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Mary's River Kalapuyan: A Descriptive Phonology

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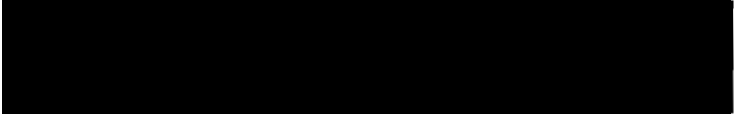
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Title: Mary's River Kalapuyan: A Descriptive Phonology.

APPROVED BY MEMBERS OF THE THESIS COMMITTEE:

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The thesis is an attempt to apply procedures of descriptive linguis-
tic analysis to a body of material phonetically transcribed by Leo J.
Frachtenberg in the Mary's River dialect of the central Kalapuyan lan-
guage. In 1913-14, Frachtenberg collected thirteen volumes of myth texts
in Mary's River, twelve from William Hartless and one from Grace Wheeler;
in addition, there were notes to the texts, three volumes of grammatical
notes, and some ethnographic material. The phonetic transcription was
carried out in the pre-phonemic tradition of recording everything the
speaker said as accurately as possible. There was no attempt to elicit
forms in a manner which would establish which sounds were "the same" to
the speaker, resulting in a considerable proliferation of variations of

forms.

The main methodological problem, therefore, has been to sort out phonetic variation and phonemic contrast. This·task was more difficult because no complete morphemic analysis exists as yet, so that morphophonemic alternations created additional complications. My method consisted first of tallying the forms that occurred, to establish those variants found most frequently (modal forms). The modal forms were examined to discover patterns of contrast and complementary distribution; those variants of forms which were not modally distributed, and single examples, were then compared to help confirm or modify the emerging phonemic patterns.

I arrived at a system of 21 consonants, six vowels, four diphthongs, and phonemic stress. This includes two obstruent series, glottalized and unglottalized, five fricatives, three resonants, and two glides. The vowels are high to mid front, low center, and high to mid back, with length distinctive. One pair of diphthongs is also distinguished by length; the others involve non-phonemic length. Consonant clusters are limited to two members initially and finally.

A number of uncertainties remain. These include the behavior of glottal stops and aspiration in final and medial position, the variation in 'vowel length, the distribution of velars, the distribution of diphthongs, and the relationships between /w/ and /u/, /y/ and /i/, and /f/ and /w/. These may be clarified when the morphemic analysis is complete.

The phonemic system appears to resemble most closely that of the neighboring Molala, although the lexicon and grammar show only slight similarities; the related Takelma also seems quite similar phonologically.

Since phonological features can be borrowed by one language from another, and in the Northwest frequently have been, further examination of such resemblances may shed light on former historical contacts between Kala-puyan speakers and other groups.

MARY'S RIVER KALAPUYAN:

A DESCRIPTIVE PHONOLOGY

by

Yvonne P. Hajda

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requirements for the degree of

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TO THE OFFICE OF GRADUATE STUDIES AND RESEARCH:

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CHAPTER I

INTRODUCTION

Kalapuyan and Its Classification

The three Kalapuyan languages were formerly spoken in the Willamette Valley of Oregon. The last known speaker, John Hudson, who served as an informant for the Santiam dialect, died sometime in the 1960's. The northern language included two known dialects, Tualatin and Yamhill; the central language consisted of some undetermined number of dialects, including the two best documented, Mary's River and Santiam; the southern, Yoncalla, is known only in one dialect, but apparently included others (Jacobs 1930:4a). These three languages appear to have been mutual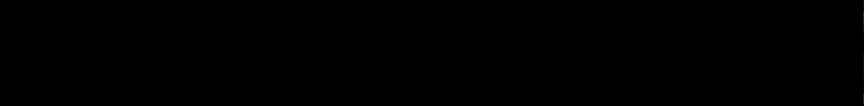ly unintelligible. Jacobs (1930:4) says "they [the Kalapuya] say that they form three dialect groups, one of which does not understand the other readily, though it be possible to learn to understand and express oneself in the adjacent dialect within some weeks."

In the Powell classification of 1885-86 (Powell 1891), Kalapuyan is treated as a language family, while another Oregon language, Takelma, now considered by many to be related, is treated as a language isolate. Kalapuyan is included, together with Takelma and Coast Oregon Penutian (Coosan, Siuslawan, and Yakonan), in Sapir's "Oregon Penutian" (1921, 1929), one of six branches of his proposed Penutian stock. The other five were California Penutian, Chinookan, Tsimshian, Plateau Penutian, and Mexican Penutian. "California Penutian" was the term proposed by Dixon and Kroeber (1919) for a group of related California languages;

these are sometimes referred to as the Penutian core. In one sense, "Penutian" includes any language or language family that can be shown (or is thought) to be related to California Penutian.

In 1918, Frachtenberg suggested a probable common origin for Coosan, Siuslawan, Yakonan, and Kalapuyan, and the relationship of these, together with Takelma and Chinookan, to California Penutian. He refers to Takelma, the Coastal languages, and Kalapuyan as "Oregon Penutian" (1918:176-177). Three years later, Sapir quotes Frachtenberg's grouping and says that he had independently arrived at the same classification. He agrees with Frachtenberg that Coosan and Siuslawan are "divergent representatives of a single linguistic stock" and says that Coosan and Takelma are clearly related; they and Siuslawan have an "astonishing number" of lexical and morphological correspondences (1921:58). He feels Frachtenberg is much too cautious about connecting Chinookan to Penutian (though he points out that half of Frachtenberg's nineteen possible Chinook-Kalapuya cognates are borrowings from Chinook), thinks the Takelma-Kalapuyan relations are genuine, and includes Tsimshian as Penutian (1921:59). His "provisional scheme" showing the internal relationships of Oregon Penutian (1921:60) is the same as that presented in 1929 (though for Penutian as a whole, the 1921 grouping does not include Plateau Penutian and Mexican Penutian, which were added later).

Frachtenberg presented a list of 53 possible cognates to support his suggestion that Kalapuyan and Takelma were closely related; he mentioned some of the common "phonetic shifts" and morphological similarities, but he was cautious in suggesting an ultimate relationship, saying there were great structural differences (1918). In 1965, Swadesh presented more evidence of the Kalapuyan-Takelma relationship; he had

earlier grouped them together as the "Takelman" family (1956). He esti-
mated a time depth of 2400 years' divergence for Takelman, and 1200
years for Kalapuyan (1965:237); earlier (1956:21, 41) he estimated 4400
years for Takelman and 9000 years for Penutian as a whole. Shipley has
attempted phonemic reconstructions of proto-Kalapuyan (1970) and proto-
Takelman (1969). "Takelman" seems to be acceptably real. As late as
the AES map of 1966, however, Voegelin still shows Takelma as a language
isolate (also 1964:119).

Relations among the other Oregon Penutian languages remain unclear.
Pierce has suggested (1965, 1966) that the languages may be less closely
related than had been assumed, or in some cases may not be related at
all: e.g., the two Coosan languages, Hanis and Miluk, may resemble each
other because of convergence rather than common ancestry. Aoki, however,
suggests that the differences may be due to Athapaskan influence on
Miluk, and Silverstein says that the differences may be mainly in sur-
face arrangements of similar elements (Thompson 1973:992-993). "Yakonan"
no longer includes Siuslawan together with Alsea and Yaquina, but Aoki
(Thompson 1973:994) feels that on the basis of lexical sets Siuslawan is
closer to Alsea than it is to Coosan; Thompson suggests that the three
should be considered as coordinate groups. "Oregon Penutian" may be
only a geographical distinction, not a linguistic one.

