MORPHOLOGY ALONE*

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With an analysis of the inflectional properties of Luiseño words, this paper builds on the examples offered in Aronoff 1994 of 'morphology by itself', of morphological generalizations not plausibly analyzed as anything other than morphology. All Luiseño words share four attributes — three of which are notional; the fourth serves to make the word accessible to the syntax. The value for the latter can be independent of the former, but it need not be. This interdependence is a purely morphological phenomenon.

Keywords: Inflection, Luiseño

1 Introduction

This paper builds on the examples offered in Aronoff 1994 of 'morphology by itself', of morphological generalizations not plausibly analyzed as anything other than morphology. The issue at hand is not, however, the relationship between morphosyntactic properties and their phonological exponence. The literature on this topic is extensive, both in favor of and opposed to the proposition that the relationship is best captured in terms of morphemes. (For arguments in favor, see Lieber (1992), Halle and Marantz (1994) and works following thereon; for arguments opposed, see Anderson (1992), Beard (1995), and Stump (2001).) Rather, we are concerned with the relationships among the morphological properties themselves. On this score, even inflectional theorists who agree with Aronoff that morphology is not to be reduced to syntax or to phonology share a single position: The set of morphosyntactic properties is derivative; hence, whatever structure is exhibited by a word's morphosyntactic properties is a consequence of another grammatical system. For A-Morphous Morphology (Anderson 1992) and Lexeme-Morpheme Base Morphology (Beard 1995), this other system is sentential syntax; for Paradigm Structure Morphology (Stump 2001) this other system is the morphological paradigm. While hewing to Aronoff's non-reductionist view of morphology, this paper considers the possibility that the structure to a word's morphosyntactic properties is not derivative, that it presents an internally driven organization. If inflection really is 'by itself', this result should not be unsettling.

2 Preliminaries

Our focus is the morphosyntactic properties of words in Luiseño, a Uto-Aztecan language of Southern California.[1] Luiseño infection is reasonably — although not exclusively — agglutinative. The

* Thanks to Anie Thompson and David Potter for comments on an earlier version of this paper and to the members of the Morphology Reading Group for creating a stimulating environment in which to think about morphology.

1 The data are drawn from my work with the late Mrs. Villiana Hyde of Escondido, California, a speaker of the Rincon dialect of the language, supported at various times by the University of California, the University of Arizona, the National Science Foundation, and the American Council for Learned Societies. Other sources of information about the properties of the language's words are Kroeber and Grace (1960), Hyde (1971), and Elliott (1999). The data is presented in the orthography introduced in Hyde (1971), which, by and large, draws on standard IPA symbols. Diverging from this system, the symbol *$* represents a voiceless retroflex fricative, *ch* represents a voiceless alveolar affricate, *sh* represents a voiceless alveolar fricative, and *th* represents a voiced dental fricative.

word in 1 offers a simple illustration. The stem is preceded by a possessive morph and followed by a complex temporal morph and an object morph in that order.

(1) no-heela-xpi-y
1SG-sing-PUNCTUAL.FUTURE-OBJECT
‘1sg will sing (obj)’

The inflectional properties of this word are of two different kinds. One is notional — person: first; number: sg; and temporal: punctual future. These three exhaust the notional range available to a Luiseño word. Every Luiseño word expresses number, the second of these, although the morphological options are not limited to being bound up with person. The words in (2) offer some of the other possibilities. Those in (2a) involve the presence of the plural morph UM and its absence; those in (2b) involve suppletive temporal morphs; and those in (2c) involve both.[2]

(2)		sg		pl	
	a.	hunwut	‘bear’	hunwutum	‘bears’
		muuta	‘owl’	muutam	‘owls’
		'aswut	‘eagle’	'aswutum	‘eagles’
	b.	chaqalaqiq	‘is tickling’	chaqalaqiwun	‘are tickling’
		huu'uniq	‘is teaching’	huu'uniwun	‘are teaching’
		heelaq	‘is singing’	heelaan	‘are singing’
		tooyaq	‘is laughing’	tooyaan	‘are laughing’
	c.	chaqalaqilut	‘will tickle’	chaqalaqikutum	‘will tickle’
		huu'unilut	‘will teach’	huu'unikutum	‘will teach’
		heelaxlut	‘will sing’	heelaxkutum	‘will sing’
		tooyaxlut	‘will laugh’	tooyaxkutum	‘will laugh’

Neither of the other two notional properties is expressed in every word. None of the words in 2, for example, express person, but those in (3) do. These words, like that in (1), include a possessive morph, by far the dominant morphological exponent for person.[3]

(3)		1		2		3	
	a.	nokaamay	‘my son’	'okaamay	‘your son’	pokaamay	‘his/her son’
		noyo	‘my mother’	'oyo	‘your mother’	poyo	‘his/her mother’
	b.	noheelaqala	‘1sg singing’	'oheelaqala	‘2sg singing’	poheelaqala	‘3sg singing’
		nohuu'uniqala	‘1sg teaching’	'ohuu'uniqala	‘2sg teaching’	pohuu'uniqala	‘3sg teaching’

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[2] Number can also be inherent in a stem, as in the pairs in (i).

(i) kwota ‘stand up (sg)’ waraava ‘stand up (pl)’
nawitma ‘girl’ nanatma ‘girls’

Number inflection must be compatible with the number of such stems.

