NAVAJO MOMENTANEOUS VERB STEM INFLECTION

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I. Introduction

Over the past decade, growing attention has been paid in the morphological literature to formalizing the notion of "paradigm" Numerous researchers (Wurzel, Stamp, among others) have worked towards defining what a paradigm is, how to tell whether two words belong to the same or to different paradigms, how paradigms are related to one another, and a variety of other issues One researcher who has made particular contributions to this field is Andrew Carstairs-McCarthy In this paper we will be focussing on two of his most important proposals regarding the theory of paradigms, namely the distinction between affixal and non-affixal morphology, and the Paradigm Economy Principle In particular, we will examining how these ideas can contribute to a better understanding of verb stem inflection in Navajo, as well as how the Navajo data can help us refine our understanding of the ways in which paradigms work in different languages

II. Theoretical Background

Carstairs (1987) provides us with one of the cornerstones of modern paradigm theory, namely the Paradigm Economy Principle (PEP) The purpose of the PEP is to constrain, for a given language, the number of possible paradigms (or conjugation/declension classes) that a given part of speech can be organized into It states that the number of paradigms can be no greater than the number of distinct inflectional realizations for that cell in the paradigm which has the greatest number of distinct inflectional realizations Or, to put it in more operational terms find the cell in the paradigm (e g Dative Plural, Past Participle, etc) which has the greatest number of different ways of being realized, and that number will be the total number of distinct paradigms possible for that part of speech

For instance, take the case of a hypothetical language with three nominal cases, A, B and C Say there are two ways of realizing Case A, two ways of realizing Case B and four ways of realizing Case C Logically, the nouns in this language must be organized into at least four declension classes, since Case C has four distinct realizations However, the claim of the PEP is that the nouns in this language will be organized into *exactly* four classes, no more, no less

However, in order to know how to apply the PEP to a given set of data, one must be able to decide what counts as a "distinct inflectional realization" To this end, Carstairs-McCarthy has drawn a clear distinction between affixal and non-affixal morphology Under his approach, only affixal morphology counts in deciding whether two words belong to the same inflectional class For instance, the English forms *eaten* and *broken* count as having the same inflectional realization for the category 'past participle', since they share the same affixal morphology (namely the suffix *-en*) The fact that *broken* also has a change in its stem vowel is ignored for

purposes of determining inflection class membership The implication is that non-affixal morphology does not behave in the same ways, or is not subject to the same principles as affixal morphology

To date, Carstairs-McCarthy's theories have been tested mostly on Indo-European languages, along with a select group of others, such as Zulu, Hungarian Below we will test these theories using data from verb stem inflection in Navajo Navajo verb stem inflection makes for an intersting and important test of Carstairs-McCarthy's theories for a number of reasons Firstly, Navajo is a polysynthetic language, genetically and typologically quite distinct from the other languages that have been examined in this framework Secondly, inflection in Navajo verb stems is carried out solely by (what appear to be) non-affixal means Thus, given the strong division between affixal and non-affixal morphology in Carstairs-McCarthy's framework, we might expect a rather different set of principles to be underlying Navajo verb stem inflection We examine this below

III. The Navajo Verb
As is well known, the morphological composition of verbs in Navajo is extemely complex Structually, 't is composed of a prefix string (which may contain either a single prefix or a conglomeration of many prefixes) and a verb theme The verb theme in Navajo is itself internally complex It is composed of a "classifier" plus a verb stem There are four classifiers in Navajo, {-∅-}, {-ł-}, {-d-}, and {-l-}, typically used to mark notions of transitivity This leaves just the verb stem, which usually has a rather abstract meaning Stems are typically of the shape CVC, where V stands for a vowel which is either short or long, low tone or high tone, oral or nasal It is changes in the shape of the verb stem (in combination with various prefixes) which mark the numerous inflectional categories of Mode and Aspect The structure of the Navajo verb (greatly simplified for our purposes) is laid out in Table I below

