1.0 Introduction:

Nisgha, a Tsimshian language spoken in British Columbia, exhibits a complex interaction between phonology and morphology in the pronominal system. The interaction involves the presence of suffixes between pronominal suffixes and verb stems, with both having some degree of grammatical function of the pronoun. The presence of these suffixes is clear due to the application of phonological rules while others are not. The interaction combined with a lack of explicitness in the morphological processes has complicated the morphological analysis of the pronominal suffixes.

The problem is to provide an analysis of the pronominal suffixes which accounts for not only the underlying forms of the suffixes, but also the interaction of the regular phonological processes which introduce predictable vowels. The present proposal makes the rules and environments for ephenthesis explicit, and argues that the formal properties of predictable vowels can be used to determine the underlying status of the vowels which surface in the pronominal suffixes. While previous proposals have been made on these issues (Tarpent 1981;1982), the present paper contributes a more explicit account of the interaction of phonology and morphology in the pronominal system of Nisgha.

I discuss the positions and phonetic forms of the pronominal suffixes in the language, then compare two different analyses of the forms with respect to what may be assumed underlingly and what can be accounted for by means of regular phonological rules.

2.0 Background to the Nisgha Pronominals:

2.1 Positions of the Pronominals

Nisgha sentences exhibit a major division between simple verb-initial declaratives and those sentences which have some negative or aspectual marker in the first position. The division is reflected in the position and form of the pronominal elements which may occur in the construction. Both sentence types employ verbal suffixes, distinct in grammatical function but not necessarily in form. In one instance the verbal suffix marks the ergative pronominal while in the other it marks the absolutive. The formal similarities between the two sentence types which I call verb-initial versus non-verb-initial.

2.1.1 Verb Initial Sentences

In a transitive verb-initial construction, the ergative pronominal elements are suffixes on the verb and the absolutive is a suffix on a pronominal base $Ai$. These can be seen in the following examples.

\[(1) a. 7an$iq-a-y | Ai-n \\ like-1sERG base-2ABS \]

\[b. 7an$iq-an | Ai-y \\ like-2sERG base-1sABS \]

The phonetic forms of the ergative verbal suffixes employed in these constructions can be seen in the inflected verb /7an$iq/ 'like'.
2.1.2 Non-verb-Initial Sentences

In non-verb-initial constructions the ergative pronominals are clitics in preverbal position while the absolutive is a verbal suffix.

5 I employ only negative examples to exhibit the forms of the pronominals in the non-verb-initial constructions. The forms and positions hold for aspectual constructions as well.

(5) a. niti tÆ 7 anesthesia-sâ We didn't like you (pI). NÆ -1ERG like -2ABS
b. niti mÆm 7 anesthesia-sâm You (pI) didn't like us. NÆ -2ERG like -1ABS

The preverbal clitic forms of the ergative are given in (6).

(6) PRE-VERBAL ERGATIVE CLITICS:

<table>
<thead>
<tr>
<th></th>
<th>1sg n(Æ)</th>
<th>2sg m(Æ)</th>
<th>3sg</th>
<th>2pl</th>
<th>3pl</th>
</tr>
</thead>
<tbody>
<tr>
<td>lsg</td>
<td>1pl tÆp</td>
<td>2pl mÆm</td>
<td>3pl t VERB-tit</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

These suffixes also mark the sole argument to the intransitive verb.

(8) a. niti paX-Æ I didn't run. NÆ -run-1ABS
b. niti paX-an You didn't run. NÆ -run-2ABS

This discussion has shown that Nisgha has two distinct sentence configurations with respect to the position and grammatical function of the pronominal elements. These can be schematized as:

(9) a. VERB (-ERG) BASE-ABS
b. NEG (ERG) VERB-ABS

The forms of the absolutive in (9a) and the ergative in (9b) are straightforward, therefore I assume the forms in the paradigms in (3) and (6) as the underlying morphemes. The remainder of this paper is concerned with the analysis of the verbal suffixes (the paradigms in (2) and (7)), although distinct in function in each case, the underlying morphological forms are subject to some dispute.