Shipley has suggested that Kalapuyan may be more closely related to
Miwok-Costanoan (California Penutian) than it is to the other Oregon
Penutian languages (1970). He and others have pointed out the relative
lack of glottalization in Kalapuyan, as compared with Chinookan and
other Northwest languages, creating a mellifluous effect. Gatschet
writes that the language is "sonorous, sweet, soft, and vocalic"

(1877:153); Jacobs called it "one of the most beautiful languages I have heard in my linguistic experience," as compared to the "fatiguing and execrable rasp, splutter and cacophony of Chinook, Molale, Sahaptin and Salish" (1930:n.p.). Early settlers and travelers made similar observations—Jesse Applegate, for instance, remarks that "their language was remarkably smooth and musical" (1930:178).

Much comparative work and imaginative speculation have been produced to support Sapir's hypothesis and to extend it. Hymes suggests three stages in the development of the Penutian hypothesis: (1) the Dixon-Kroeber classification of California languages (1919), (2) Sapir's addition of other Pacific Coast languages (1921, 1929), and (3) the extension of Penutian by Freeland, Sapir, Whorf, Swadesh and others to include various additional native languages of Latin America (Hymes 1959: 69). The latter stage is mostly post-World War II. The trend in Penutian work has been to include, not exclude, languages and language families. In 1958, Pitkin and Shipley say, "Penutian investigations have followed a pattern of supplying to the literature new and bold, but undemonstrated, hypotheses of wider and wider relationships, while those suggestions already in the literature have stood uninvestigated for the last half century" (Pitkin and Shipley 1958:175). In 1966, Shipley attempted to remedy this by showing the relationship of Klamath to the California core. Also in 1966, Rigsby showed that Cayuse and Molala, the former "Waiilatpuan" family, are not related at the family level, but Molala is probably still Plateau Penutian. Sapir's Penutian appears to be largely accepted as a linguistic fact (e.g., Hymes 1964), though the parts are rearranged from time to time. But Thompson's statement is still accurate: "The groupings of the putative northern extension of

California Penutian are still in question--indeed the relation of many of the languages remains not yet established, for some not even proven" (1973:987).

It is not my purpose here to explore these larger connections further, but only to establish the phonemic system of one dialect of Kalapuyan. I hope this will help to provide slightly more secure footing for the Penutian expedition.

Resources

A considerable amount of phonetically transcribed material exists, particularly for the northern and central languages. Some early vocabulary lists were collected: the Rev. Samuel Parker collected some forms from a central dialect in the 1830's (Parker 1838:333-336); this may be the earliest such list, but at about the same time, Dr. Tolmie transcribed words from what is probably Tualatin (Scouler 1841; cited in Powell 1891:81). In the early 1830's, Hale of the Wilkes Expedition collected vocabulary from a number of Indian groups, including some from two probably Tualatin-speaking informants (Hale 1846:564-629). Gibbs (1851) has a Yamhill vocabulary from two signers of the Champoeg Treaty. There is also a list of forms from a central dialect from Barnhardt in 1859. None of these lists is phonetically reliable; Hale's is undoubtedly the best.

In 1877, Albert S. Gatschet made the first substantial contribution to the linguistic knowledge of Kalapuyan. He had already begun work on other American Indian languages, which was to continue; he and Dorsey were the major contributors to the work of the Powell classification (Sturtevant 1959:196-199). Before coming to America, he had made con-

tributions to the study of European languages as well. In his Kalapuyan

work, he concentrated mostly on Tualatin, recording vocabulary, grammar,

ethnographic and historical texts from Peter Kenoyer and Dave Yatchkawa

at the Grand Ronde Reservation, collecting partial Luckiamute and

Ahantchyuk (central dialects) vocabularies, using Powell's outline, and

a Yamhill vocabulary from Peter Selky, also at Grand Ronde. He stressed

the importance of using only a "scientific" alphabet, that is, one which

uses the same letter for the same sound (1877a:148), advice which he did

not follow himself: [ɬ] is usually "thl" in his manuscripts, for in-

stance. He is not as accurate as later linguists, having missed glot-

talization and some other distinctions, but his work is nevertheless

quite usable. His manuscripts are in the National Anthropological

Archives.

In 1913-14, at the Siletz Agency and at Chemawa, Leo J. Frachtenberg

recorded thirteen manuscript volumes of myth texts in the central Mary's

River dialect. (He had worked with other Western Oregon languages pre-

viously.) Something over one volume of the texts are from Grace Wheeler,

the rest from William Hartless. Jacobs refers to Wheeler's "Lower

McKenzie River dialect" (1945:351), but Frachtenberg says "Grace Wheeler

is a Kalapuya, Wm. Hartless is a Mary'sville. Both dialects the same,

but traditions different according to Grace" (1913-14a, Vol. 3, n.p.).

There are three volumes of notes to the texts (1913-14b), and three

volumes of grammatical notes (1913-14c). The latter are largely from

Hartless, with some material from Grace Wheeler, apparently corrected

with Hartless. There is a collection of ethnographic notes from Hart-

less (1913a). From other dialects, Frachtenberg collected vocabulary,

grammatical notes and a short text in Yamhill, from Louise Selky, and

Yoncalla vocabulary and grammatical notes from Mrs. Robert Allen and
Mrs. Tom Jackson, collected at Grand Ronde (1913b, 1914). In 1915,
Frachtenberg made marginal notes and corrections directly in Gatschet's
field notebooks of Tualatin with the help of Louis Kenoyer (Peter Keno-
yer's son and the last known speaker of Tualatin) at the Yakima Reserva-
tion. He completed some typescripts of his own and Gatschet's texts in
which he normalized his own transcriptions to some extent. The original
manuscripts of his field notebooks and some other materials are to be
found in the National Anthropological Archives; his slip files, some
typescripts, and some other materials are in the Jacobs Archives; and
some typescripts, which I have not seen, are apparently also in the
American Philosophical Society.

Frachtenberg does not list the symbols used in his Kalapuyan manu-
scripts or their values anywhere, but it is not difficult to figure them
out. In discussing the similarities and differences of Kalapuyan and
Takelma phonology (1918:179), he gives a few symbols and describes their
phonetic values. He does present such lists of symbols for his earlier
work in Coos, Siuslaw, etc. (1922a, 1922b), and these, together with the
Smithsonian guide (Boas, et al. 1916) and general familiarity with the
symbols used by Boas and his students at the time, make it possible to
be reasonably certain of the values intended. Frachtenberg's materials
are more reliable than Gatschet's, but Jacobs, for one, mistrusted his
phonetic abilities (1945:204). Jacobs does say that the Mary's River
texts are probably Frachtenberg's best work (which fact he attributes
to Hartless' excellence as an informant). Hymes has also pointed out
some of Frachtenberg's inconsistencies and limitations as a phonetician
in his work with Siuslaw (1966:328-342).

Melville Jacobs collected material largely in Santiam, from Eustace Howard at West Linn, and John Hudson at Grand Ronde, during 1928-36. He had done a considerable amount of work with other Northwest languages, perhaps more Sahaptin than anything else. He checked and corrected some of Gatschet's and Frachtenberg's materials with John Hudson and Louis Kenoyer. He also collected some Yoncalla vocabulary and did further work on Tualatin with Louis Kenoyer. He published most of Gatschet's Tualatin texts and Frachtenberg's Mary's River texts, after reworking them in his own phonetic transcription (that of the Smithsonian guide) and correcting them with the help of John Hudson and Louis Kenoyer, together with much of his own material from Hudson (Jacobs 1945). Further, he recorded some material from Hudson on Edison wax cylinders; fortunately this is now on tape, but the sound quality is still that of the much-played originals. Jacobs started work on a grammatical sketch of Kalapuyan, which was not published (1930); and there are notes on the phonology and grammar in the introductory sections of the published texts and in an unpublished autobiography of Louis Kenoyer (n.d.). Jacobs' materials are probably the most phonetically reliable, but even so they suffer from some confusion of morphophonemic, phonemic, and phonetic information, as Lisker (1946) has pointed out, making for some uncertainties in reconstructing the phonological system. His unpublished materials are in the Jacobs Archives.