Table I Navajo Verb Structure

Verb		
Prefix String	Theme	
	Classifier	Stem

IV. Verb Stem Conjugation
In Young and Morgan (1992), the conjugation of a given verb stem is indicated by simply listing all the variant shapes that the stem can taken, identified with which combination of modal and aspectual features each form expresses This listing of stem forms is called the "stem set" An example, for the verb stem "have a bad dream" is shown in Table II on the following page The Aspects are shown down the left side of the table, with the Modes running across the top

Table II Sample Stem Set

	Imperf	Iterative	Perfective	Future	Optative
Mom/ Trans	gáásh	gash	gaazh	gash	gáásh
Cont	gaash	gash	gaazh	gash	gaash
Diversative	gazh	gash	gazh	gash	gazh
Repetitive	gash	---	---	---	---
Semelfactive	gash	gash	gash	gash	gash
Neuter	gash	---	gaazh	---	---

Examples
>   nidiishgaazh 'I lept up in my sleep, had a nightmare'
>   naashgaash 'I'm going around in a terrible condition (as if starving, freezing)'
>   yiishgash 'I cast a spell on it'

This listing of stem forms begs the question of predictablity That is, is there any way to predict some or all of the forms in a stem set, or, are the forms essentially random, and therefore must all simply be memorized? Young and Morgan address this issue briefly, saying

"Although the existence of regular patterns and rules governing the derivation of stems from underlying roots is quite apparent, and although some of them have been formulated, research in stem derivation is far from complete or conclusive as far as the Navajo langage is concerned " (Young & Morgan (1992 807))

Although the question of verb stem inflection in Navajo has been addressed by previous researchers, the data have never been looked at from the viewpoint of modern paradigm theory Below, we offer the beginnings of a new approach to this traditionally thorny problem, focussing on its application to verb stems inflected for the Momentaneous aspect, the aspect which occurs with the largest number of verbs

V. Conjugation Classes: A Descriptive Account

To begin our investigation, we grouped Navajo momentaneous stems into conjugation classes, using a traditional, descriptive approach[1] This procedure produced 26 conjugation classes, each contatining a minimum of 3 verbs, as shown in Table III on the following page

Table III Basic Conjugation Classes

	Iterative	Future	Impf=Opt	Perfective	Gloss
Class 1	k'ąs	k'ąs	k'ąąs	k'ą́ąz	*straighten*
Class 2	kos	kos	kees	kééz	*cough*
Class 3	tas	tas	táás	taaz	*twist*
Class 4	'ish	'ish	'éésh	'eezh	*string beads*
Class 5	no'	noł	nood	noód	*lick*
Class 6	zı'	zıł	zííd	zııd	*grasp*
Class 7	tsı'	tsıł	tsééd	tseed	*pound*
Class 8	lah	lah	lááh	laá'	*gather*
Class 9	tłoh	tłoh	tłeeh	tłée'	*handle mush*
Class 10	k'eh	k'eh	k'ééh	k'ee'	*cut, slice*
Class 11	ts'ah	ts'ah	ts'éeh	ts'ee'	*coil*
Class 12	dǫǫh	dǫǫł	dǫǫh	dǫǫd	*jerk*
Class 13	neeh	neeł	neeh	ne'	*play*
Class 14	k'ą́ą́h	k'ą́ą́ł	k'ą́ą́h	k'ą́ą́'	*burn*
Class 15	lóós	lóos	lóós	loóz	*lead*
Class 16	bısh	bısh	bíısh	bızh	*braid*
Class 17	gıs	gıs	géés	gız	*twist*
Class 18	k'oł	k'oł	k'ooł	k'ol	*undulate*
Class 19	lı'	lıł	lííd	lıd	*smoke*
Class 20	ka'	kał	kaad	kad	*sew*
Class 21	t'ah	t'ah	t'áah	t'a'	*fly*
Class 22	tsah	tsah	tsééh	tsa'	*bite down*
Class 23	nah	nah	neeh	na'	*swallow*
Class 24	yeh	yeh	yééh	yeh	*give presents*
Class 25	chah	chah	chééh	cha	*cry*
Class 26	tł'ıs	tł'ıs	tł'ıs	tł'ıs	*hard*