2.2 Morphological Forms of the Verbal Suffixes:

When the ergative suffixes in (2) and the absolutive suffixes in (7) are compared, many similarities in the two paradigms are apparent. In fact many of the suffixes are identical. For example, compare the underlined second person singular forms in the negative and positive constructions below.

(10) a. niti -n 7 anesthesia-an I didn't like you. NÆ -lsERG like -2ABS
b. 7 anesthesia-Sd nh-Æ You like me. like -lsERG base-1ABS

Both examples employ the identical suffix, -an, to mark a second person singular argument on the verb, but the grammatical function of the suffix is unambiguous in each. In (10a) it serves to mark the absolutive argument while in (10b) it marks the ergative. The functional difference between the two forms is unambiguous, since it can be determined by the form of the construction, and by the presence of the ergative clitic in (10a) and the absolutive form on the pronominal base in (10b).

Not all the verbal suffix forms are identical however. There is a formal distinction in the ergative and absolutive suffixes in the second person plural and the third person singular forms. The difference can be seen by comparing negative and positive transitive constructions.

(11) a. niti -n 7 anesthesia-asaIb him-Æ I didn't like you. NÆ -lsERG like -2pABS
b. niti -n 7 anesthesia-saIb You didn't like me. NÆ -lsERG like -2pABS

The above examples show that the two second person plural suffixes differ in form. The ergative suffix is vowel initial, while the absolutive suffix is not:

(12) 2pl ergative: -3sâ
    2pl absolutive: -sâ

A similar distinction is evident in the third person singular forms.

(13) a. 7 anesthesia-St nh-Æ He liked me. like -3ERG base-1ABS
b. niti -n 7 anesthesia-t I didn't like him. NÆ -lsERG like -3ABS

The ergative is vowel initial while the absolutive is not.

(14) 3sg ergative: -t
    3sg absolutive: -t

But even when formally distinct the two verbal suffix paradigms share many features. Ignoring the extra vowels in the ergative forms, a similar sequence occurs in each case.

The third person plural marker is a discontinuous morpheme, with the t preceding the verb and the -tit suffixed to the verb itself.
The similarities evident in the two paradigms, make two morphological analyses possible: 1) Collapse the two paradigms, depending on an independent explanation for the differences which surface. 2) Treat the two suffix paradigms as separate and distinct, but differing only in the third person singular and the second person plural forms.

The surface forms of the absolutive suffixes vary from the underlying forms in (16) in the three underlined forms below.

(17) ABSOLUTIVE VERBAL SUFFIX PARADIGMS:

```
  /?an/ :q/  "like"
<table>
<thead>
<tr>
<th>PERSON</th>
<th>C</th>
<th>NUMBER</th>
</tr>
</thead>
<tbody>
<tr>
<td>3sg</td>
<td>/?an:/q-</td>
<td>-t</td>
</tr>
<tr>
<td>2sg</td>
<td>/?an:/q-</td>
<td>-an</td>
</tr>
<tr>
<td>3pl</td>
<td>/?an:/q-</td>
<td>-am</td>
</tr>
<tr>
<td>1sg</td>
<td>/?an:/q-</td>
<td>-a~</td>
</tr>
<tr>
<td>2pl</td>
<td>/?an:/q-</td>
<td>-at</td>
</tr>
<tr>
<td>3pl</td>
<td>/?an:/q-</td>
<td>-am</td>
</tr>
</tbody>
</table>
```

None of the suffixes is assumed to be vowel initial, yet the first person singular and plural, and the second person singular surface with a vowel, [a] or [i] depending on the verb stem. The extra surface vowels in these forms are assumed to be epenthetic, inserted by phonological rule(s) breaking up impermissible consonant clusters. Such an insertion is not problematic, but it is necessary that the environments and the corresponding rules for the epenthesis process be made explicit. The next section of the paper will outline the analysis for epenthesis proposed by Livingston (1985; 1986).

