A FIRST LOOK AT
SECONDARY STRESS IN YANAN DISCOURSE

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0. Introduction

This study began with an idle question about the nature of secondary stress in Yana, a Hokan language once spoken in Northern California. The topic of secondary stress goes begging in Sapir's writing: as far as I've been able to determine, the single only reference to secondary stress occurs in the front matter of the 1910 Yana Texts, in the section entitled 'Key to Characters Used'.! There, Sapir lists the symbol grave opposite the bare explanation, "secondarily stressed vowel" (1910: p5). Nowhere is there a discussion of the role this stress might play in the grammar of Yana. Is it strictly a lexical phenomenon, and is it predictable? If not, what is its domain, and what are its functions?

This paper consists of four main parts: one, a discussion of the literature and the phonetic issues involved in understanding secondary stress; two, a description of the method behind the analysis by means of a brief look at interactions between discourse and syntax in Yanan texts; three, a presentation of the results of the study itself; and four, an attempt at some preliminary conclusions, with a look to what the next phase of this study might be.

1. Background on Secondary Stress

The exact phonetic character of secondary stress is not entirely clear. Consider: to find secondary stress on a word like gi'lm'djidjiwaya'lu 'tasseled buckskin skirt' (N145.6) is one thing; but what can be the meaning of a secondary stress in the absence of a primary stress--as in a word like wak!alp!ayaayi 'husband' (C99.4). The position of the stress is a clue, of course, since primary stress is usually found toward the front of the word, and secondary stress only at the very end. But position alone could not have been the guideline Sapir used, on account of alternations like the ones below:

(1) N. yá' ~ ya' 'people'
(2) N. mì'ts! ~ mi'ts!' 'Coyote'
(3) N. matts!e'w ~ matts!e'w 'perforated white beads'
(4) C. a'i tc ~ a'itc 'these here'
(5) C. ba'l ~ ba'l 'cheeks'
(6) C. t'ú'aina ~ t'ú'aina 'grandmother!'
There are even some alternations involving three levels of stress, like this common triplet from Central Yana:

(7) C.  t'i'nt'  'he said'
    ~ t'i'nt'  'he said'
    ~ t'i'nt'  'he said'

Presumably Sapir did not work in terms of absolute amplitude to distinguish these levels of stress. More likely is that he transcribed according to a scheme of relative amplitude ---that is, secondary stress only as defined against a primary. And since we commonly find secondary stress in words lacking a primary stress, it is clear that Sapir transcribed ---and had to transcribe---in units larger than the word in order to assign stress correctly.

If Sapir needed to make reference to larger units of discourse, such as the phrase or breath group, there could also have been a distinctive pitch contour associated with secondary stress, which helped identify it in contexts where other levels of stress were possible. Given the close connection between secondary stress and the clause, which we shall discuss presently, a pitch correlate to the acoustic reality of the stress is not unlikely. The involvement of intonational contours is hardly incompatible with a role in discourse-level structures.

However, if there were an intonational component to secondary stress, it was evidently not falling tone; for, if we try to generalize from Sapir's examples in the passage below, falling tone correlates instead with primary stress:

The ordinary interrogative has an added -n for the male forms, with stress accent and falling (not rising) tone on the preceding vowel, e.g. 'au'asi'n "is there fire?" The corresponding female form has a final lengthened vowel, generally of the same quality as the original vowel, with stress accent and falling tone, e.g. 'au'asi' "is there fire?"

(Sapir 1949:211)

This remark, the only actual lead we have in the matter, explicitly associates a primary stress with falling tone. Complementarily, then, secondary stress could have been associated with rising tone. This is at least a possibility, although a rising contour signaling phrase-finals is unusual enough in the world's languages that Sapir would probably have drawn our attention to the fact. On the other hand, then, stress and pitch may simply have been independently varying systems in the grammar of Yana. Unfortunately, this is one thing about Yana we can never know for sure.

While we may well wonder about the exact phonetic value of secondary stress, its role in the grammar is somewhat less of a mystery. Secondary stress has a fairly transparent association with phrase-final positions in Yanan discourse.
It is not an attribute of the word per se (to answer one of the questions posed at the start of this paper). That is, the metrical placement of secondary stress within a word is in fact completely predictable—to wit, on the ultimate voiced syllable of the word; but the decision as to whether any given word is eligible to receive such stress depends on factors outside the domain of the word itself—to wit, the relative position (namely, final) of that word within a stretch of discourse.