Jaime De Angulo and L. S. Freeland began an unpublished grammatical sketch of Tualatin, collected texts from Louis Kenoyer in 1928, and began the autobiographical sketch of Kenoyer, continued later by Jacobs. Their materials are in the Jacobs Archives and at the American Philosophical Society.

Morris Swadesh was the last linguist to work with John Hudson, collecting some vocabulary from him in 1953. A tape of good quality exists, on which a word list and a brief text is recorded. The tape is in the Languages of the World Archives at Indiana University. Some of Swadesh's materials were published in his 1965 article.

No complete analysis of Kalapuyan phonology exists. The valuable uncompleted analysis by Jacobs has been mentioned. Frachtenberg has occasional comments scattered through his texts, notes, etc., but while these are useful in pointing to things needing investigation, they have not proved very helpful in analysis.

In comparing Kalapuyan to Takelma, Swadesh (1954), using a phonemic transcription but presenting no phonemic analysis, gives a list of cognates in the three Kalapuyan languages. Shipley (1969, 1970) presents his own proto-Kalapuyan reconstruction, apparently based largely on Swadesh's word lists. And in a critical review of Jacobs' Kalapuya Texts, Lisker (1946) presents a list of Santiam phonemes, with no indication as to how he arrived at them.

Problem and Method

The material I have analyzed here was selected somewhat arbitrarily. Mary's River was chosen in the first place because of the sizable amount of material available--next to Santiam, it is probably the best-documented Kalapuyan dialect. Santiam is much better known, because of the Jacobs texts; this made Mary's River more interesting to me. I started with the first six myth texts in the manuscripts of Frachtenberg's Mary's River texts; this takes up the first two volumes, and seemed to be more than adequate material to work with. I supplemented this with

terms from the ethnology and (cautiously, since it is not always clear who the informant is) by the grammatical notes. (I have had access to Xeroxed copies of all of these, obtained from the National Anthropological Archives.) The six myths are titled "Coyote and the Gamblers," "Coyote and Panther," "Grizzly and Panther," "Coyote's Adventures," "Coyote as Culture Hero," and "The Boy in the Moon." Under somewhat different titles, they appear as Mary's River myths numbers 1, 2, 8, 5, 3, and 9 in the Jacobs texts (1945). Thanks to the Jacobs Archives, I have been able to look at a typescript of the fifth myth, "Coyote as Culture Hero," prepared by Frachtenberg from his manuscript. I have consulted the tapes of Hudson (though these are in another dialect) for evidence especially on the accentual system, and I have examined Jacobs' reworking of Frachtenberg's texts.

I have used the Jacobs versions (and the tapes) only to provide clues to interpretation, however. Jacobs says that Frachtenberg's recordings from Hartless were "in such excellent condition as to allow consistent standardization and accurate checking," so that he needed only to eliminate obvious inconsistencies and errors (1945:204). These involve, he says, failure to recognize an "intermediate" series of consonants, inconsistency in recording glottal stops and glottalized consonants, lengthening of some vowels and diphthongs, treating many morphemic elements as separate words which were not separated in normal speech, and treating /k/ and /g/ + /y/ as palatalized stops instead of as sequences of stop plus /y/ (1945:146-147). But Jacobs himself never writes /ky/, only /k/; and Frachtenberg removes all palatalization marks in his typescript. (Some of these "errors" will be discussed at greater

length in Chapter II.) He does not explain how Hudson, speaking a dif-
ferent though closely-related dialect, was able to provide a check on
Mary's River pronunciation. Jacobs' remarks about Frachtenberg's simi-
lar "corrections" of Grace Wheeler's speech by William Hartless apply to
himself as well:

> I have not always been able to disentangle the linguistic changes,
> from a Lower McKenzie River original, for which Mr. Hartless may
> have been first responsible. As consequence, the Wheeler dicta-
> tion may be somewhat covered by a Hartless overlay in Mary's River
> dialect. Add to that the Hudson superimposition in Santiam dia-
> lect, for which I am responsible, and the student is confronted
> with a stratification through which it may be often difficult to
> determine what is pure Lower McKenzie (1945:351).

To determine Mary's River phonology, therefore, it seems better to rely
primarily on Frachtenberg's own recordings.

What I have attempted to do here is to present as complete an anal-
ysis as possible of the "taxonomic" phonemic system of the Mary's River
dialect, using standard descriptivist techniques (as presented in, e.g.,
Gleason 1961:257-341 or Pike 1963). There are obvious difficulties in
basing such an analysis on the sorts of material available, and these
will become more obvious as the analysis proceeds.

Most descriptive phonemic analyses are based on fieldwork with in-
formants. Here, I am using phonetic transcriptions which can no longer
be checked against actual speech. I must of necessity rely on Frachten-
berg's accuracy, or try to discover what inaccuracies did exist. I have
assumed that his symbols represent phonetic realities, and I have fol-
lowed his indication of "word" boundaries, although often the forms that
are written with spaces on either side may be morphemes separated in
slow speech, as Jacobs claims, rather than independent forms.

Frachtenberg's transcriptions of a form often do appear to vary

considerably. For instance, a word he translated as "now, then"[1] ap-
pears in some five slightly different forms. These could be due to mis-
hearings by Frachtenberg, to variations in speech by Hartless, or per-
haps to the lumping of morphologically different but phonetically similar
forms under one translation. One variant, la^u?,[2] is by far the most fre-
quent, occurring 87 times in the six myth texts. The others in the
texts are lau (twice) and l·au? (twice); laú· (once) and la^u (once) oc-
cur in the grammatical notes. It would appear at least that la^u? can be
relied on as the modal form, whatever accounts for the others. In some
cases, one finds two or three variants occurring equally often in the
manuscripts. These I have taken to be phonemic or phonetic variation on
the part of the informant (as the others may also be, of course) rather
than recorder error.

Some variations are fairly easy to attribute to Frachtenberg's dif-
ficulty in distinguishing sounds. k and q, for instance, are often
written over each other, as well as appearing to vary freely in repre-
sentations of the same form. nak "say, said," for instance, is often
written over naq in the first four pages of the first myth (see Appendix
for an example), but Frachtenberg finally settles on nak. In spite of

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[1]
Frachtenberg's interlinear translations are very rough. My
glosses are based on these translations, and are not to be taken as
exact identifications.

[2] I have underlined symbols and forms used by Frachtenberg in his
manuscripts, and used the conventional brackets and slash marks to in-
dicate phonetic and phonemic values, where necessary. In citing Frach-
tenberg's forms, I have used his symbols, except that I write p (etc.)
for p!, ? for ε, o· (etc.) for ð. I have typed a instead of writing a.
I have generally enclosed in parentheses those symbols which are used in
some variants of a form but not in others, to avoid listing all variants:
e.g., má·pa(?)t(5) includes má·pat (3) and má·pa?t (2).

the inconsistencies, some environmental conditioning of k̲ and q̲ is in fact evident--not enough, however, to say that k̲ and q̲ are clearly in complementary distribution. Because of the "free variation" (on Frachtenberg's part),and supplemented by the trend to conditioning, k̲ and q̲ have to be treated as members of one phoneme. Jacobs agrees, and is explicit about the variation (1930:n.p.).