3.1.2 Epenthesis

All descriptions of the Tsimshian languages have noted the occurrence of epenthetic vowels in the language. In a study of the consonant clusters which occur in Nisg̱a, Livingston (1985;1986) notes that there are no sequences of a consonant immediately followed by a sonorant consonant which are not between two vowels. This gap can be captured in the following statement.

(18) "C C [sonorant] C"
result is a sequence [...CVn].

Given the possessive data in (19), a rule of epenthesis can be proposed.²

(20) VOWEL EPENTHESIS: 

\[ \begin{array}{c}
& \rightarrow & \mathsf{a} / [+\mathsf{sonorant}] \\
& & \mathsf{C}
\end{array} \]

The rule inserts a vowel, [a], between a consonant and a following sonorant consonant when the sequence occurs word finally or before another consonant, the environment created by the addition of the possessive forms in (19).

Another important fact about the epenthesis process noted by in Livingston concerns the quality of the epenthetic vowel inserted by the rule. Epenthetic vowels in Nisgha are subject to lowering in the result is a sequence [...CVn].

The following is a table of the epenthetic vowels which surface in (19) above with the forms in (21) below.

(21) a. /q'eysaʔ + n/ 
   b. /hanaq' + n/ 
   c. /napax + n/

Following a glottal stop or a uvular consonant, the epenthetic vowel surfaces as [a] and not [a]. This lowering of the epenthetic vowel can be accounted for by a rule which is necessary to account for the quality of the vowels which surface in reduplication.

In Nisgha the quality of the vowel in the reduplicative prefix is independent of the stem vowel. Compare the vowels in the following reduplicated examples.

(22) a. wank 
   b. tès 
   c. gan 
   d. ḫus 
   e. ḫus

<table>
<thead>
<tr>
<th>Stem</th>
<th>Final Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>wank</td>
<td>ḫus-wank'</td>
</tr>
<tr>
<td>tès</td>
<td>ḫus-tès</td>
</tr>
<tr>
<td>gan</td>
<td>ḫus-gan</td>
</tr>
<tr>
<td>ḫus</td>
<td>ḫus-ʔus</td>
</tr>
</tbody>
</table>

¹⁸ That the second person singular is not vowel initial can be seen by comparing the addition of a vowel suffix to a vowel final stem.

1) /ptːa/ + a/ /ptːaʔa/ door + Question The sequence of two underlying vowels is the environment for glide epenthesis, thus /yV + V/ surfaces as [...VYV]. That the epenthesis process is limited to the addition of sonorant consonant suffixes is shown by a comparison with the behavior of other suffixes on consonant final forms.

1) /ʔus + t/ /ʔusʔ/ dog + 3s (his dog) 

On a consonant final stem, non-sonorant and vowel forms do not trigger epenthesis.

² For a thorough analysis of the reduplication process and in particular the form of the vowels see Thompson 1984.

Following the uvular consonant, the reduplicative vowel surfaces as [a] instead of the regular [a].²² The lowering of the reduplicative vowel is accounted for by means of a vowel variation rule (Thompson 1984:30). A simplified form of the rule is given in (23) to account for the quality alternations in the epenthetic vowel.³³

(23) VOWEL LOWERING:

\[ \begin{array}{c}
& \rightarrow & a / [+\mathsf{sonorant}] \\
& & \mathsf{low}
\end{array} \]

The rule lowers the epenthetic vowel [a] to a following glottal or a uvular consonant. The interaction of Epenthesis and Vowel Lowering is sufficient to derive the forms in (21) above.

To sum up the epenthesis process assumed here is one which inserts vowels in clusters of any consonant followed by a sonorant consonant in word final or preconsonantal position. Furthermore, the quality of the epenthetic vowel is determined in part by the nature of the preceding segment. If the stem final consonant is a glottal or a uvular the vowel lowers from the normal [a] to [a].