Swadesh, in his introduction to the Yana Dictionary, considers the physical reality of the Yanan phrase and remarks that the "phonetic unity of the phrase is presumably marked by the close sequence of its parts and by its prosody" (Sapir & Swadesh 1960:p4). This mention of prosody is probably a reference to secondary stress. If so, it constitutes the only "discussion" of the phenomenon that I am aware of.

So the hypothesis of this paper is that secondary stress is a discourse marker, signaling the end of a phrase, or perhaps controlling some larger unit of discourse. Here, the notions of 'idea unit' and 'extended sentence' (Chafe 1980), or alternatively of 'line' and 'verse' (Hymes 1977), are possibilities that come to mind. However, before we can make any use of secondary stress for the purposes of discourse analysis, or try to figure out its true domain, we need to verify the general observation that it "seems to be" a discourse phenomenon associated with phrase-final position.

2. Methods and Analysis

With this end in mind, I undertook the statistical examination of a body of texts from each of the three dialects. The corpus on which this study is based consists of 2667 words of Northern Yana, 2672 words of Central Yana, and 2646 words of Yahi. All of this material was entered onto an IBM PC/AT computer by Jean Perry and Ken Whistler. Whistler's own KWIC-MAGIC concordance program was the primary tool we used for cutting into the mass of data. The KWIC-MAGIC program made it possible to generate a complete concordance of all the Yanan stress patterns, complete with a listing of tokens in their context. Because my intentions were in part comparative, each dialect was concorded separately.

I first did a preliminary scan of the database, checking simply for matches between secondary stress in the Yana line and Sapir's punctuation in the gloss line." This count found the rate of correspondence to be 79% for Northern Yana and 71% for Central. (Since the Yahi material is not glossed in this manner, it could not be compared on this point.) While these percentages clearly represented more than a random coincidence between secondary stress and gloss punctuation, the need for a less artificial metric is obvious.

The next step, then, was to return to the texts and break them into clause-sized syntactic groups, letting each group stand on its own as a line. The principles for this division had to be syntactically based, of course, since I could hardly use secondary stress as a clue to the phrasing
of the texts, when such usefulness was precisely what I was trying to show in the first place.

The divisions, then, are based on essentially syntactic criteria, designed to be as impartial as possible to the kind of discourse strategies—like topicalization, extrapositions, afterthoughts, and the like—which secondary stress might conceivably be reflecting.

Of course, there is usually more than one way to skin a clause, in Yana no less than any other language. Some of the decisions that had to be made in order to make the division into lines involved the handling of quotations, time adverbs, topicalizations, serial noun phrases, dependent verbs and vocatives. These decisions, of course, are open to debate and reconsideration; the main thing was that, however formulated, the criteria be applied consistently for all three dialects.

Before presenting the results of the study, I’ll discuss examples of some of these crucial types. In the examples, single vertical bars represent word boundaries, while double bars indicate the line breaks dictated by the analysis.

a) Vocatives. A vocative phrase was always given a line of its own:

(8) N. klun u | mau si-in u | mā’ si-idja’ | tl in i’ si na’
and | you will | be glad, | O daughter!

In the majority of cases, as here, the syntactic grouping is reinforced by secondary stress.

b) Direct discourse. Quotations presented a choice as to whether to include the reported speech in line with the verb of saying. I opted for a compromise in this matter:

(9) N. djjidja’mmagar a | t i’ n e t’
Pray shoot him!” | he said,

(10) C. bik la’m e’mak’
I thought they were really | yo’ l e’ a iyauna
me’ tc’i | t’i’ t’i
Coyote | he said,

Discrimination hinged on the twin conditions of syntactic complexity inside the quote, plus the presence of an overt subject for the verb of saying. If these two conditions were both met, as in (10), I split the line; if not, as in (9), I left it as one. Only occasionally do the Northern and Central dialects choose to observe the quotation boundary with secondary stress, though when they do, the stress is more likely to appear in cases like (10). The Yahi data is not enlightening here, since the Northern and Central full verb of saying has evolved in Yahi into a simple quotative, the clitic -t’i, which gets suffixed to the final word of the reported speech.
c) Serial noun phrases. Although the members of serial NP structures are frequently awarded an intonation group all their own in natural language discourse—for instance, in list intonation—syntactically they belong to the same clause, and I have treated them so. Coordination in Yana is usually achieved by juxtaposition. Here is an example from Northern Yana:

\[(11) \text{ N. wala'us'i} \quad \text{mu'tis'u} \quad \text{ma'ls'unna} \quad \text{they will grow} \quad \text{mu'tis'u roots} \quad \text{ma'ls'unna roots.} \]

This particular example shows secondary stress "separating" the members of the conjoined NPs. The text examples as a whole, though, run about 2:1 against secondary stress in this environment.