Establishing the range of variation has been the most difficult methodological problem. My procedure has been first to tally the number of times each variant of a form occurs, as in the example of 1a^u?. This has produced a list of forms ranging from a considerable number of single examples of forms, to some which occur many hundreds of times--e.g., the verbal particle written k^{u}m (493 occurrences) or k̲u̲m̲ (116 occurrences). Some of these vary not at all, but some have up to twenty or thirty different forms. Most of the variation lies in the omission or addition of vowel length, aspiration, or glottalization; vowel quality differences account for most of the rest.

By taking the variants which occurred most frequently, I was able to establish modal forms in a considerable number of cases, though sometimes my decisions were arbitrary ones. Working first with these modal forms, I examined the distribution of sounds in the usual way to try to establish contrast and complementary distribution. To check emerging patterns, I examined single examples and those cases where the variation did not yield clear-cut modal forms. For instance, pí·nE "girl" occurs 26 times, with differences in the final vowel twice; p̰í·ne "have, keep" occurs five times, with differences in the final vowel. This appears to reveal a contrast between initial p̰ and p̲. Initial p̰ occurs much less

often than p̪, but I found p̪láꞏtowa "it buds out" twice, p̪íꞏyuk "was placed" twice, p̪iꞏ "laid it down" once, p̪aꞏq (?) once, and sp̪íꞏ́íf "little bugs" once. I also found two forms varying in initial stop: p̪áꞏs(E)la?t occurred three times (and p̪áꞏsau "smoke!" once) and the same with unglottalized p occurred once ("smoking"); and also p̪áslau? eight times, páslau? five times ("enough, let's quit") also occurred. (Initial p occurs in the same environments as all of these.) I took the two variable forms to contain /p̪/ (though p̪áslau? at least is uncertain). Another instance of p ~p̪ is p̪au? (three times) and pau? (20 times) ("canoe"); I took these to contain /p/.

For some sounds, no or very few modal forms could be established, or the variation was so great that instances of contrast could not be cited with any confidence. Forms containing final ?t or t were of this kind: for example, the suffix -tn̪t (11 times), -tn̪?t (13 times). Most forms varied in this way, though ?t is more common than t in final position. As already noted, forms with k and q vary in this way: and so, especially, do those with vowels—e.g., a form "they kept going" shows up as follows: íꞏfî(?)t (3), íꞏfit (1), éꞏfi?t (1), ǵ(ꞏ)fi?t (3); "moon" occurs as tóꞏpiꞏ? (3) and túꞏpiꞏ? (2).

There was no unarbitrary way to rely on statistical tallies to establish the existence of free variation, contrast, or complementary distribution. For instance, although [ə] can be established as modal in a few forms (e.g., píꞏnE for "girl," with two variant forms, píꞏni and píꞏneꞏ), there is no instance except for single examples in which [ə] does not vary with some other vowel or with nothing. This led me to examine its distribution more carefully, and eventually I decided that [ə]

was non-phonemic (see Chapter II). Patterning, as well as numerical distributions, has to be considered in any phonemic analysis.

Errors in my analysis may have a variety of sources: insufficient examples of forms, errors in Frachtenberg's recording, Hartless' mistakes in speaking, my mistakes in analysis, and so on. A further source of possible error, however, lies in the fact that a morphemic analysis of Kalapuyan has not yet been completed. Since the identification of morphemes is therefore not always as secure as it might be, some phonemic variation may have been taken as phonetic variation, and vice versa. Although I have sorted out some morphophonemic variation, an intractable residue remains.

ANALYSIS OF DATA

The problem I have set myself is to reduce Frachtenberg's numerous phonetic symbols to phonemes. His symbols are arranged in the following chart according to the phonetic values they probably represent (see discussion of the interpretation of Frachtenberg's symbols in Chapter I). Since some of his symbols are no longer in common use, I have added my own equivalents in brackets.

Consonant Symbols

	Stops	Affricates	Fricatives	Nasals	Laterals, Flaps/Trills	Glides
Labial						
Voiced	b			m,m̥ [m̩]		w,ẘ [u]
Voiceless	p		f			
Aspirated	pᶜ					
Glottalized	p! [ƀ],p'					
Alveo-dental, Alveo-palatal						
Voiced	d			n,n̥ [n̩], ñ [n·]	1,ī [1·],r	
Voiceless	t,t̄ [t·]	ts,tc [tš]	s,s̄ [s·], c [š]		L [l̥]	
Aspirated	tᶜ					
Glottalized	t! [ƚ],t'	ts! [ƚs], tc! [ƚš]				
Palatal(ized)						
Voiced			—		1·[1ʸ]	y
Voiceless	k·[kʸ]	ts·[tsʸ], tc·[tšʸ]	s·[sʸ], c·[šʸ]			

	Stops	Affricates	Fricatives	Nasals	Laterals, Flaps/Trills	Glides
Velar						
Voiced	g(?)					
Voiceless	k		x			
Aspirated	kʿ					
Glottalized	k! [k̓]					
Labialized	kw, kᵘ					
Back Velar						
Voiceless	q					
Glottalized	q! [q̓]					
Labialized	qw, qᵘ					
Glottal	ʿ [ʔ]		h, ʿ			

Vowel Symbols

	Front		Center	Back
	Unrounded	Rounded		
High	i, Ī [i·]			u, ū [u·]
	Î [ɩ,i], Î̄ [ɩ·]		Î [ɨ]	ů [ʔʊ], ů̄ [ʔʊ]
Mid	e, ē [e·]	ʊ	E [ə], Ē [ə·]	o, ō [o·]
	ɑ̆ [ɛ,æ?], ɑ̄ [ɛ·,æ·?]			ô [ʌ]
Low			â	ŵ [ɔ]
			ɑ, ā [ɑ·]	

a^i [aɪ̯], ai [aɪ̯], $a^{\bar{i}}$ [ai·], $a\bar{i}$ [ai·]

$\bar{o}^i$ [o·i̯], $\bar{o}i$ [o·i̯]

a^u [aʊ̯], au [aʊ̯], $a^{\bar{u}}$ [au·], $a\bar{u}$ [au·]

Generally the second elements of [ai·] and [au·], and the first of [o·i̯], are shown long, but sometimes the lengthening is reversed, or both are marked long.

Comments on Symbols

Frachtenberg uses a raised dot following a consonant to indicate palatalization (k·, etc.). In the typescript of the fifth myth, Frachtenberg removes all palatalization marks. In his slip files, Frachtenberg uses the later half-circle under a consonant (k̯, etc.) for the raised dot of the manuscripts; but some forms containing palatalized symbols in the manuscripts do not show palatalization in the slip files, and vice versa. Length of consonants and vowels is indicated by a macron (s̄, ō, etc.). The circumflex over vowels indicates a short vowel; in most cases it probably also meant a somewhat lowered tongue height. The vowel qualities intended by Frachtenberg are somewhat more difficult to establish than consonant qualities; short unstressed vowels are a special problem, since they seem to represent central vowels on occasion, as well as their primary values.

The segmental phonemes probably were organized so as to utilize certain of the phonetic features, in the following way:

Probable Segmental Phonemes

Consonants

	Obstruents		Fricatives	Resonants	Glides
	Plain	Glottalized			
Labial	p	ʾp	f	m	w
Alveo-dental, Alveo-palatal	t	t̓	s	n	y
	c	c̓	ł	l	
Velar	k	k̓	x		
Labiovelar	kʷ	k̓ʷ			
Glottal		ʔ	h		

	Vowels			Diphthongs	
	Front	Center	Back		
High	i i·		u u·	ai	ui
Low		a a·		au a·u	

Inventory of Phonemes

Consonants

/p/ initial, medial, final.[1]

  [b] (b)[2] occasional after /m/; sometimes varies freely with [p].

    tcámbek· (16) tcámp#k· (1) "chief"[3]
    ma·bat (1) ma·pa(?)t (5) "still, yet"

  [p] (p) elsewhere.

    pí·la(?)tꞌ (3) "followed," tápafo(?) (3) "four times,"
    wái·tap (6) "camped"

  Contrast: /f/ pa? (11) "then, in that case," fa? (3) "foot"
         /w/ pa? (11) "then, in that case," wa? (102) "no, not"
         /m/ pa? (11) "then, in that case," maꞌ (17) "thou"
         /kᵂ/ pá? (11) "then, in that case," kwa(ꞌ) (5) "took it"
         /p/ pí·nE (24) "girl," pí·nE(?) (5) "have, keep"

/t/ initial, medial, final.