(ii) kwotaq ‘is standing’ waraavaan ‘are standing’
nawitmal ‘girl’ nanatmalum ‘girls’

[3] The small number of other possibilities would take us too far afield. They include the person forms to which postpositions attach.

(i) 'oyk ‘to you’
poyk ‘to him/her’

These have different stress properties than the possessive morphs. They also include a third person form 'A that doesn’t vary with first or second person and, as such, has been reanalyzed to be part of the stem in many words.

(ii) 'ahiichu ‘orphan’
'ayo ‘thumb’

None of the words in (2a) expresses temporality nor do those in (3a), but those in (2b) and (2c) do, as do those in (3b).

The second kind of inflectional property is associated in (1) with the object morph. This property isn't notional. It serves to make the word accessible to the syntax. A word marked 'object' is available to the non-subject argument to a predicate. The example in (4) is illustrative. [4,5]

(4) noo n pilaachaq **noheelaxpiy**
I aux is.learning **1sg.will.sing.object**
'I am learning to sing.'

As the 'outermost' piece of inflectional morphology, 'object' is the only one of the four inflectional properties in (1) that must be syntactically accessible. As evidence, consider the three 'object' marked words in (5). [6] All of these express number, as required; they vary in regard to the properties of person and temporality. (5a) is first person; the other two lack person. (5c) is 'non-punctual'; the other two lack temporal morphology.

(5) a. hunwuti 'bear (object)'
b. no$waamayi 'my daughter (object)'
c. heelaqal 'singing (object)'

Because they share 'object', each can function as the non-subject argument to a predicate.

(6) a. wunaalum pum **hunwuti** 'aamowun
they aux **bear.object** are.hunting
'They are hunting the bear.'
b. wunaalum pum **pokaamayi** chungiwun
they aux **3sg.boy.object** are.kissing
'They are kissing his son.'
c. wunaalum pum naqmawun hengeemali **heelaqal**
they aux hear boy.object **sing.nonpunctual.object**
'They hear the boy singing.'

Whether an object-marked word has a temporal contour or not is not essential to whether it can be a non-subject argument to a predicate; it is not accessible. Whether an object-marked word has person or not is not essential to whether it can be a non-subject argument to a predicate; it is not accessible. Since all words express number, the presence of (internal) number in these object-marked words is irrelevant to the issue of whether the words in question can be a non-subject argument to a predicate.

We will refer to the 'outermost' inflectional properties like object-marking as FINAL. Thus, a word like (1) has the complete range of notional inflectional properties — person, number, and a temporal contour; external to all of these it also has object-marking, its final inflectional property and the only one that must be syntactically accessible. (7) formalizes the four properties required to capture the

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[4] Multi-word constructions are, of course, possible in Luiseño. But, in almost all cases the morphology of the head word carries the syntactic information for the construction and the morphology of the other words indicate their relationship to the head.

[5] AUX has become an old-fashioned term, but it remains the best label for Luiseño's robustly second position clitic complex (see Akmajian, Steele, and Wasow 1979 and Steele et al.1981).

[6] The word *heelaqal* 'singing' lacks the object morph, but this is a consequence of other properties of the word. It remains object-marked.

morphosyntactic properties of the word in (1). The character of the first three will be obvious; the attribute labeled FINAL is the locus for the property that must be syntactically accessible.[7]

(7) PER(SON):
NUM(BER):
TEMP(ORALITY):
FIN(AL):

The idea informing the rest of this paper is that Luiseño words do not differ in terms of their attributes; all share the template required for the most 'fully inflected' among them like (1), i.e. the four attributes in (7). Since we have seen that words can differ in regard to the expression of person and temporality, this means that some words will be specified 'null' for the attributes PER and TEMP. Much more important is the relationship among the values for the four attributes. They need not be independent of one another. One dependency holds between the values for PER and NUM. The example in (1) where the expression of both number and person are bound up in the possessive morph is suggestive of this fact although the situation is more complicated. A second dependency is between the value for FIN and the values for each of the three notional properties. Every word includes among its inflectional properties the 'outermost', the property like object-marking in (1) that must be syntactically accessible. However, not all words are so nicely behaved in maintaining a division between the notional properties and the final property. In fact, each of the three notional properties can find expression both independently, as in (1), and in the 'outermost' property, albeit not simultaneously. That is, there are words where what makes them syntactically accessible is their temporal contour, or their person, or their number — or even some combination of these. Both dependencies are morphological.

3 Second Pass: Notional Properties

The examples in (8) and (9) represent the notional properties of the words in (2) and (3) respectively, independent of a consideration of the final property. The structures in (8) are reasonably straightforward. They all include a number value for the attribute NUM. Those in (8a) are specified 'null' for the attribute TEMP — i.e. they lack the inflectional morphology that expresses a temporal contour. Those in (8b) have a non-null value for this attribute. The words in (2b), (2c) and (3b) present some of the rich temporal inflectional morphology — Q/WUN or AN; LU/KU or XLU/KU, and QALA respectively. We will attend almost not at all to the various temporal distinctions; the important point for our purposes is the existence or the absence of temporal morphology (and, hence, the existence or absence of a temporal contour). Finally, both the words in (8a) and those in (8b) are specified 'null' for PER — i.e. they lack the inflectional morphology that expresses '1,2,3'. The structures in (9) share a non-null value for PER. They differ from one another in terms of their temporality. Those in (9a) are specified 'null' for the attribute TEMP; those in 9b have a non-null value for this attribute. The number properties of these two structures require discussion.