In Table IV on the following page, we show the actual exponents which are charcteristic of each class The Column marked '#' indicates the number of verbs in that class

Table IV Exponents Defining the Conjugation Classes

	#	Future	Impf=Opt	Perfective
Class 1	9	no change	v > vv	v > v́v́ +vd
Class 2	11	no change	v > ee	v > eé +vd
Class 3	20	no change	v > v́v́	v > vv +vd
Class 4	6	no change	v > éé	v > ee +vd
Class 5	9	' > ɬ	v' > vvd	v' > v́vd
Class 6	4	' > ɬ	v' > v́v́d	v' > vvd
Class 7	3	' > ɬ	v' > eéd	v' > eed
Class 8	6	no change	v > vv	vh > v́v́'
Class 9	4	no change	v > ee	vh > éé'
Class 10	10	no change	v > v́v́	vh > vv'
Class 11	8	no change	v > ée	vh > ee'
Class 12	23	h > ɬ	no change	h > d
Class 13	11	h > ɬ	no change	vvh > v'
Class 14	6	h > ɬ	no change	h > '
Class 15	6	no change	no change	+vd
Class 16	24	no change	v > v́v́	+vd
Class 17	4	no change	v > éé	+vd
Class 18	6	no change	v > vv	+vd
Class 19	7	' > ɬ	v' > v́vd	' > d
Class 20	4	' > ɬ	v' > vvd	' > d
Class 21	9	no change	v > v́v́	h > '
Class 22	10	no change	v > ee	h > '
Class 23	3	no change	v > ee	h > '
Class 24	8	no change	v > v́v́	no change
Class 25	6	no change	v > éé	vh > v
Class 26	11	no change	no change	no change

From a purely descriptive point of view, it would be reasonable to say that our work is done We have taken all the data and classified it into 26 separate and distinct groups (plus irregulars) However, from a cross-linguistic perspective, the system described here is rather unusual, since most languages have far fewer than 26 verbal conjugation classes.

Moreover, we can see how this analysis of Navajo verb stem inflection runs afoul of Carstairs-McCarthy's PEP Looking at the chart above, we can see that there are 4 unique exponents for the Future mode, 8 for the Imperfective=Optative and 17 for the Perfective Accordingly, there should be only 17 conjugation classes, however, our account finds 26 This means one of two things either Navajo verb stem inflection is not subject to the Paradigm

Economy Principle, or there is another way to analyze the data which will bring it in line with the PEP We explore the second of those possibilities below

VI. A Second Pass Through the Data

In creating the analysis shown above in section V, we simply followed the traditional methods of grouping verbs into conjugation classes However, Carstairs-McCarthy has shown that this methodology misses a crucial distinction between affixal and non-affixal morphology His position, based on analyses of various other languages, is that non-affixal morphology should not be considered when determining conjugation classes If we are going to test his claims about the PEP, it seems only fair to follow the methodology he used in discovering the PEP The question then becomes, What counts as 'non-affixal morphology'?

As a first estimation, we could say that non-affixal morphology is anything other than an affix, i e anything which is not clearly a prefix, suffix or infix From that relatively conservative standpoint, we immediately run into a serious problem with the Navajo data Examining Table IV, we see that there are seven different methods for marking Mode in Momentaneous stems (some of these methods may co-occur) final consonant mutation, tone change, vowel lengthening, vowel shortening, ablaut, deletion of final consonant and zero-marking None of these methods are unambiguously affixal, and indeed most of them appear to be clearly non-affixal