  [d] (d) occasional after /n/; sometimes varies freely with [t].

    mánda·t (2) mánta·t (2) "looked at it"
    dukulhu? (1) tukulhu? (1) "owl"

---

[1] Because morpheme boundaries are not always known, the environments are word-initial, medial, final, unless otherwise specified.

[2] Frachtenberg's symbols, underlined and enclosed in parentheses, follow the allophones they represent.

[3] Numbers in parentheses refer to the number of times each form or variant occurred. If only one form is cited, it is the modal form. In the forms, symbols in parentheses are variable; I have listed all variants in full only when relevant to the particular example. See note on page 12 for my normalization of Frachtenberg's transcriptions.

[t] (t) elsewhere.

> táu·ʔnE (18) "one," yá·tu· (4) "standing out," wá·qtsît (39) "woman, wife"

Contrast: /c/ tᵾ̆ʔ (7) "tooth," tc(·)ᵾ̆ʔ (8) "I"
　　　　　/y/ tᵾ̆ʔ (7) "tooth," yᵾ̆ʔ (9) "who"
　　　　　/n/ ta(ʔ)kal(ʔ) (2) "fir bark," náka(ʔ)t(t) (12) "said"
　　　　　/s/ tqá(·)laqsaʔ (2) "hornet," sqá·yaq (3) "bluejay"
　　　　　/ɫ/ ɫau (3) "eel," táu·ʔnE (18) "one"

/c/ initial, medial, final.

[tsʸ] (ts·), [tšʸ] (tc·) vary freely with each other and with [ts] and [tš]; somewhat more frequent before or after front vowels.

> tc·îyám̓p (1) tc·Eyám̓p (1) ts·Eyáʔmp (1) tcîyám̓p (3) tcEyam(ʔ)p (5) "come from"

[ts] (ts), [tš] (tc) elsewhere.

> tcá·poʔ (2) tsá·poʔ (1) "basket," mí·tcwa(ʿ) (4) mí·tswa (1) "year," k·ᵾ̆ʔtc (9) k·ᵾ̆(ʔ)ts (2) "make, use"

Contrast: see /t/
　　　　　/s/ tcoʿ (14) "where," so(ʿ) (10) "good"
　　　　　/ɫ/ tc(·)ᵾ̆ʔ (8) "I," ɫsᵾ̆ʔ (7) tsᵾ̆(·)ʔ (3) "bone" tsálfafoʔ (1) "noise," tsaʔl (5) "river;" tsalaftsálaf (2) "bee beetle, horned toad"

/k/ initial, medial, final.

[kʸ] (k·) varies with [k]; more frequent before or after front vowels.

> k·i· (31) ki· (1) "if, when"

[q] (q) before [o], [a], [a·], [au], [o·i]; varies with [k].

> qó·ʇqai (24) kó·tkai (1) "woke up, got up," wáqaʔ (4) wákaʔ (1) "slave," sqolq (2) sqolk (1) "went in a circle"

[k] (k) elsewhere; rare before [o], [a·]).

> kam (36) "they, he, you will," yí·kum (8) "maybe," tmú·ak (12) "salmon"

Contrast: /kʷ/ kin (14) "went (ʔ)," kʷin (19) "got hold of, took"
　　　　　/x/ ɫa·qta(ʔ)t (2) "tied it," tóxta·tʔ (1) "I knock;" ol(·)îk· (2) "acorn," ptcîx (2) "blue"
　　　　　/h/ ka (4) "your (ʔ)," haʔ (11) "up; voice, mouth"

/ʔ/ wo·ʔk (58) "arrived," wo·ʔ (4) "go back after"
/k̓/ kú·tkumu· (6) "morning," k̓u·ptatcaʔf (3) "make fun
              of me"

/kʷ/ initial, medial; not found before [o] or [u].

[qu̯] (qw) varies with [ku̯].

qwaɬ(-) (4) kwaɬ (2) "it burned," lá·kwaʕ (2) lá·qwa (4)
        "hand"

[ku̯] (kw) elsewhere.

kwíle(·)k· (9) "eye," é·takʷi·ʔt (3) "went to see"

Contrast: see /k/
            /w/ waʔ (102) "no, not," qʷa(ʕ) (5) kʷa (3) "head, hair"
            /k̓ʷ/ q̓ʷa(ʕ) (5) k̓ʷa (3) "head, hair," k̓wáyayu· (1) "she
                  was pregnant"

/p̓/ initial.

[p̓] (p!)

p̓í·yuk (2) "was placed," p̓lá·towa(ʕ) (2) "it buds out"

Contrast: see /p/

/t̓/ initial.

[t̓] (t!)

t̓au (3) "eel," t̓waɬtEni·(ʔ) (3) "he poked it"

Contrast: see /t/.

/c̓/ initial.

[t̓s] (ts!), [t̓š] (tc!) free variants.

t̓slaʔ (4) t̓šla(ʔ) (2) "anus, inside," t̓sálaft̓salaf (2) "bee
        beetle, horned toad"

Contrast: see /c/

/k̓/ initial.

[q̓] (q!) varies with [k̓].

q̓aú·tʕwî·ʔtʕ (1) k̓áutfîʔt (1) "were singing"

[k̓] (k!) elsewhere.

ḱálha(·)pkwa(ʿ) (3) "she peeped in"

Contrast: see /k/

/ḱʷ/ initial.

([q̓u] (q̓!w) occurs once as a variant of [qu].)

[ḱu] (k̓!w)

     ḱwáyayu· (1) "she was pregnant," ḱwaíhEn (1) "chewed up"
        (All other instances of ḱw vary with kw or with qw .)

Contrast: see /kʷ/

/ʔ/ inferred to exist in syllable-initial prevocalic position; syllable-
    final, postvocalic.

  [ʔ] (ɛ)

     waʔ́ (102) "no, not"

Contrast: /h/ faʔ (4) "foot," yaʿ (5) "did"
            waʔla? (2) "nowhere," wála ́ʿ (22) wála (6) "downhill"
      see /k/

/f/ initial, medial, final.

  [ɸ] (f)

     fó·fufla·ta? (1) "cooking basket," póntcu·f (5) "make you"

Contrast: /h/ faʔ (4) "foot," ha? (11) "up; voice, mouth"
      /x/ fo·i?ya (1) "put on clothes," xoí·wai (1) "drunk"
      see /p/

/s/ initial, medial, final.

  [sʸ] (s·), [šʸ] (c·) vary freely with each other and with [s], [š];
    somewhat more common before and after front vowels.

     kú·ci(·) (21) kú·cE· (1) kúsi(·) (2) kú·c·i· (1) kús·i· (2)
     "that, there," s·nⱥ(ʿ) (110) snⱥ (29) "Coyote"

  [s] (s), [š] (c) elsewhere.

     cápli (1) sápli (1) "bread," wa·ᵘso? (10) "nobody," wí·nas
     (20) "indeed," kuc (100) kus (1) kuc· (1) kus· (1) "that,
     there"

Contrast: /x/ mi·s· (3) "cooked camas," ptcîx (2) "blue"
      /h/ simⱥ(?)(ʿ) (5) "my father," hímat (2) "widower, girl"
      See /t/, /c/

/ɫ/ initial, medial, final.