(8)	a.	PER: null	PER: null
		NUM: sg	NUM: pl
		TEMP: null	TEMP: null
	b.	PER: null	PER: null
		NUM: sg	NUM: pl
		TEMP: near time	TEMP: near time

[7] In other work, I use different labels for these attributes, driven by considerations beyond the scope of this discussion. The choice of labels for the attributes themselves is ultimately of no import; what they identify is.

	c.	PER: null NUM: sg TEMP: punctual future	PER: null NUM: pl TEMP: punctual future
(9)	a.	PER: 1,2,3sg NUM: sg TEMP: null	
	b.	PER: 1,2,3sg NUM: # TEMP: non-punctual	

The examples in (1) and (2) might have led to the expectation that a word can express number exactly once — as part of the possessive morphology, like the first, or as part of other morphology, like the second. In fact, the words in (3a) involve both: Both have a possessive morph; in addition, both are like the words in 2a in regard to the plural morph or its absence.

(10) sg		pl	
nokaamay	'my son'	nokaamayum	'my sons'
'okaamay	'your son'	'okaamayum	'your sons'
pokaamay	'his/her son'	pokaamayum	'his/her sons'
noyo	'my mother'	noyom	'my mothers'
'oyo	'your mother'	'oyom	'your mothers'
poyo	'his/her mother'	poyom	'his/her mothers'

(9a), accordingly, has two number values, one as part of the value for the attribute PER and another as the value for the attribute NUM. It is clear from the examples in 10 that these two number values are independent of one another. The word in (1) with which we began and the words in (3b) illustrate a different situation. The only expression of number in these cases is associated with the possessive morph. (9b), accordingly, has a single number value — as part of the value for PER. But since the attribute N is the locus for number, its value is '#', a value meant to reflect that the obligatory expression of number is located in the value of another attribute — here PER.

The words in (9a) and (9b) differ, as noted, in regard to the value for the attribute TEMP. Those in (9a) are 'null'; they lack the inflectional morphology that expresses a temporal contour. Those in (9b) are 'non-punctual'. This fact is irrelevant to the distinction at issue. There are [TEMP: null] words where the value for NUM 'points' to the value for PER, as in (9b) and there are words with a temporal contour where number in NUM and number in PER are independent. The words in (11) exemplify the former, as shown in (12). The words in (13) exemplify the latter, as shown in (14).

(11)	a.	sg		b.	pl	
		notaax	'1sg reflexive'		chamtaax	'1pl reflexive'
(12)	a.	PER: 1sg NUM: # TEMP: null		b.	PER: 1pl NUM: # TEMP: null	
(13)	a.	numb		b.	pl	
		noma'max	'I like (at least one)'		noma'maxum	'I like (pl)'
		no$allax	'I dislike (at least one)'		no$allaxum	'I dislike (pl)'
(14)	a.	PER: 1sg NUM: numb TEMP: non-punctual		b.	PER: 1sg NUM: pl TEMP: non-punctual	

Although the examples in (13)/(14) are offered to demonstrate that the difference between (9a) and (9b) in terms of their number properties is independent of their temporal properties, they do raise another

issue. To this point, the obligatory number of a Luiseño word has been either 'sg' or 'pl', regardless of the attribute in which it appears. These are the only two number values that appear in PER — unsurprisingly, since they accompany '1', '2', or '3'. The values available to NUM are somewhat richer, in that they include 'numb', meant to represent the join of 'sg' and 'pl'. As the glosses of the words in (13) suggest, number is associated with the target of the emotion. In the [NUM: pl] words, there must be more than one 'likee' or 'dislikee'; in the [NUM: numb] words, there must be at least one 'likee' or 'dislikee', but there may be more. Other words showing a similar number contrast are in (15). Those in (15b) have a possessive prefix (and, hence, a non-null value for PER); those in (15a) lack a possessive prefix.[8]

(15)		numb		pl	
	a.	toota	'rock(s)'	tootam	'rocks'
		palvunla	'valley(s)	palvunlam	'valleys'
		huukapish	'pipe(s)'	huukapichum	'pipes'
	b.	nohuu	'my arrow(s)'	nohuum	'my arrows'
		noki	'my house(s)'	nokim	'my houses'
		nopuush	'my eye(s)'	nopuuchum	'my eyes'

We have seen, then, two possibilities for the values for the attributes PER and NUM. In (9a) and (14), the two are independent and the word has two expressions of number. In (9b) and (12), there is a single expression of number, located in the value for PER and the value for NUM is '#'. A second interaction between the values for the attribute PER and the attribute NUM is possible. The words in (16) have both a possessive morph and the contrast between the plural morph UM and its absence, like the words in (13) and (15b), although the plural morph in these cases is even less highly valued. Unlike these words, the number in PER (associated with the possessive morph) is not independent of the number value. The 'pl' words in the second column can include the 'pl' morph; the 'sg' words in the first column cannot. That is, these words have a single number.

(16)	a.	nomlu	'1 strong (sg)'	pommlu(m)	'3 strong (pl)'
		nopli	'1 right-handed (sg)'	pompli(m)	'3 right-handed (pl)'
	b.	nochaqalaqax	'1 good at tickling (sg)'	pomchaqalaqax(um)	'3 good at tickling (pl)'
		nohuu'unax	'1 good at teaching (sg)'	pomhuu'unax(um)	'3 good at teaching (pl)'

There is an important difference between these words and those single-number words represented in (9b) and (12), however. The latter cannot show the contrast between the plural morph and its absence. The words in (16), in contrast, can best be described as having separated the person value and the number value contributed by the possessive morph. The representation in (17) captures this separation, by locating '#' in PER, rather than in N. Note, finally, that the words in (16a) lack any temporal morphology; the words in (16b) are inflected for temporality. (Their stems are shared with words in (2b) and (2c).)

