singular

Modes (major conjugational categories)

Y&M	**Y&M ABBREV.**	**LGR**	
imp.	I	IPFV	imperfective
perf.	P	PFV	perfective
fut.	F	FUT	future
opt.	O	OPT	optative
iter.	Iter	ITR	iterative
		USIT	usitative
progr.		PROG	progressive
repet.	rep	REPT	repetitive

Aspect in Y&M

Y&M	**Y&M ABBREV.**	**LGR**	
Momentaneous	Mom.	MOM	momentaneous
	NI	NIPFV	neuter imperfective
	NP	NPFV	neuter perfective
	Rep	RPT	repetitive
	Rev.	RVS	revisionary
	Iter.	IT	iterative
Seriative	Ser.	SER	seriative
	Sem.	SMLF	semelfactive
	Prog.	PRG	progressive
Completive		COMP	
Terminative		TERM	terminative
Stative		STAT	stative
Prolongative		PROL	prolongative
Inceptive		INCP	inceptive
		NOML	nominalizer
Inchoative	Inch.	INCH	inchoative
Transitional	Trans.	TRNSL	transitional

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