This account of epenthesis is adequate for deriving the surface vowels in the absolutive suffixes given the underlying forms of the suffixes assumed in (16) above. Because the process is limited to clusters whose second member is a sonorant, it accounts for the fact that vowels surface only with the first person singular and plural, and the second person singular forms, these being sonorants. As the derivation in (24) shows, the epenthesis rule does not apply in the case of the third person singular.

(24) DERIVATIONS:

a. 'hit + 1s' b. 'hit + 2s' c. 'hit + 1p' d. 'hit + 3s'

/yats + ʔ/ /yats + n/ /yats + h/ /yats + t/

epenthesis

/yatsʔ/ /yatsʔ/ /yatsʔ/ /yatsʔ/

Only the application of the epenthesis rule is necessary to account for the surface forms which occur on/yats/ "hit/chop".

In addition, the epenthetic vowels in the absolutive suffix are expected to be subject to the Vowel Lowering rule, surfaced as [a] instead of [a] after uvulars and glottals.

³² For a thorough analysis of the reduplication process and in particular the form of the vowels see Thompson 1984.

The rule is simplified for two reasons. Thompson's rule accounts for the rounding of the reduplicative vowel in addition to the lowering, a process involved in epenthesis which I ignore for the purposes of this study. In addition I assume different distinctive features for the conditioning environment, employing the features [+sonorant, +low] to distinguish the glottal and uvular consonants from the rest of the consonants in the inventory.
The surface forms of the absolutive suffixes are accounted for by a combination of the underlying forms in (16) in conjunction with two general phonological rules which are needed elsewhere in the language. As mentioned above, the Single Paradigm analysis relies on an independent explanation for the vowels which surface in the ergative suffixes, one which does not rely on phonological processes.

3.2 Ergative Marker Hypothesis

According to Tarpent (1982:56), the vowels which surface in the ergative suffixes are an independent underlying morpheme. The ergative process is unambiguously manifested by means of an ergative suffix on the verb consisting of a single unstressed vowel, underlyingly /-a-/. The suffix precedes the person and number pronominals from the paradigm in (16). Thus the morphological elements in the ergative suffix are analysed as a sequence of 'ergative marker-person marker' on /%an:/.

(26) UNDERLYING ERGATIVE PARADIGM: ergative marker hypothesis

(Tarpent 1981;1982)

(29) -third person singular

(28) -first person singular

(27) -second person plural

(25) DERIVATIONS:

The non-alternating vowels occur in:

The alternations in the ergative marker vowel are of two kinds. One involves alternations within the single paradigm, specifically the two vowels which are never surface as /a/ versus the rest. In addition to the problems presented by non-alternating ergative marker vowels there is a consistent lack of the hypothesized ergative marker in the third person plural. It never surfaces between the verb and the suffix in any form. Since the vowel is posited to be present underlingly, its disappearance must be due to deletion. Furthermore, since the posited ergative marker vowel never surfaces in the third person plural, the deletion has to be analysed as a case of absolute neutralization in that all traces of the underlying form are removed by the application of phonological process(es). The absolute neutralization might not be a problem if there were independent evidence for the necessary deletion process elsewhere in the language, but deletion of elements other than the ergative marker...
vowel is not attested anywhere in the Tsimshian literature.\(^{14}\) Independent of supporting evidence based on other deletion processes, I will use violations of phonotactic constraints to motivate the deletion of the vowel in the third person plural form. But the deletion of (\(\ldots\)-C-V-CVC) sequences cannot be construed as such given the acceptable (\(\ldots\)-V-CVC) sequences which arise in the second person plural.

(39) third plural -\(\ddot{a}\)-tit
second plural -\(\ddot{a}\)-sam

Given the lack of motivation for a general deletion rule in the language, the deletion of the ergative marker vowel in the third person plural form appears to be a morpheme specific case. Thus far I have outlined a number of phonological problems with the ergative marker hypothesis based strictly on the form and presence of the vowels which surface in the ergative forms. The first is the inconvenience of the application of otherwise regular phonological rules to the proposed underlying ergative marker vowel, and the second is the need for a morpheme specific rule to account for the deletion of the proposed vowel in every instance of the third person plural.