If we take the traditional viewpoint on non-affixal morphology and then follow Carstairs-McCarthy in ignoring all non-affixal morphology in determining conjugation classes, we are left with practically no data to analyze Our analysis would be that all 26 of our classes from Table IV get collapsed into a single conjugation class, since they do not contrast in affixal morphology, only in non-affixal morphology Each verb then would have to be lexically specified for just exactly what types of non-affixal it takes in marking each of the different modes This is essentially the approach Young and Morgan take in listing fully-specified stem sets, bringing us right back to square one Clearly, something is amiss

To remedy this situation, we need to modify our conception of what 'non-affixal morphology' means In all the languages on which the PEP has been tested so far, the main type of non-affixal morphology that has been found is vocalic ablaut (e g English, German) In Table V on the next page, we factor out ablaut, collapsing conjugation classes which differ only in ablaut, but which are identical in all other ways [2]

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Table V Conjugation Classes With Ablaut Removed

	#	Future	Impf=Opt	Perfective
Class 1+2	20	no change	v > vv	v > v́v́ +vd
Class 3+4	26	no change	v > v́v́	v > vv +vd
Class 5	9	' > ł	v' > vvd	v' > v́v́d
Class 6+7	7	' > ł	v' > v́v́d	v' > vvd
Class 8	6	no change	v > vv	vh > v́v́'
Class 9	4	no change	v > vv	vh > v́v́'
Class 10+11	18	no change	v > v́v́	vh > vv'
Class 12	23	h > ł	no change	h > d
Class 13+14	17	h > ł	no change	h > '
Class 15	6	no change	no change	+vd
Class 16+17	28	no change	v > v́v́	+vd
Class 18	6	no change	v > vv	+vd
Class 19	7	' > ł	v' > v́v́d	' > d
Class 20	4	' > ł	v' > vvd	' > d
Class 21+22	19	no change	v > v́v́	h > '
Class 23	3	no change	v > vv	h > '
Class 24+25	14	no change	v > v́v́	no change
Class 26	11	no change	no change	no change

Even after factoring out ablaut, however, we find the Navajo data to still be in violation of the Paradigm Economy Principle After taking out the ablauted exponents, we find that the Future Mode still has 4 distinct exponents, the Imperfective=Optative has 5 and the Perfective has 13 According to the PEP, then, we should have only 13 conjugation classes, yet, despite eliminating the ablaut classes, we still have 20 separate and disinct conjugation classes

We are again left with one of two possibilities either the PEP does not apply to Navajo stem inflection, or we need to modify our analysis so as to bring it in line with the PEP Given that there are still a number of other types of non-affixal morphology that we could potentially factor out, it behooves us to carry on with the analysis Now the question becomes, which of the remaining non-affixal methods do we factor out next?

There are four reamaining possibilities final consonant mutation, tone change, vowel lengthening and zero-marking While all of these fall under a traditional interpretation of 'non-affixal', some are more 'non-affixal' than others For instance, in some previous analyses of Navajo stem inflection, the stem-final consonant mutation has been treated as a result of suffixation of a consonant coupled with the deletion of the original stem final consonant due to phonotactic constraints against word-final consonant clusters Vowel lengthening and tone change, especially under modern, non-linear treatments of phonology, can be thought of as adding, or "affixing", an extra timing unit or an H-tone Likewise, it is very common to treat "no

change" as an instance of "adding" a phonologically null affix Given this, it is not clear how to decide, in any clear and impartial way, what's affixal and what's not

At this point, it is helpful to refer back to some of the previous analyses that Carstairs-McCarthy has carried out Although the most common type of non-affixal morphology he encountered in the languages he studied was ablaut, there were also a few cases of stress shifts within a given paradigm (e g Russian) At first, this seems to be of no help, since Navajo is not typically described as a stress-language However, if we were to find a parallel phenomenon in Navajo, the best candidate would seem to be tone shift We explore this possibility in the next section

VII. A Third Pass Through the Data

Below, in Table VI, we show what happens to our analysis when we factor out tone shifts as being non-affixal