    [ɫ] (ɫ, L)

        ɫoʔq (1) "dug a hole," yú·ɫma(·) (12) "spirits," qwaɫ (4) "it burned"

    Contrast: /l/ ɫoʔq (1) "dug a hole," loʔq (2) "redheaded wood-pecker"
                pá·ɫamtʊt (1) "drunk," pá·laqya(ʔ) (3) "medicine man"

/x/ initial, medial, final.

    [x] (x)

        xá·yai (1) xoí·wai (1) "drunk," ú·1xayu· (2) "seal," ptcîx (2) "blue"

    Contrast: /h/ ú·1xayu· (2) "seal," yólhatca (1) "it is sold"
           /f/ oxotwa·tnt (1) "I cough," fó·foʔ (1) "she cooked"
           See /k/

/h/ syllable-initial, syllable-final.

    [h] (h) syllable-initial, pre-vocalic.

        haʔ (11) "up; voice, mouth," púnhäʔ (2) "he made"

    [ʕ] (ʕ) syllable-final, post-vocalic.

        maʕ (17) ma (1) "thou," yaʕ (5) "did"

    Contrast: /w/ haʔ (11) "up; voice, mouth," waʔ (102) "no, not"
           See /p/, /k/, /x/, /ʔ/

/m/ initial, medial, final.

    [m] (m)

        ma· (68) "house," mú(ʔ)1·ma(·)tîʕ (3) "held in her mouth," múca(·)yim (2) "sea lion"

    Contrast: /n/ na (3) nai (2) "do," maʕ (17) ma (1) "thou"
           See /p/

/n/ initial, medial, final.

    [ŋ] inferred to exist before velars.

    [n] (n) elsewhere.

        nís(·)ni(ʕ) (32) "told to," mí·fan (7) "very, harder"

Contrast: /l/ na̧ (3) nai (2) "do," la̧ᶜ (2) "excrements"
/y/ ník·d̶ (59) "what," yí·ku(·)n (9) "maybe"
See /m/, /t/

/l/ initial, medial, final.

[r] (r) sometimes varies with [l]

bɤré(ʔ) (4) bére(ʔ) (2) béleʔ (1) péleʔ (1) pɤléʔ (2) "big"

[lʸ] (l·) sometimes varies with [l]

l·í·li̧ʔtᶜ (1) lí·lȨʔtᶜ (1) "I laugh"

[l] (l) elsewhere.

lá(·)qayo(·)ʔ (6) "far," lí·lu· (1) "wolf," mó(tE)ts·al (4)
"rope"

Contrast: see /ł/, /n/

/w/ syllable-initial.

[u̯] (w)

wí·naswi(·) (72) "yes, indeed"

Contrast: /u·/ wó·(ʔ)ki·ʔ (11) "he brought," ó·k̓d̶ʔ (3) "he fed
her"
See /p/, /kʷ/, /h/

/y/ syllable-initial.

[i̯] (y)

yá·nat (3) "I'll visit"

Contrast: /i·/ yí·kun (8) "maybe," yí·twa (1) "wind;" í·tî̧(ʔ)t (6)
"is traveling"
See /n/

Discussion of Consonants

Palatalization and Length. In consonants, these do not appear to be phonemic. Consonants marked as palatalized vary with those not so marked, and long consonants vary with short ones. In his typescript, as noted, Frachtenberg removes all palatalization marks (no long consonants

appear in that myth). The length appears to be stylistic. (Consonant length is more common in Tualatin, but there too it is not phonemic.)

Velar Stops. Based on this material, k̲ and q̲ represent one phoneme. There may in fact be two phonemes involved, but the variation in writing them is such that contrast cannot be asserted with confidence. (In the other Kalapuyan languages, contrast is also uncertain. Frachtenberg notes in his slip files that Yoncalla, like Takelma, lacks q̲ and q̲!; but Jacobs has a q̲ in his Yoncalla materials. There may be a morphophonemic or allophonic relation between [x] and [q] in Yoncalla and in Tualatin, but I have not found such a relationship in Mary's River.)

Frachtenberg had trouble distinguishing [k] and [q]. He says q̲ is often misheard for k̲; he often writes one over the other in manuscript; and many forms are written now with k̲, now with q̲. ʔk̲ and q̲ are also shown as varying sometimes; in fact, all four velar stops may vary. I found koi·sEso· (2) k̓oi·sEso· (3), q̓o·isEso (2) "smoking," and kauʔt (1) qauʔt (14) q̓au(ʔ)t (4) "sing;" also k̓au(·)ta (3) qauta (2) q̓au·ta (1) "song" (I have normalized most of the vowels in these examples); and there are several others. In his slip files, Frachtenberg lists some pairs of terms which he seemed to intend as examples of contrast, but most of which represent free variation: qta· "ear" and "ktaʔ (or qtaʔ)" "smoke," taqt or takt "to fasten"--there are many other examples. Jacobs also treats [k] and [q] as fluctuating members of one phoneme. He says that Frachtenberg, like himself, uses k̲ and q̲ interchangeably in original manuscript (1930:n.p.). He also notes that [k] and [kw] are produced further back in the mouth than they are in English, between the [k] and [q] of Chinook or Sahaptin (Jacobs 1945:14). The acoustic

results are evident from the tapes of Hudson.

There are some differences in the contexts of k̲ and q̲, however; they do not always vary freely. Frachtenberg says q̲ is always aspirated, but he writes k̲ that way more often. q̲ occurs only before o̲, a̲, a̲·, au̲, and o̲·i̲ of the vowels, while k̲ appears before front vowels and u̲, but rarely before o̲. l̲ and q̲ tend to appear together, while l̲· almost never occurs in the same syllable with q̲. Possibly more patterning was present, but was obscured by difficulties in hearing and transcribing the differences between [k] and [q]. The trend to environmental conditioning reinforces the conclusion of common phonemic membership.

/k^W/ appears to be a unit phoneme, not a cluster. Initially and medially, it occurs with the same freedom of occurrence as /k/ before vowels, except that it does not occur before o̲ or u̲. Unlike /k/, it does not appear as the first member in initial consonant clusters, but it does occur following initial /p/, /t/, /c/, and /s/. Since clusters seem to be limited to two consonants, /k^W/ is best considered a unit. One advantage to considering it as such is that it can be used to even out the distribution of [k] and [q] to some extent, since ku̲ can then be interpreted as the phonetic result of /k^W/ occurring before /u/, while the conjunction of /k/ plus /u/ results in qo̲.

Glottal Stops and Glottalized Consonants. Glottalization presents a somewhat difficult problem. [ʔ] may not be a segmental phoneme (though I am interpreting it as one), but rather a marker of juncture. In final postvocalic position, however, it contrasts with other consonants, with aspiration (/h/, which may also have marked juncture), and with zero: hǝk·, snǝ, tǝ, pkǝʔ. I could not observe any correlation

between the occurrence of [ʔ] and any particular initial sound in the following word. Because, as Jacobs says, it was difficult to hear "this impressively elusive phenomenon" (1930:n.p.), it was not always consistently recorded, which makes contrast somewhat difficult to be certain of. It is never written initially before vowels, but almost certainly occurred there; it is audible in that position in John Hudson's taped Santiam speech. Jacobs (1930) says that there are three situations in which the glottal stop is found: (1) as a syllable or word marker (indicated in his texts by dashes, which occur intervocalically or between vowels and resonants); (2) as a stylistic element with no grammatical function, before C_1 (he seems to mean a syllable-final consonant) in CVC_1 or $CVVC_1$ syllables--it appears randomly in such circumstances; and (3) as a "true consonant"--that is, in final postvocalic position. Frachtenberg notes in his slip files that "between two consonants of the same series a $^{\varepsilon}$[ʔ] is inserted to serve as hiatus," as in tuman$^{\varepsilon}$nai. That is, geminate clusters are prevented at morpheme boundaries by the insertion of a glottal stop--an example of Jacobs' (1) above. The final postvocalic glottal stop, if it follows monosyllables, tends to be retained in larger constructions, while the glottal stop preceding a final consonant is less often retained. Medial contrasts, such as /wáʔlaʔ/ "nowhere" and /wálah/ "downhill" are thus created, where the glottal stop serves to mark a morpheme boundary.