The problems for the phonological analysis of the language posed by the Ergative Marker analysis are significant enough to suggest that some other account of the ergative suffix morphemes is possible. The next section outlines a proposal for the underlying forms of the pronominal suffixes which accounts for the presence and the quality of the vowels in every case, using only the Epenthesis and Vowel Lowering rules discussed in Section 3.1.2.

4.0 A Two Paradigm Analysis:

Rather than collapsing the suffix forms in the language into one paradigm, the analysis of the pronominal suffixes advocated here posits two sets of verbal suffixes, one specific to the ergative and the other specific to the absolutive.

The underlying forms of the absolutive suffixes is identical to that outlined for the Single Paradigm analysis outlined in Section 3.2 above. The paradigm I assume is that given in (16) above.

(31) ABSOLUTIVE SUFFIX PARADIGM:

<table>
<thead>
<tr>
<th>Form</th>
<th>Paradigm</th>
</tr>
</thead>
<tbody>
<tr>
<td>1sg</td>
<td>-t</td>
</tr>
<tr>
<td>2sg</td>
<td>-n</td>
</tr>
<tr>
<td>3sg</td>
<td>-m</td>
</tr>
</tbody>
</table>

The underlying absolutive suffixes are all consonant initial and the vowels will surface between the stem and the suffix in consonant forms and will be subject to the lowering rule after the uvular and glottals.

Thus far this analysis of the suffixes is identical to the single Paradigm analysis. Where it differs is in the underlying forms assumed by an underlying morpheme sequence. Rather they are members of a

(32) ERGATIVE SUFFIX PARADIGM:

<table>
<thead>
<tr>
<th>Form</th>
<th>Paradigm</th>
</tr>
</thead>
<tbody>
<tr>
<td>1sg</td>
<td>-(\ddot{a})</td>
</tr>
<tr>
<td>2sg</td>
<td>-(\ddot{a})</td>
</tr>
<tr>
<td>3sg</td>
<td>-(\ddot{a})</td>
</tr>
</tbody>
</table>

The ergative suffixes differ from the absolutives only in the presence of extra underlying vowels in the second person plural and the third person singular forms. The rest of the forms are identical to those in (31). They are all consonant initial except for the second person plural and the third person singular forms.

The morphological forms of the ergative suffixes in (32) account for the underlying forms of all but the first person singular and plural, and the second person singular forms in a straightforward way. They are derived by means of simple concatenation.

(33) DERIVATIONS:

<table>
<thead>
<tr>
<th>Form</th>
<th>Paradigm</th>
</tr>
</thead>
<tbody>
<tr>
<td>2pl</td>
<td>-sa(\ddot{a})</td>
</tr>
<tr>
<td>3pl</td>
<td>-(\ddot{a})-tit</td>
</tr>
</tbody>
</table>

In each case, the suffix is added to the stem and the surface form is identical to the underlying form.

Given the underlying forms of the ergative suffixes in (32), it is necessary to account for the addition of surface vowels in three of the forms: the first person singular and plural, and the second person singular. In addition it is necessary to account for the alternations in these vowels, that is [1] except where lowered to [a]. This is not a problem for the analysis. Since this pattern of alternation is exactly that found in the regular suffix paradigm, I utilize the phonological rules necessary there to account not only for the presence but also the alternations of the vowels in these forms. This is possible because the underlying forms assumed in the ergative paradigm consist of a single sonorant consonant, creating the environment where epenthesis applies to insert a vowel. And since epenthetic vowels are subject to lowering the alternations in form are accounted for by the regular Vowel Lowering rule.