Table VI Conjugation Classes With Ablaut and Tone Removed

	#	Future	Impf=Opt	Perfective
Class 1+2+3+4	*46*	no change	v > vv	v > vv +vd
Class 5+6+7	*16*	' > ł	v' > vvd	v' > vvd
Class 8+9+10+11	*28*	no change	v > vv	vh > vv'
Class 12	*23*	h > ł	no change	h > d
Class 13+14	*17*	h > ł	no change	h > '
Class 15	*6*	no change	no change	+vd
Class 16+17+18	*34*	no change	v > vv	+vd
Class 19+20	*11*	' > ł	v' > vvd	' > d
Class 21+22+23	*22*	no change	v > vv	h > '
Class 24+25	*14*	no change	v > vv	no change
Class 26	*11*	no change	no change	no change

After factoring out tone, we find that the Future Mode has 3 distinct exponents, the Imperfective=Optative also has 3, and that the Perfective has 8 There are 11 conjugation classes in total, meaning that we are still in violation of the PEP, even though we have reduced the number of classes by more than half from the original 26 However, we are much closer to conforming to the PEP than we have been In fact, it is now possible to isolate specifically those classes which are preventing strict accord with the PEP

Violations of the PEP occur when two separate conjugation classes share the same exponent for that morphosyntactic category which has the largest number of distinct exponents In Navajo, that category is clearly the Perfective In Table VI, we can see 3 pairs of classes that share the same Perfective exponent Class 14 and Class 21+22+23 are both marked by h > ',

Class 15 and Class 16+17+18 are both marked by voicing the stem final consonant, and Class 24+25 and Class 26 are both marked by no change in the Perfective

In recent work, Carstairs-McCarthy has weakened the PEP somewhat, allowing for a limited number of 'mixed paradigms', which violate a strict interpretation of the PEP Mixed paradigms are typically described as 'going like' one class for part of the paradigm, but then 'going like' another class for the rest of the paradigm For instance, we could say that Class 13+14 goes like Class 12 in the Future and Imperfective=Optative, but then goes like Class 21+22+23 in the Perfective Conversely, we could say that Class 21+22+23 goes like Class 24+25 in the Future and Imperfective=Optative, but then goes like Class 13+14 in the Perfective Similar observations can be made for the other 2 pairs of classes that violate the PEP

Of the remaining candidates for non-affixhood, vowel lengthening, final consonant mutation and zero-marking, none are unambiguously more non-affixal than any other, and indeed it is not hard to come up with *affixal* interpretations for them, as discussed above So, having eliminated the three most clearly non-affixal inflections (ablaut, subtraction and tone shift), we can say that, by and large, momentaneous verb stem inflection in Navajo conforms to the Paradigm Economy Principle, with the few exceptions probably to be handled by the proviso for mixed paradigms

VIII. Macroparadigms

Carstairs-McCarthy defines a 'macroparadigm' as

"any two or more similar paradigms all of whose inflexional differences can be accounted for either phonologically, or else correlate consistently with differences in semantic or lexically determined syntactic properties, or, any paradigm which cannot thus be combined with other paradigm(s) " (1987 69)

Taking our 11 conjugation classes from Table VI, we can group the majority of them into one of two macroparadigms by correlating their inflectional differences with phonological differences in the basic form of the stem This is shown below in Table VII

Table VII Macroparadigms

	#	Unique Phonological Characteristic	Macroparadigm
Class 1+2+3+4	46	short vowel + fricative	I
Class 5+6+7	16	short vowel + glottal	I
Class 8+9+10+11	28	short vowel + h	I
Class 16+17+18	34	short vowel + fricative	II
Class 19–20	11	short vowel + glottal	II
Class 21–22+23	22	short vowel + h	II

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As we can see, all the classes that go into Macroparadigm I are phonologically distinct from each other, likewise with Macroparadigm II From this, we can derive the following rules of 'macroinflection' shown below in Table VIII

Table VIII Macroinflection

	I	II
Number of Verb Stems	90	67
Future	' > ł vvh > vvł	
Impf=Opt	v > vv ' > d	
Perfective	v > vv fric > +vd ' > d h > '	— fric > +vd ' > d h > '