(17)	a.	PER: 1#	PER: 3#
		N: sg	N: pl
		TEMP: null	TEMP: null
	b.	PER: 1#	PER: 3#
		N: sg	N: pl
		TEMP: generic	TEMP: generic

[8] The 'pl' forms in (15), like the 'pl' forms in (13), are less highly valued than their 'numb' counterparts. This reasonably follows from the fact that 'more than one' is subsumed within 'at least one'.

We have been examining the values of the attributes that reflect the three notional properties available to a Luiseño word, independent of the value for FIN. As we have seen, the value for the attribute TEMP can be 'null' or can reflect the presence of a temporal morphology; and, the value for NUM always reflects the presence of number, but, with the value '#', it can point to its expression in another attribute. The value for PER can be null or can reflect the presence of person morphology; in the latter situation, number can accompany the values '1', '2', or '3' or be separated from them. (18) summarizes the eight combinations of notional properties introduced above. [9]

(18) a. PER: null
NUM: number
TEMP: null

b. PER: null
NUM: number
TEMP: temp

c. PER: person&number
NUM: number
TEMP: null

d. PER: person&number
NUM: number
TEMP: temp

e. PER: person&number
NUM: #
TEMP: null

f. PER: person&number
NUM: #
TEMP: temp

g. PER: person#
NUM: number
TEMP: null

h. PER: person#
NUM: number
TEMP: temp

4 Second Pass: Final Properties

The outermost piece of inflectional morphology in the words in (1) and (5) above, repeated in (19) below, is 'object'. In (20) are words where the corresponding inflectional piece is the postposition NGA.[10] The first three of the four sets of examples in (20) parallel those in (19). The 'inner' part of the (a) examples has the properties in (18a); that of the (b) examples has the properties in (18b); and that of the (c) examples has the properties in (18c). After that the two sets pull apart. (19d) is based on (18f); (20d), on (18d); (20e), on (18e); and (20f), on (18g).

(19)	a.	hunwuti	'bear (obj)'
	b.	heelaqal	'singing (obj)'
	c.	no$waamayi	'my daughter (obj)'
	d.	noheelaxpiy	'1sg will sing (obj)'
(20)	a.	toonga	'on the rock(s)'
		palvunnga	'on the valley(s)'
	b.	chaqalaqalanga	'(on) being tickled'
		huu'uniqalanga	'(on) being taught'
	c.	nohuunga	'on my arrow(s)'
		nokinga	'on my house(s)'
	d.	nochaqalaqivonga	'on (what) 1sg tickled'
		nohuu'univonga	'on (what) 1sg taught'
	e.	poonga	'on him/her/it'
		poomonga	'on them'

[9] This isn't to say that all of the values available to each attribute can freely combine. It is simply a statement about the general configurations.

[10] Most postpositions have two forms – one when what precedes is one of the special person forms noted in fn 3 and the other elsewhere. For the postposition at issue, the two forms are ONGA and NGA, respectively.

f. pomlunga ‘on 3 strong (sg)’
poplinga ‘on 3 right-handed (sg)’

It would appear, then, that the attribute FIN and its value is a simple addition to one of the structures in (18) — i.e. [FIN: object] or [FIN: post]. (21) and (22) demonstrate this point with the structure for the words in (19a) and (20b), respectively. [11]

(21) PER: null
NUM: numb
TEMP: null
FIN: object
(22) PER: null
N: numb
TEMP: non-punctual
FIN: on

[FIN: object], as discussed above, identifies the word as a non-subject argument to a predicate. [FIN: post], varying somewhat with the postposition itself, identifies the word as either a non-subject argument or an adjunct, a non-essential addition to some part of a sentence. (The word in 22 is the former.) The structures offer a simple division into ‘internal’ notional properties (represented in the attributes PER, NUM, and TEMP) and ‘outermost’ accessible properties (represented in the attribute FIN).

These two are not the only outermost morphological properties available to a word, of course. In fact, none of the words in (2), (3), (11), (13), and (16), the words used to construct the structures in (18 includes either of these. Given the model in (21) and (22), let’s isolate the properties to be represented as the final part of a word.

In (2a), (2c), (3a), (13) and (16) this part is associated with the presence or the absence of the plural morph UM. A word specified [FIN: number] is available to function as a main clause predicate and as a non-subject argument to a predicate. The sentences in (23) and (24), using the first word in (2a) and (2c) respectively, are illustrative.[12]

(23) a. wunaalum pum **hunwutum**
they aux **bears**
‘Those are bears.’
b. noo pum hunwutum **noma'maxum**
I aux bears **I.like.pl**
‘I like bears.’
(24) a. hengeemali pum **chaqalaqikutum**
boys.object aux **tickle.punctual.future.pl**
‘They are gonna tickle the boy.’
b. hengeemali mil **chaqalaqikutum** miyqu$
boys.object aux **tickle.punctual.future.pl** were
‘They were gonna tickle the boy.’

[11] As the examples in (19) and (20) suggest, many of the structures in (18) are compatible with both [FIN: obj] and [FIN: post]. A few are compatible with one or the other only. One – that in (18h) – does not occur in words with either of these.