In Frachtenberg's material, glottalized obstruents (as in initial p!) are in complementary distribution with sequences of glottal stop plus obstruent (such as final ʔp). One could consider all these as clusters of /ʔ/ plus consonant, but this would create three-consonant clusters;

since other consonant clusters seem to be limited to two members, this complicates the clustering patterns and does not seem to solve any problems. Initial glottalized obstruents appear to contrast with plain ones, although the amount of variation between the two in some cases makes it difficult to decide which one a particular form contains. For example, ṭau (3) "eel" and taú·?nE (18) "one," and other pairs, show a contrast between /ṭ/ and /t/. But I also found nine instances of tal? and twelve of ṭal? "dog," and cannot tell whether the initial phoneme is /t/ or /ṭ/--assuming my analysis is right in the first place. In medial position, where they rarely occur, glottal stops plus consonants probably mark morpheme boundaries, as noted above. In final position, a different pattern obtains. Here, /t/ and /c/ act differently from /p/ and /k/. t and ?t appear not to contrast; almost every form containing final t has variants with ?t, and vice versa. ts is rare in final position (two forms only); ?ts is more common (six forms), but these apparently do not contrast either. While also not contrasting with their unglottalized counterparts, ?p and ?k, rather than showing free variation, seem to be conditioned in some way, since they occur finally, for the most part, following o or a in monosyllables; p and k occur in these, and other, final environments, so that the conditioning is not very clear. In larger constructions, the glottal stop is retained before k in some forms, as it is following vowels in monosyllables, possibly depending on which suffix is added.

?k is particularly obscure, since Frachtenberg sometimes writes it alternately with q or ?q, as does Jacobs: "I also write this stop with a glottal catch preceding it: ?k, ?q [Jacobs' underlining]" (1945:13).

(Since k does not usually appear before o, some instances of k̓o may be
[ʠo].) The entire region of velar stops—k, q, k̓, q̓, kʷ, qʷ, k̓ʷ, q̓ʷ—
is a murky one.

/k̓ʷ/ is rather rare and, like /kʷ/, as well as other glottalized
stops, it does not occur finally. It varies with /kʷ/ in initial posi-
tion to an uncomfortable degree: only two forms containing /k̓ʷ/ ini-
tially do not vary with /kʷ/, and those consist of only one example each.
I postulate the existence of /k̓ʷ/, therefore, mainly on grounds of pat-
terning.

Glottalized resonants and fricatives also occur finally; the glot-
talization is sometimes retained when suffixes are added. Here too
glottalization appears to be nonphonemic.

Intermediates, Glottalized Stops, Unglottalized Stops. Jacobs in-
sisted that there were three series of stops in Kalapuyan: aspirated
surds, glottalized surds, and "intermediates" (unaspirated surds with
occasional brief voicing). He inserted intermediates in Frachtenberg's
and Gatschet's texts where voiced consonants were written, and in many
other places on principles which are not made explicit. In the hope
that Jacobs might shed light on glottalized vs. unglottalized obstruents,
and on velars in particular, I examined the distribution of intermedi-
ates, glottalized and unglottalized obstruents in Jacobs' treatment of
Frachtenberg's material. I found, first, that they do not contrast in
final position. Glottalized stops are rather limited in distribution,
generally occurring initially in stressed syllables. In that position,
they contrast with unglottalized stops. Intermediates generally do not
occur preceding stress; they tend to vary with unglottalized stops

wherever they occur. This is somewhat confusing, since Jacobs says the intermediates are hard to distinguish from <u>glottalized</u> stops, and that they are often recorded inconsistently:

> The texts are full of inconsistent recordings of D [the capitals represent intermediates] for a phonemic <u>t̲</u>, G for a phonemic <u>k̲</u>, because ... the acoustic effect of the articulation of a glottalized consonant is so little different from the articulation of an intermediate stop (Jacobs 1945:151).

His treatment of the Mary's River material, however, shows greater patterning than is visible in his own Santiam, for some reason. Whatever the status of intermediates, Jacobs' treatment of Mary's River tends to confirm what I found, that glottalized and unglottalized stops contrast in initial position.

There seems to be evidence for two phonemic obstruent series. Shipley (1970:98) maintains that the contrast in proto-Kalapuyan is between aspirated and unaspirated. However, Frachtenberg sometimes writes aspiration after both glottalized and unglottalized stops, so aspiration obviously cannot be used to sort out the two series, in Mary's River, at least. They may be glottalized-unglottalized, fortis-lenis, or clusters vs. single stops, but not aspirated-unaspirated.

<u>Aspiration</u>. In general, aspiration presents a problem, mainly because Frachtenberg seems to be so inconsistent in recording it. He says that glottalized consonants, <u>q</u>, and final voiceless consonants preceded by <u>n</u>, are automatically aspirated, but he seldom writes them that way in the manuscripts. And Jacobs notes that the surds are aspirated as much as, or more than, in English (1930:n.p.). In the manuscripts, aspiration is shown finally after <u>k̲</u>, <u>q</u>, <u>t̲</u>, ?k, ?q, ? t̲, ?m, and ?l; the same forms are also written without aspiration. <u>k̲</u>, and sometimes <u>t̲</u>, are occasion-

ally shown aspirated in initial or medial position. Some of these instances, especially with t̲, are apparently transitions between consonants (t̲ᶜmat, t̲ᶜkoúwi·, t̲ᶜwé·sapaqne). After k̲, aspiration generally precedes a̲ or a̲u̲ (k̲ᶜáuni, k̲ᶜána, pk̲ᶜalk), or unstressed i̲ (ók̲ᶜik, yúk̲ᶜin, múk̲ᶜi). In all these, Frachtenberg also writes unaspirated t̲ or k̲. Aspiration also sometimes marks juncture medially; in these cases, as with [ʔ], it appears to be retained when a form with final postvocalic aspiration, or final t̲ᶜ, is compounded (tcóᶜnak, tamí·t̲ᶜwoʔk). [h] and [ᶜ] are in complementary distribution, since the latter is syllable-final and the former syllable-initial. Like [ᶜ], [h] can be used as a morpheme boundary marker medially, since it only occurs syllable-initially and does not cluster with other consonants (púnhᵘʔ).

Frachtenberg's typescript of the fifth myth is interesting with regard to aspiration. In it, morphemes are separated even more often than they are in the manuscript version. Aspiration is added rather regularly to forms shown without it (and retained, usually, for those with it) in the manuscript: it is present after all final t̲ and ʔt̲, after k̲ and ʔk̲ if they follow back vowels, and apparently after p̲ and ʔp̲ in the same environment (some vowels had not yet been inserted in the typescript, to judge by the manuscript; spaces were left for them). The similarity to the distribution of final [ʔ] plus stop is clear: grave stops appear to act alike. (It is noteworthy however that in the manuscripts p̲ is not written aspirated.) That is, p̲ and k̲ may be written with a glottal stop if they follow back vowels in monosyllables, and they may be aspirated in that environment, glottalized or not. t̲, on the other hand, freely varies with ʔt̲, and both are always shown aspirated in the typescript.