As Table VIII shows, verbs in Macroparadigms I and II share the same affixal exponents in the Future and Imperfective=Optative The only difference between the two macroparadigms comes in the marking of the Perfective, and even there the two are quite similar, the only difference being in the presence or absence of vowel lengthening

This distinction between Macroparadigm I and II also has an unexpected consequence Going back to our first pass through the data, we can see two types of ablaut classes Type I (Classes 2, 4, 7, 9 and 11) had the ablaut vowel *e* in both the Imperfective=Optative and the Perfective Type II (Classes 17, 22 and 23) had the ablaut vowel *e* only in the Imperfective= Optative and not in the Perfective In the end, all the Type I ablaut classes wound up in Macroparadigm I, and all the Type II ablaut classes wound up in Macroparadigm II (See discussion of Class 25 below) Thus, if we know that a given verb is an ablauting verb, we can predict its pattern of ablaut based on what macroparadigm it belongs to

IX. Other Macroparadigms

Although the vast majority of regular verbs belong to Macroparadigm I or II, there are five classes not accounted for in Tables VII and VIII These are shown in Table IX on the following page

Table IX Other Classes

	#	Unique Phonological Characteristc	Macroparadigm
Class 12	23	long vowel + h	I or II
Class 13+14	17	long vowel + h	I or II
Class 15	6	long vowel + fricative	I or II
Class 24+25	14	short vowel + h	III
Class 26	11	no consistent characteristic	IV

Classes 12, 13+14 and 15 fit equally well into either Macroparadigm I or II, based on the rules shown in Table VIII This ambiguity runs afoul of Carstairs-McCarthy's 'Macroparadigm Uniqueness Claim'

"When paradigms are assigned to a macroparadigms in accordance with the definition of 'macroparadigm', it will be found that each paradigm belongs to one macroparadigm and one macroparadigm only " (1987 76)

Thus, the MUC predicts that there should be no ambiguity in the assignment of conjugation classes to macroparadigms Yet, that is exactly the situation we have with Classes 12, 13+14 and 15, which could belong to either Macroparadigm I or II Thus, we seem to have counterexamples to the MUC

Consider the four logical possibilities in trying to group two conjugation classes into the same macroparadigm, shown below in Table X

Table X Logical Possibilities of Macroparadigm Assignment

Phonologically Distinct?	Affixally Distinct?	Macroparadigm?
yes	yes	different
no	yes	different
yes	no	potentially ambiguous
no	no	same

The crucial case is the third one, where the two classes are phonologically distinct (e g one has a short vowel and ends in a fricative, the other has a short vowel but ends in a glottal stop) but are not affixally distinct (i e , their rules for affixation do not contradict one another) The problem is that it is possible to be phonologically distinct and affixally non-distinct from more than one macroparadigm at a time

Take the case of Class 13+14 It is phonologically distinct from all the classes in either Macroparadigm I or II, since all those classes contain verbs with short vowel stems, and Class 13+14 contains verbs with long vowel stems Since all regular verbs inflect the same way in the

Future and Imperfective=Optative, we need to look to the Perfective Here, the rule for Class 13+14 is change the final $h > '$ However, this rule is part of the macroinflection for both macroparadigms already Thus, there is no principled way of deciding which of the two it belongs to Now, if we were to somehow assign Class 13+14 to one of the macroparadigms, then Class 12 is no longer ambiguous since it must belong to a *different* macroparadigm from Class 13+14 This follows from the fact that phonologically non-distinct classes which are affixally distinct must belong to different macroparadigms, as shown in Table X above However, as long as Class 13+14 is ambiguous as to its macroparadigm status, so is Class 12

The same ambiguity can be seen with Class 15, which is phonologically distinct from all other regular verbs, but which is affixally non-distinct from both Macroparadigm I and II Thus, while the MUC appears to hold under the majority of circumstances, it can be breached in just those cases where classes are phonologically distinct but affixally non-distinct from two macroparadigms at the same time