[12] As the sentence in (23a) suggests, simple copular sentences in Luiseño lack a copula. Implicit in this example is the proposal that they have a predicate, however.

In addition, words specified [FIN: number], but only those also specified [TEMP: null], can also serve to specify the subject.[13]

(25) **hunwutum** pum xaariwun
bears aux are.growling
'The bears are growling.'

In (3b) the outermost morphosyntactic part is associated with the temporal morph QALA. A word specified [FIN: temporal] has one of two syntactic possibilities, varying with the kind of temporality. When it is aspectual, as in (3b), it serves as the predicate in an adjunct clause.

(26) nawitmal upil tooyaqu$ **noheelaqala**
girl aux was.laughing **1sg.sing.non.punctual**
'The girl was laughing while I was singing.'

When it is non-aspectual (e.g. tense), it serves as the predicate in a main clause. None of the examples above are of words with a simple outermost tense morph, but the main clause predicate *tooyaqu$* 'was laughing' in (26) is illustrative. (The morph at issue is QU$ 'distant time'.) To demonstrate that the morph QU$ is associated with tense only, consider the words in (27) based on the suppletive stems in fn 2.

(27) kwotaqu$ 'was standing up' waraavaqu$ 'were standing up'

In (2b), the outermost part is associated with morphs Q/WUN or Q/AN, both of which involve a temporal contour (of the non-aspectual variety) and number. Depending on the kind of temporal notion involved, a word specified [FIN: temporal&number] has one of three syntactic possibilities. The words in (2b) are [FIN: tense&number] and, like their simple [FIN: tense] counterpart in (26), they serve as the predicate in a main clause.

(28) hengeemali pum **chaqalaqiwun**
boy.object aux **tickle.near.time.pl**
'They are tickling the boy.'

When the temporal notion is aspectual, a word specified [FIN: aspect&number] can serve as the predicate in an adjunct clause. And a word specified [FIN: infinitive&number] can serve as the predicate in a non-subject argument. Because they raise issues that will divert us from the main point here, I briefly postpone their discussion.

Finally, in (11), the outermost morphosyntactic part is associated with the possessive morph — i.e. with both person and number. A word specified [FIN: person&number] can serve as a non-subject argument to a predicate.[14]

(29) noo n **notaax** chaqalaqiq
I aux **1sg.reflexive** is.tickling
'I am tickling myself.'

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[13] See Steele (1989) for an analysis of the Luiseño subject, the issues of which I cannot touch on here.

[14] A small number of such words serve as a simple adjunct, the properties of which are very particular. I mention them in the interest of full disclosure, but I am not going to discuss them here.

These last are important in that they make the point that the 'outermost' inflection is not a specific location in the word. The other words might have led to the presumption that 'outermost' is the final part of a word — or in the case of the plural morph, its absence. Words specified [FIN: person&number] should destroy this presumption, since here 'outermost' is at the beginning of the word. It is worth pointing out, then, that reflexives are not the only words that can be [FIN: person&number]. The words in (30) are similarly analyzed.

(30)	[FIN: 1sg]		[FIN: 1pl]	
	nochaqalaqipi	'1sg will tickle'	chamchaqalaqipi	'1pl will tickle'
	nohuu'unipi	'1sg will teach'	chamhuu'unipi	'1pl will teach'
	noheelaxpi	'1sg will sing'	chamheelaxpi	'1pl will sing'
	notooyaxpi	'1sg will laugh'	chamtooyaxpi	'1pl will laugh'

Like the reflexives, these words function as a non-subject argument to a predicate. (31) is illustrative.

(31) noo p **noheelaxpi** miyq
I aux **1sg.will sing** is
'I have to sing.'

The difference between the words in (30) and the reflexive in (29) parallels that between the word in (1) and that in (5b): The former in either case includes temporal morphology; the latter does not.

It is tempting to think of (31) as containing a sentential subject — *noo noheelaxpi*. In fact, in my early work on Luiseño (Steele (1977)), I succumbed to this temptation. If this were the correct analysis, we would expect the aux, which in Luiseño is robustly second position — after the first word or first constituent — to have the option of following the entire sentential subject. It does not, as Steele 1977 noted and could not account for. If *noheelaxpi* is a non-subject argument to *miyq* and *noo* is the instantiation of the 1sg subject, the position of the aux is entirely non-problematic.[15]

The instances of the final inflection, the part of a word that must be syntactically accessible, discussed in the preceding discussion are summarized in (32), grouped into five types.

(32) a. [FIN: non-notional]
[FIN: object]
[FIN: post]
b. [FIN: number]
c. [FIN: temporal]
[FIN: tense]
[FIN: aspect]
d. [FIN: temporal&number]
[FIN: tense&number]
[FIN: aspect&number]
[FIN: infinitive&number]
e. [FIN: person&number]

While this isn't an exhaustive enumeration of the value types available to the attribute FIN, it is close. I will touch on what's missing when we return to the second and third values in (32d) below.

[15] The agreement properties– the aux is '3sg' – are also exactly what we would expect on this analysis. (See Steele (1989).)

5 Putting It All Together

We have examined the properties of both the three notional attributes and the final inflection independent of one another. It will be clear from a comparison of the summary of the former in (18) and the summary of the latter in (32) that the two are not entirely disjoint. In fact, of the values for the attribute FIN in (32), only two — the two non-notional values in (32a) — are not also represented in the values for the attributes PER, NUM, and TEMP. It should be clear that the illustrative words in (23) through (31) don't present multiple exponence of the notions in question. Those in (23), (24) and (25) have a single expression of number; that in (26), a single expression of 'non-punctual'; that in (27), a single expression of 'near time pl'; that in (28), a single expression of 'distant time'; and those in (29) and (30), a single expression of '1sg' or '1pl'.