What appear to be conjoined participles might also have been analyzed as a single line, in keeping with the treatment of conjunction for noun phrases:

\[(12) \text{ C. kun'a'mari'mi} \quad \text{e'm'djayau} \quad \text{gali'a'yauna} \quad \text{old woman} \quad \text{keeping on weeping,} \quad \text{crying.} \]

Lack of the absolutive ending -na on the first of the two participles, furthermore, indicates that this sequence was probably performed as a single compound unit. However, keeping to the general principle of one clause to a line, the sequence must be split.

d) Repetitions. In contrast to the treatment of serial noun phrases, I analyzed both simple and incremental repetitions as involving separate syntactic groups. (Note that the last example, 12, would have wound up being split on these grounds, as well.) As a process, the rhetorical device of repetition has some features in common with coordination, but ultimately, the elements in a repetition do not form a sequence but a replay. Conceptually they cannot belong to the same syntactic unit. Central Yana provides a clear illustration of this in the form of the following incremental repetition:

\[(13) \text{ C. buni'dip'adadubal't} \quad \text{a1} \quad \text{ma'nini} \quad \text{It bounced up} \quad \text{it} \quad \text{bow} \quad \text{ga'ibutc!p'a'maniha} \quad \text{former coarse-sinewed bow.} \]

Although this particular example does not show it, by far the dominant pattern of such repetitions is for secondary stress to reinforce the syntactic boundary.

f) Dependent clauses. Dependent clauses come in a wide variety of flavors in Yana, and my policy was to assign them to separate lines. Below are some examples:
(14) N. <conditional>
  ts'!u'ps'i£ | asinu | p'it'a'1£
  "It will be good if you burst."

(15) C. <purpose clause>
  nis'a'andë | aitc | yä'na | ba'iruyauna
  Now they went off the people going to hunt deer.
  (The people went off to go to hunt deer.)

(16) Y. <object complement>
  dë'duk'au' | qi | 'u'iri'mauna | yü'tc'aina
  [she finished] | [OBJ] | [roasting mush] | [acorn mush]
  on hot rocks
  ([She finished roasting acorn mush.])

(17) N. <result clause>
  ma'usindj | ga'läya' u | t'ï'yaunënum | aigidej
  "I shall be crying your saying in that way."
  ("I shall cry because you speak in that manner,"

Secondary stress may or may not reinforce the syntactic boundary in such contexts, although there is a definite preference in favor of it, with one exception: conditionals in primary stem a- 'if/when' are virtually never split off by secondary stress. Example (14) is typical. Why this particular subordinate construction should behave or be treated differently, I'm not sure.

9) **Periphrastic verb constructions.** This type of clause, so common a fixture in all the Yana texts, features a finite, person-marked, modal-like main verb in tandem with a non-finite (either infinitive or participial) subordinate verb. The latter carries the actual lexical meaning of the verb construction as a whole. We have seen other instances of this, by the way, in examples (8), (14) and (17) above. A few more illustrations will suffice:

(18) N. k'u'mandj | wëdurü'1'i
  not I ever have any left over.

(19) C. maus'i | ma'ls'unduyau
  "I shall be going to get ma'ls'unna roots,

(20) Y. ba'sik'i | mësi | dë'wisaru'vaut'i.
  "At night I'll go off to see dancing."

(21) N. k'usunup' | dja'limaptcili'ì
  and they would all laugh together
  among themselves

To keep in line with the treatment of other subordinate clauses, these verbs, ending variously in -(i) 'INFINITIVE' and -(vau(na)) 'PARTICIPLE', ought to have been split off as separate syntactic groups. However, that solution doesn't quite seem right for Yana.
own description is the phrase-final retention (with or without devoicing) of word-final short vowels. But the circumstances of distribution aren’t quite right for this role of taking up slack. Secondary stress and phrase-final retention are intersecting, not complementary, phenomena. The two patterns readily overlap:

(22) C. mini’nt’dja’
    Look up to smoke-hole
    of sweat-house
    dju’w’
    (at) jack-rabbit!

(23) N. djú’duŋ’t’
    He looked for gophers
    by tapping with stick
    ai
    mits’!1
    he
    Coyote

| g1 | yú’mimai’t’
| at | Yú’mimadu |

What the data indicates is clear: secondary stress, while indeed associated exclusively with line-final position in discourse, is not itself the cue that uniquely delineates this unit. The next phase of this study will have to determine whether or not this function belongs instead to the phrase-final retention of short vowels.