Lastly, there are Classes 24+25 and 26 Class 24+25 comes very close to belonging to Macroparadigm II (including the fact that Class 25 is a Type II ablaut class), except for the fact that h-final verbs in Macroparadigm II undergo a change of $h > '$, whereas the verbs of Class 24+25 undergo no change at all If they did, they would be identical to Class 21+22+23 Thus, the 14 verbs of this class constitute their own separate Macroparadigm III

The same is true of the verbs in Class 26 These verbs are unique in that they keep the same form all the way through the momentaneous aspect, thus making them quite distinct from any of the other regular verbs in the language Indeed, they are reminiscent of indeclinable nouns in languages with case systems Furthermore, this is the only class of verbs in the language where the basic form of the stems do not share any consistent phonological characteristics

X. Conclusion

Before concluding, it is important to remember that the research and analysis presented above is only of a preliminary nature We have only considered the momentaneous aspect stem inflections, and while they are the most common, there are many other aspects which need to be investigated before a full account of verb stem inflection in Navajo can be given[3] However, the approach taken above does point us in the direction of some interesting findings

Firstly, we see indications that vowel ablaut, subtraction and tone shift need to be treated differently from vowel lengthening and consonant mutation (and zero-marking) in dealing with verb stem inflection By doing so, we manage to bring the Navajo data largely into line with the Paradigm Economy Principle, where previously it seemed that the PEP may not have even been applicable in this language It also gives us some idea of what counts as 'affixal' and what counts as 'non-affixal' with regard to inflection, and the degree to which language-specific considerations need to be made in this area

Secondly, we see that the majority of momentaneous verb stems in Navajo can be grouped into one of two basic macroparadigms, differing only in their inflection of the Perfective An interesting point for further research will be to see if the number of macroparadigms can stay this low, or whether more will be needed to adequately account for the data.

Thirdly, the distribution of vowel ablaut across modes within a given ablaut class appears to be sensitive to the distinction between Macroparadigm I and II/III At the very least this is an interesting coincidence, but it also may be an indication that something similar to the analysis proposed above is actually at work in the language, and has been for quite a while, given the fact that similar ablaut alternations are found in all other branches of Athabaskan

Fourthly, we saw a few counterexamples to Carstairs-McCarthy's Macroparadigm Uniqueness Claim, in the ambiguity surrounding Classes 12, 13+14 and 15 However, these three cases all fall into the logical 'gap' left by the definition of of the macroparadigm itself, and thus do not seem to threaten the notion of macroparadigm anymore than 'mixed paradigms' threaten the notion of paradigm

Lastly, and perhaps most importantly, we see that it is possible to (begin to) analyze Navajo verb stem inflection within a modern paradigm-based framework, and furthermore that doing so provides us with insights into the system that might not have been available through other means These insights can then be put to use in the teaching of Navajo (and, presumably related Athabaskan languages), wherein verb stem inflection has been one of the major pitfalls in acquiring full competence in the language Likewise, the analysis of these data tells us some interesting things about our theory of paradigms and how they work, in some places validating previous conclusions, and in other places raising questions about certain claims This will no doubt continue to be true as our research progresses and we come to have a better understanding of the intricacies of this system

NOTES

1 Unlike previous analyses, we have taken the Iterative mode form as basic This choice is certainly not uncontroversial, and indeed further research may point to taking another form (either an actual inflected form or a more abstract 'underlying' form) as basic

2 Classes 9 and 23 are ablaut classes, but they had no corresponding non-ablaut classes to be collapsed with Note also that we eliminated subtractive morphology (final consonant deletion and vowel shortening) in Classes 13 and 25, allowing them to combine with Classes 14 and 24, respectively

3 There is still, of course, the question of conjugating the prefix strings, which I have left completely unaddressed These would have to be dealt with in order to make a statement about Navajo verb conjugation as a whole, and is definitely a point for much further research.

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