Given that the final inflection is obligatory — a word has to be accessible to the syntax — one response to this situation would be to eliminate the attribute representing the notional property when it is present in the attribute FIN. For example, *hunwutum* 'bears' in (23) and (25) would be:

(33) PERS: null
TEMP: null
FIN: pl

Of course, we lose the possibility of generalizing across the entire set of words according to their expression of the three notional properties, as shown in (18) at the end of Section 3. If maintaining this generalization is a priority, a second option would be to eliminate the attribute FIN when its value is one of the notional properties. In effect, then, the representation of none of the words in (2), (3), (11), (13) and (16) would include the attribute FIN. Instead of (33), *hunwutum* 'bears' would be associated with the structure in (34).

(34) PERS: null
NUM: pl
TEMP: null

Of course, if we hold to the idea that a word must have a property giving it syntactic accessibility, we would have to introduce some way of tagging the notional attribute that carries it. Furthermore, in either of these scenarios, all four attributes remain necessary for words based on [FIN: object] or [FIN: post].

I tipped my hand on this issue at the outset, when I proposed that all words are associated with four attributes. It should be clear now that taking this position will require a revision of the representations in (18) to include the relationship between the values for PER, NUM, and TEMP and the value for FIN.

The discussion of the values for PER and NUM in Section 3 above proposed '#' to represent number properties shared across the two attributes. This notation can also be employed to capture the relationship with the value for FIN. Where the value for FIN includes number — i.e. is (31c), (31e) or (31f) — the value for NUM must be '#'. So, for example, rather than either (33) or (34) above, *hunwutum* 'bears' is associated with the structure in (35).

(35) PER: null
N: #
TEMP: null
FIN: pl

In a similar fashion, when the value for FIN includes temporality — i.e. is (32b) or (32d) — the value for TEMP is '@'. For example, *noheelaqala* '1sg singing' in (26) above is associated with the structure in (36).

(36) PERS: 3pl
NUM: #
TEMP: @
FIN: non-punctual

It follows. then, that when the value for FIN includes both temporality and number, as in (32d), the value for NUM is '#' and the value for TEMP is '@'. For example, *chaqalaqiwun* 'are tickling' in (27) above is associated with the structure in (37).

(37) PER: null
N: #
TEMP: @
FIN: nr time & pl

Finally, when the value for FIN includes person and number, as in (32e), the value for PERS is '%#'. The word in (29), for example, is associated with the structure in (38).

(38) PER: %#
N: #
TEMP: null
FIN: 1sg

These morphosyntactic representations maintain the idea that the three attributes PER, NUM, and TEMP are the locus of the expression of the notional properties of person, number, and temporality respectively, as well as the idea that every word has a property that makes it syntactically accessible. They also embody a set of claims about the inflectional structure of Luiseño words. (1) A word has the possibility of expressing temporality once only, but it need not. If it expresses temporality, the value for TEMP reflects its presence, either directly or with the value '@' as a pointer to the value for FIN. (2) A word has the possibility of expressing person once only, but it need not. If it expresses person, the value for PERS reflects its presence, either directly or with the value '%' as a pointer to the value for FIN. (3) Number, as the single obligatory notional property, must find expression, either directly in the value for NUM or with the value '#" as a pointer to another attribute.

(39) shows the modifications in the eight PER/NUM/TEMP structures in 18 required by the presence of one or another of the five FIN value types in (32). The number of the examples illustrating a structure is noted in parentheses. Three structures are uninstantiated. I mentioned in fn 11 that (18h) is not possible with either of the non-notional FIN values; accordingly the first structure in (39h) is starred. The other two starred structures are in (39d). They share two number values and a temporal value in FIN. Note, finally, that in the presence of [FIN: person&number], the difference between the two structures in (18d) and (18f) is obliterated.

(39) a. PER: null
NUM: number
TEMP: null
FIN: non-notional
(19a; 20a)

PER: null
NUM: #
TEMP: null
FIN: number
(2a)

b. PER: null
NUM: number
TEMP: temp
FIN: non-notional
(19b; 20b)

PER: null
NUM: #
TEMP: temp
FIN: number
(2c)

PER: null
NUM: number
TEMP: @
FIN: temp
(27)

PER: null
NUM: #
TEMP: @
FIN: temp&number
(2b)

c. PER: person&number
NUM: number
TEMP: null
FIN: non-notional
(19c; 20c)

PER: person&number
NUM: #
TEMP: null
FIN: number
(3a)

PER: %#
NUM: #
TEMP: null
FIN: person&number
(11)

d. PER: person&number
NUM: number
TEMP: temp
FIN: non-notional
(20d)

PER: person&number
NUM: #
TEMP: temp
FIN: number
(13)

**PER: person&number
NUM: number
TEMP: @
FIN: temp

**PER: person&number
NUM: #
TEMP: @
FIN: temp&number

PER: %#
NUM: #
TEMP: temp
FIN: person&number
(30)

e. PER: person&number
NUM: #
TEMP: null
FIN: non-notional
(20e)

f. PER: person&number
NUM: #
TEMP: temp
FIN: non-notional
(1; 19d)