I assume, therefore, that the Epenthesis and the Vowel Lowering rules apply to the sonorant consonant forms within the ergative paradigm exactly as they do in the absolutive. Thus the derivations of epenthetic vowels between the absolutive suffixes in (24) and (25) apply to the sonorant ergative suffix forms as well.

The Two Paradigm analysis of the verbal suffixes advocated here requires two distinct paradigms, differing only in two forms. But the additional complication, assuming that placing a paradigm versus a single morpheme adds to the complexity of the analysis, is more than offset by the simplification of the phonological analysis necessary to account for the surface forms. The derivations of phonological rules are necessary to account for all the surface forms. But the rules contrast with the minimum of four rules required in the Single Paradigm analysis: epenthesis and lowering applying to the absolutive, modified lowering, and deletion applying to the ergative marker vowel.

Independent of the number of rules necessary for the two analyses, a generalization is captured under the Two Paradigm Analysis which is not possible employing a single paradigm analysis. This has to do with
the quality of related vowels. Under the Two Paradigm analysis, a generalization can be made regarding the difference between alternating and non-alternating vowels in the language. Non-alternating vowels are possible to be present in the underlying morpheme, for example [34] which occurs in the second person plural and the third person plural ergatives, while alternating vowels are inserted by phonological rules. Contrast with this are the predictions made by the Single Paradigm analysis. The vowels in the ergative and absolutive paradigms are analyzed as coming from separate sources in the grammar, one is present underlyingly while the other is inserted by phonological rule, and thus are predicted to pattern together along these lines. The predictions do not accord with the data, however. Rather there is a division between alternating and non-alternating vowels within the ergative paradigm which is not accounted for.

5.0 Conclusions

The large number of shared elements which occur in the ergative and absolutive paradigms combined with the fact that restrictions unambiguously determine their grammatical function in every case, makes an analysis which collapses the two into a single suffix paradigm very appealing. But as this study has shown, a morphological analysis cannot be carried out in isolation. The simplicity gained in one area of the grammar can create significant complications in another. For example, I have argued here that the simplification in the analysis of the paradigms loses its appeal when the complications generated for the phonology are considered. Therefore I adopt an analysis with two very similar but distinct paradigms.

In addition to the phonological implications, it is necessary to consider the interaction of the morphology and syntax in the analysis of the Nisgha pronominals. While such a body of morphology is beyond the scope of this paper, I would like to suggest a few questions which are raised by the two analyses discussed her.

While in the Two Paradigm analysis posits an ergative marker whose function is to mark the ergative argument in a sentence (Tarppent 1982). An analysis receives support when ergative sentences which include nominal elements are considered. When the ergative nominal directly follows the verb in a verb initial construction, a suffix occurs on the verb. The form of the suffix is [-a-] and not the normal [-i-].

Conclusions

The order of elements in the sentence are the same as in (34), the ergative nominal follows the verb and precedes the absolutive. There is a difference, however, in the morphological elements which occur with the verb. Instead of an ergative marker preceding the ergative nominal functioning to assign it case, there is a third person singular ergative clitic between the negative and the verb. The syntactic analysis which assigns an ergative marker must explain why a case marker is necessary for the ergative nominal in the sentence in (34) but not in (35). Such examples in (34) and (35) raise other questions for the Two Paradigm analysis. The pronominal element in (35) is explainable in a case of agreement or double marking of the ergative argument. But what is the nature of the ergative pronominal in (34)? If it is a case of double marking, why does it surface as [I-g?] and not the normal [I-t-]?

Addressing these issues is not the purpose of this paper. Rather they are raised to show that morphological issues are important throughout the grammar and therefore cannot be addressed in isolation. This seems to be particularly true for the analysis of Nisgha since many of the important inflectional elements in the language consist of single consonantal segments suffixed or encliticized to the verbal elements where they are subject to phonological alternations. In addition many inflections contrast with similar but non-alternating forms, making the morphological analysis of the language a complex process of factoring out phonologically predictable material.

REFERENCES