The purpose of this paper has simply been to review the scant literature concerning secondary stress and to establish the exact degree of correlation between secondary stress and line-final position. But what can we do with the facts we have discovered? The first step to take is simply recognition. Though we don’t know the whole story yet, secondary stress seems to be demonstrably a discourse marker, one of the phrasing cues of the spoken language, strongly correlated with line-final position. The next step is to grant it authority and begin to use it, use it to understand the rhetorical structures of these texts as works of verbal art. Ultimately, we can discard the arbitrary syntactic divisions we made in order to establish the credentials of secondary stress as a discourse marker, and instead learn to use secondary stress itself—and these other devices, as we come to grips with them—to develop an organic, performance-based interpretation of these texts.
The modal/infinitive construction is better analyzed as a case of periphrasis—much like the modal/infinitive or modal/participle constructions in English (e.g. 'John will be gathering rosebuds come what may'). Accordingly, I have not tried to sunder them. The stress phenomena agree with this analysis: secondary stress is unknown in such contexts. In other words, the fabricated sentence (19'), "*maus-i' ma'ls-unduyau" would simply not be a well-formed line of discourse in Yana. Conditional clauses in a = 'if/when', like (14) above, pattern in exactly the same way, and are also instances of this construction.

3. Results of the Analysis

Now that we have seen something of the problems and observations that came out of the analysis, let's proceed to the results of the study itself.

Having reckoned the line-breaks according to these general principles, and having applied them consistently to all three dialects, I made a line count of the finished product. The 2867-word corpus of Northern Yana organizes itself into 1235 lines or syntactic groups; Central's corpus of 2672 words broke down into 1024 lines; and Yahi, with the smallest corpus at 2646 words, came in with the highest total, 1476 lines. This puts the mean length of lines for Northern, Central and Yahi at 2.3, 2.6 and 1.8 words per line, respectively. The relatively low average length shown by Yahi agrees with the general impression one gets of Ishi's language as being more elliptical in style, and in syntax less hypotactic than the other two dialects.

Both the Northern and the Central data show a very high degree of correlation between secondary stress and phrase-final (line-final) position. In Northern, fully 92% of the secondary stresses fall on line-final syllables; in Central, the figure sits at 85%. The Yahi correlation, however, is nowhere near that high: 45%, just less than half, of the secondary stresses in Yahi coincide with line-final position. Figure 1-A (in the Appendix to this paper) brings together this set of percentages.

What is going on in Yahi that's so different from its sister dialects? The answer has more to do with frequency of occurrence than with function. To see this best, we first need to filter out the particles and little function words that never could or never would bear stress, and remove them from the main corpus. By this I mean words like the articles ai/sitc/dji/tc' and their other variants; the general-duty objective preposition qi; and the third-person possessive article k'.

Now, the Northern data contains 632 secondary stresses; out of a filtered corpus of 2412 words, that means that 26%---more than a quarter---of the Northern Yana corpus bears secondary stress on the ultimate syllable. The Central data has fewer secondary stresses overall: out of a 2048-word filtered corpus, 193 words carry secondary stress---that
makes for 9% of the Central Yana corpus. Figure 1-B presents this second set of percentages.

As you can see, Yahi is another matter entirely. Secondary stress is almost non-existent in Ishi’s texts. Fifteen occurrences in a filtered corpus of 2233 words don’t count for much---in fact, for less than 1%. (Which explains why there are so few Yahi examples among the citations in this paper.) As a consequence, the statistical significance of the 45% correlation reported in Figure 1-A for Yahi is, for better or worse, brought seriously into question.

Why Yahi should lack the stress pattern, though, is an interesting question---particularly when it’s so well established in the Northern and Central dialects. Does the step-wise decrease (from 26% to 9% to less than 1%) in frequency of occurrence, going from north to south geographically, reflect a dialect gradation?

Another possibility comes to mind, as well. Could secondary stress be a hitherto unreported feature of female versus male speech patterns? Remember that the main speaker of the Northern texts, the dialect with the highest rate of occurrence, was Betty Brown, and the speaker of the Yahi texts, with the lowest, of course was Ishi. Then recall that Sam Batwi, speaker of the middle-scoring Central Yana texts, "had a tendency to slip into the use of female forms, probably owing to the fact that he had been for a long time accustomed to use his language chiefly in talking to his wife..." (Sapir 1910:156, footnote 3a).

It would be unwise to make too much of these speculations at this point, but the discrepancy among the three dialects is certainly intriguing. The issue deserves further study.