PER: person&number
NUM: #
TEMP: @
FIN: temp
(3b)

PER: %#
N: #
TEMP: null
FIN: person&number
(11)

PER: %#
N: #
TEMP: temp
FIN: person&number
(30)

g. PER: person#
NUM: number
TEMP: null
FIN: non-notional
(20f)

PER: person#
NUM: #
TEMP: null
FIN: number
(16a)

h. **PER: person#
NUM: number
TEMP: temp
FIN: non-notional

PER: person#
NUM: #
TEMP: temp
FIN: number
(16b)

PER: person#
NUM: #
TEMP: @
FIN: temp&number
(see 41 below)

6 Some Loose Ends

All FIN values offered in Section 5, even when they are complex, appear to be associated either with a simple morph or its absence. Let's return, then, to the two FIN values in (32d) whose discussion I postponed. Words based on these two FIN values are in (40) and (41) respectively. To make the morphs in question perspicuous, these words are based on the same four stems found in (2b) and (2c). For reasons beyond the scope of this paper, [FIN: infinitive&pl] is, at best, unlikely with intransitives. Thus, the second column in (41) has two holes.

(40) [FIN: punctual&sg]		[FIN: punctual&pl]	
chaqalaqiwunut	'tickling'	chaqalaqiwuntum	'tickling'
huu'uniwunut	'teaching'	huu'uniwuntum	'teaching'
heelaat	'singing'	heelaantum	'singing'
tooyaat	'laughing'	tooyaantum	'laughing'
(41) [FIN: infinitive&sg]		[FIN: infinitive&pl]	
pochaqalaqilo	'to tickle'	pomchaqalaqilo	'to tickle'
pohuu'unilo	'to teach'	pomhuu'unilo	'to teach'
poheelilo	'to sing'		
tooyilo	'to laugh'		

The important aspect of these examples is their morphological complexity. The words pairs in (40) involve the presence of the plural morph UM or its absence, as well as temporal morphology (WUNUT or

AANT).[16] The word pairs in (41) involve a third person possessive morph, as a prefix, and the temporal morph LO, as a suffix.

Although the words in (40) might appear to share with those in (2c) 'internal' temporality and 'external' number, they cannot be so analyzed. If this were their analysis we would expect them to function as either the predicate in a main clause or the predicate in a non-subject argument. (Cf. 24.) They cannot. Their only syntactic option is as the predicate in an adjunct clause.

(42) nawitmal upil tooyaqu$ **heelaat**
girl aux was.laughing **sing.punctual.sg**
'The girl was laughing while she sang.'

Although the words in (41) might appear to share with those in (3b) 'external' temporality and 'internal' person and number, they cannot be so analyzed. If this were their analysis we would expect them to function as the predicate in an adjunct. They cannot. Their only syntactic option is as a non-subject argument to a predicate.

(43) 'aya'yish up **poheelilo**
fun aux **to.sing**
'It's fun to sing.'

One FIN value type is missing from (32) and its exponence is also morphologically complex. Consider the four-way contrast in (44). (44a) and (44b) differ from one another in terms of the plural morph, as do (44c) and (44d). (44c) and (44d) share the presence of the object morph; it is absent in (44a) and (44b).

(44) a. heelaxmokwish 'sang'
b. heelaxmokwichum
c. heelaxmokwichi
d. heelaxmokwichumi

While this set of words appears to resemble the four-way contrast in (45), the differences are striking.

(45) a. hunwut 'bear'
b. hunwutum 'bears'
c. hunwuti 'bear (obj)'
d. hunwutumi 'bears (obj)'

The first two words in (45) have the syntactic options associated with [FIN: number]; the first two words in (44) do not. The second two words in (45) have the syntactic options associated with [FIN: object]; the second two words in (44) do not. Rather, the words in (44) serve as the predicate in a relative clause and 'agree' with its head in number and in 'object'.

(46) a. no$waamay heelaxmokwish …
my.daughter sang.sg.no.object
'my daughter who sang…'

[16] The segment U in the second syllable of WUNUT is elided in the plural form. The segment N in AANT is elided syllable finally. The distribution of these two forms turns on the final segment of the stem.

b. no$waamayum heelaxmokwichum …
my.daughter sang.pl.no.object
'my daughters who sang'
c. … no$waamayi heelaxmokwichi
… my.daughter.object sang.sg.object
'… my daughter who sang.'
d. … no$waamayumi heelaxmokwichumi
… my.daughters.object sang.pl.object
'…my daughters who sang.'

I propose to analyze the FIN value in (44) as a combination of number and object, where the latter includes a specification of both its presence and its absence, as shown in (47). Words with these FIN values are available to function as the predicate in a relative clause.

(47) a. [FIN: sg&no object]
b. [FIN: pl&no object]
c. [FIN: sg&object]
d. [FIN: pl&object]

The critical point for our purposes is that the words in (44) offer another situation of complex exponence.

7 Further Considerations

I must admit to finding considerable appeal in the very general nature of the proposed morphosyntactic representations of Luiseño words. All words share four attributes; they vary in their values for these attributes. However, esthetic satisfaction is not the only, not even the major, argument in favor of this analysis.

The representation of both notional and final attributes, even when they share values, is consistent with the fact that both play an analytical role. To make this point, let's return to two of the words introduced above, both of which present the FIN value of an adjunct — [FIN: punctual&number] and [FIN: non-punctual] respectively.

(48) a. nawitmal upil tooyaqu$ **heelaat**
girl aux was.laughing **sing.punctual.sg**
'The girl was laughing while she sang.'
b. nawitmal upil tooyaqu$ **noheelaqala**
girl aux was.laughing **1sg.sing.non.punctual**
'The girl was laughing while I was singing.'

The adjunct in each case is a (one-word) clause. The structure of the words comprising the two clauses is in (49).

(49) a. PER: null
NUM: #
TEMP: @
FIN: punctual&sg

b. PER: 1sg
N: #
TEMP: @
FIN: non-punctual

Assume that an adjunct clause, like a main clause, has a subject and a temporal location. This information is provided by the 'internal' part of the two structures in (49) — i.e. by the values for PER and NUM, for the subject, and by the value for TEMP, for the temporal location. Both (49a) and (49b) indicate, then, that the clause has a temporal location, but that it is 'externally' available. And, indeed, the temporal location of either adjunct clause varies with the temporal location of the main clause. Compare (50) to (48).

(50) a. nawitmal po tooyaan **heelaat**
girl aux was.laughing **sing.punctual.sg**
'The girl will laugh while she sings.'
b. nawitmal po tooyaan **noheelaqala**
girl aux was.laughing **1sg.sing.non.punctual**
'The girl will laugh while I am singing.'

Both (49a) and (49b) indicate that the clause has a subject. But they differ as to whether it is 'externally' available (49a) or not (49b). And, indeed, the subject of the clause represented by (49a) must be identical with the subject of the main clause, while the subject of the clause represented by (49b) is independent. Compare (51) to (48).

(51) a. noo nil tooyaqu$ **heelaat**
I aux was.laughing **sing.punctual.sg**
'I was laughing which I sang.'
b. noo nil tooyaqu$ **pomheelaqala**
I aux was.laughing **3pl.sing.non.punctual**
'I was laughing while they were singing.'

The kind of sentential adjunct exemplified in (48) always makes its temporal location accessible in the FIN value. Contrast this situation with the relative clause exemplified in (46). The structure of the predicate in the (single-word) relative clause in (46a) is as in (52).

(52) PER: null
N: #
TEMP: punctual past
FIN: sg&no object

The head of the relative clause with which the value for FIN agrees is also the subject. But the temporal location of the relative clause is 'internal' to the word in (52). And, the temporal location of a relative clause is independent.

These observations do not constitute an analysis, of course. They do, however, provide further support for the morphosyntactic structure proposed in the preceding section. This structure contains the three attributes whose values provide the locus for the word's notional properties **and** an attribute associated with the word's syntactic options, even when the property coded in the latter is shared with a property coded in one (or more) of the former. This structure also represents the fact that this property is shared.

8 Inflection as Derivative

As noted at the outset, non-reductionist morphological theories in general take whatever structure inflection might present to be derivative but they differ as to the source — syntax (Anderson 1992, Beard 1995) or paradigms (Stump 2001). The first is most at odds with the internal organization to Luiseño inflection proposed here.

Beard defines inflection as an operation modifying the grammatical representation of a lexeme 'proper to syntax'. A verb lexeme, for example, includes in its grammatical representation the fact that it is a verb and its argument requirements. (32a) is his grammatical representation of the Turkish base /gel/ 'come'. The addition of information about 'Voice, Aspect, Tense, Mood, Modality, and Person… [are] accounted for in syntax.' (p. 152-3) The grammatical representation simply collects this information. (53b) represents the base in (53a) 'raised to Infl'. (p. 53)

(53) a. Subj___
+V

b. -Plural
+1stPerson
+Past
±Negation
+Potentiality
Subj___
+Verb

The first part of (53b) is structured only in that the order of the features is supposed to determine how these are read into the system that spells them out.[17] The only significant difference between Beard and Anderson on the issue at hand has to do with the collection process. As indicated above, Beard appears to assume movement of at least the grammatical properties of the base to the location of the properties in syntax. Anderson assumes something closer to an Aspects model, where the terminal nodes in the tree collect the information.

In either case, there is no place for the distinction made between the notional and final properties of words, nor is it obvious that the relationships between the value for the attribute FIN and the values for PER, NUM, and TEMP — or the values for PER and NUM, for that matter — would be either predicted or accommodated. These are morphological, not syntactic, facts.

On the other hand, the four attributes of Luiseño words and their values could be viewed as describing a paradigm, a very large paradigm that includes all morphosyntactic properties. The difference between this paradigm and those employed by Stump is, ultimately, one of focus. With a label like 'Paradigm Schema for Bulgarian Verbs' (Table 2.I, pg 37), he selects a subset of the language's morphosyntactic properties. A table with the label 'Paradigm Schema for Bulgarian Words' would correspond to the kind of morphosyntactic structure I have been attempting to describe for Luiseño. Now, it is certainly true that not every Luiseño stem is compatible with every combination of morphosyntactic properties in this structure and we can isolate different parts of it based on what kinds of stems select which properties. (In fact, we can use different parts of the structure itself to determine the focus, e.g. all structures that contain a temporal value.) But that is a different enterprise. In short, rather than morphosyntactic properties taking their organization from paradigms, the reverse is the case.

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[17] 'The initial assumption here will be that the possibility of ordered grammatical features is a universal parameter. However, fusional affixation ignores feature order, and the ordering of agglutinative affixes with respect to each other is arbitrary. This suggests that the actual order of features is…a variable of the parameter set by individual languages.' (p.54)

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