Where Figure 1-A showed the percentage of secondary stresses that coincided with line-final position, Figure 1-C shows us the percentage of syntactic groups or lines that are terminated by secondary stress. As usual, the figure is highest for Northern Yana, where 47%—almost half—of the line-finals are signaled by secondary stress. In Central, 16% of the line boundaries are marked by secondary stress. The Yahi correspondence, naturally, is negligible at less than half a percent.

4. Some Conclusions

Now that these results are in, we need to compare the findings displayed in Figures 1-A and 1-C and consider the implications of these two graphs when taken together. Let’s take Northern Yana as a point of departure. Roughly half the lines in the corpus are terminated by secondary stress. That means that the other half of the lines are marked by---what? Secondary stress does not tell the whole of the story in Northern Yana, still less of it in Central. What, if anything, takes up the slack and marks the remaining lines?

One candidate that we already know about from Sapir’s
APPENDIX

Figure 1. Secondary Stress Statistics for Yanan

(A) : showing percentage of secondary stresses that occur in line-final position

(B) : showing percentage of filtered corpus that carries secondary stress

(C) : showing percentage of lines that are terminated by secondary stress

FOOTNOTES

1. A 'Key to Characters' section is in order here, too. I am using Sapir's original orthography in this paper, instead of our modern orthography (developed by Ken Whistler for the purposes of reconstruction and concordance), because only Sapir's transcription retains the stress.

Some of the (now) non-standard conventions to note are: primary [''] and secondary [''] stress placed after, not over the vowel; macron ['] and circumflex [''] for vowel length; superscript vowels to indicate voicelessness; italics (here indicated by underscore) to represent voiceless resonants; ['] for glottal stop (but [''] means glottal stop in Yahi); [''] for aspiration (very easy to confuse with secondary stress [''] on this printer!); and [!] to indicate glottalization of preceding consonants.

2. Text citations for numbered examples are as follows:
   (1) N139.1 ~ N131.8, (2) N145.9 ~ N149.4, (3) N188.5 ~ N188.4, (4) C101.4 ~ C94.1, (5) C95.6 ~ C95.12,
(8) N182.2, (9) N192.6, (10) C102.19, (11) N153.1,
(12) C10.4, (13) C10.9, (14) N147.7, (15) C51.8,
(16) Y43.235, (17) N139.7, (18) N130.12, (19) C13.4,
Northern and Central references are to page and line num-
bers in Sapir's 1910 Yana Texts. The Yahi material is
not as yet available in published form; references are
keyed to text number (#1 "A Story of Lizard", #2 "Coyote
and Old Quail Woman", #3 "Coyote Rapes His Sister") and
line number in my concordance of these texts.

3. This special prosodic use of primary stress for inter-
gratives is not to be confused with the ordinary, lexical
primary stress that usually falls on the first heavy syl-
lable of a word. Interrogative (and also exclamatory) stress
is always on the final syllable—a pattern in prosodic con-
trast with secondary stress.

4. It was these exploratory results that were reported at
the combined Hokan/Penutian/Uto-Aztecan Conference in Salt
Lake City in June 1987.

5. In fact, the Yahi corpus contains 4 additional tokens of
secondary stress, which were not counted because they were
not on the final voiced syllable. Two of these anomalies
had secondary stress on the initial syllable!
I don't know what's going on with what little secondary
stress there is in Yahi, but it's clearly different from
the Northern and Central dialects.

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Occasional Papers On Linguistics

Papers from the 1987 Hokan-Penutian Languages Workshop and Friends of Uto-Aztecan Workshop, Held at University of Utah, Salt Lake City, June 18-21, 1987.

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PREFACE

For the first time, The Hokan-Penutian Languages Workshop and the Friends of Uto-Aztecan Working Conference met together as a single conference, at the University of Utah, Salt Lake City, June 18-21, 1987. In the past, the conferences usually met back to back; the Uto-Aztecan meeting usually ended one or two days before the Hokan-Penutian meeting began, which gave people just enough time to travel from one location to the other. Since a number of people attend both meetings, it is hoped that these joint meetings can occur more often.

All the papers except the last one were given in a slightly different form at the meeting in Salt Lake City. The last paper was given at the 1986 Hokan-Penutian meeting, which met as a section the Haas Festival at Santa Cruz. The papers are given in the order they appeared at the meeting at the University of Utah.

The participants of the conference gratefully acknowledge all the work done by Professor Wick R. Miller, other faculty members, and the students at the University of Utah, which made the conference run so smoothly and enjoyably.

The 1988 Hokan-Penutian Languages Workshop will meet at the University of Oregon, Eugene, June 16-18, 1988.

James E. Pedden, Editor
Carbondale, March 1988
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