It is possible that some consonants which Frachtenberg sometimes writes aspirated were in fact glottalized. (Hymes [1966:333] says the same for Frachtenberg's transcription of Siuslaw.) Glottal stops written alone are not shown aspirated, but sometimes a rearticulation of the vowel appears: fa?^{a}. There are a few instances of variation between [?] and [ʕ] in final postvocalic position as well.

I have kept aspiration in final postvocalic position as an allophone of /h/, since it seems to contrast with other consonants, /?/, and zero, as already noted. It occurs almost entirely after short vowels in that position; /?/ and nothing also occur following long vowels and diphthongs (final vowels can be long, short, or diphthongs).

Fricatives and Affricates. /x/ is rare; I have found it in only six forms. Since it was rare, Frachtenberg paid attention to it when it occurred, and did not vary in recording it. Two of the forms are borrowings from Chinookan (úlxayu·, "seal," probably of Lower Chinook origin, and ptcîx, "blue," from Chinook Jargon), indicating a possible source of the sound. It is written more often in texts of other Kalapuyan languages, however, possibly varying allophonically or morphophonemically with q.

/f/ is phonemic, contrasting with /w/, /h/, and /p/, but its morphophonemic relationship with /w/ and maybe /h/ is problematic. It was a bilabial voiceless fricative at least in the central dialects and Yoncalla, but Yamhill and possibly one informant in Tualatin appear to have had a labiodental [f]. Frachtenberg says for Mary's River that w̄ "looses its sonancy" after t and becomes f, but he always writes tw. (He reverses this for Tualatin, saying that f becomes w after t, ts, and

q, but as examples he gives tsfan, not tswan, in addition to tswi· and

tswo·.) In Santiam, Jacobs says that he often records f as fw and hw;

that it is a "peculiar hw or xw sound," as in "which" or nonsense "fwich"

(1930:n.p.), and that the relations between h, h^w, f and f^w are not

clear in Santiam (1945:14). Apparently referring to all the Kalapuyan

languages, Swadesh says that he writes wh or hw for /f/, "because it is

evidently the cluster of w with aspiration" (1965:237). Frachtenberg

does not record h^w or x^w for Mary's River, but there are some central

Kalapuya-Yoncalla correspondences in his slip files in which f = ^{x}w,

and there is also a hu- = wu-. /f/ is thus probably derived historical-

ly from a rounded velar fricative. It is extremely rare in the North-

west, being found only in Kalapuyan and in the Neighboring Molala.

s and c vary freely. Jacobs says that Frachtenberg's s̬, c̬ of the

slip files--equivalent to s·, c· in the manuscripts--represent a sound

"intermediate" between [s] and [š] (1930:n.p.)--possibly an alveopalatal

slit fricative.

ts and tc also vary freely. They occur in all positions, contrast

with t and s, and also enter into initial clusters; they evidently rep-

resent a unit phoneme, /c/. (See discussion of clustering below.)

Resonants and Glides. /l/ may have had fronted and backed allo-

phones. As noted earlier, the palatalized l· almost never occurs with

the back velar q, but it may often be found with k. Both k and q are

found with unpalatalized l. The apparently inconsistent recording makes

it difficult to state the conditioning, however. There was an r allo-

phone, occasionally varying with l intervocalically.

/y/ and /w/ are phonemically distinct from /i/ and /u/--yí·- and

i·- contrast, for instance--but the consonants may be related morphopho-
nemically to the vowels. Their distribution could be extended to final
position by writing the final elements in diphthongs as /y/ and /w/ (see
discussion of vowels and diphthongs).

/m/ and /n/ are quite straightforward. /n/ before k was probably
[ŋ], as in Hudson's Santiam speech, but Frachtenberg only records n.

Consonant Clusters

In initial and final position, consonant clusters appear to be
limited to two phonemes. Word-medially, three-phoneme sequences occur
sometimes (e.g., /puncpupat/, "were swimming"), but I have found only one
sequence of four (/swankswaku·/, "crawled"). These three- and four-
phoneme sequences apparently involve a morpheme boundary, although I am
not always able to identify it (/swank/ + /swaku·/; /punc-/ "became" +
/pupat/). In finding morpheme boundaries, the presence of non-cluster-
ing consonants or impossible sequences is helpful, but these are not al-
ways present (see below). Frachtenberg mentions "permissible sound
groupings," without listing them, and says that all suffixes are added
to stems by means of a connective vowel, so clearly the clusters which
could occur were limited. However, he gives "exceptions" with no inter-
vening vowel, and in the manuscripts he does not always indicate such a
vowel either. In discussing syllable structure, Jacobs (1930:n.p.) says
that phonetically no consonant clusters exist, since an epenthetic vowel
is always inserted after the first consonant (CCV = C[V]CV), and /y/
after a stop does not count as a consonant. He too does not show "in-
tervening vowels" consistently. An examination of medial clusters has
therefore not proved very enlightening; I do not list them here.

These consonant phonemes do not cluster finally and initially: /l/, /x/, /h/, /ʔ/ (according to my analysis, final clusters of [ʔp], etc., are non-phonemic; these are discussed later). Thus, when these consonants turn up in medial clusters (such as in púnhä́ʔ) I can be confident a morpheme boundary is involved.

Initial clusters found are as follows:

Second Member

First Member	p	t	c	k	kʷ	p̓	t̓	k̓	k̓ʷ	f	s	w	y	l	m	n
p		x	x	x	x						x		x	x		
t	x			x	x		x			?	x	x		x		
c				x	x								(x)	x		
k			x								x		x			
p̓													x			
t̓											x			x		
c̓											x		x			
f		x														
s		x		x	x	x	x	x	x		x			x	x	

In initial clusters, /p/, /t/, /c/, /k/, /p̓/, /t̓/, and /s/ occur in either first or second position. /f/ may also, if Frachtenberg's tw is really /tf/. /c̓/ only occurs first in this material. /k̓/, /k̓ʷ/, /kʷ/, /w/, /y/, /l/, /m/, and /n/ occur only as second members. That is, sequences of obstruent plus obstruent, fricative, or resonant, or sequences of fricative plus obstruent or resonant may occur. There are no geminate clusters within Frachtenberg's word boundaries, except as stylistic variants. There is only one instance of /fp/ (/fpi/, "gopher"),

but it seems reliable. /cy/ occurs only as a variant of tcEy-; the schwa is either one of Frachtenberg's intervening vowels, or an allophone of /i/. /m/ and /n/ can function as syllabics; some apparent initial clusters with m and n in initial position are examples of this. In medial position, clusters such as the nf in psínfo? indicate a morpheme boundary.

Final clusters, excluding sequences of glottal stop plus consonant, are much simpler:

	Second Member			
First Member	p	t	c	k
m	x			
n		x	x	(x)
1	x	(x)		x

I infer the existence of /1t/ and /nk/ from the occurrence of ?1t and ?ñk. Final clusters are limited to resonants plus obstruents.

In final position, glottal stops occur with consonants as follows:

?p	?f	?m, m?	m?p
?t	?s	?n, n?	n?t, ?nk
?c	?ɬ	?1, 1?	?1t, ?1p
?k			

As noted earlier, glottalization appears not to be distinctive in this environment. When the glottal stop occurs with final consonants, Frachtenberg most often writes it preceding obstruents and fricatives, but either preceding or following resonants. Thus, it seems probable that the articulation of the glottalization occurred simultaneously with the

resonants. It would probably be useful to retain writing the glottal
stop finally with consonants in those cases where it is retained morpho-
phonemically in larger constructions, even though it appears to be non-
phonemic.

Vowels and Diphthongs

/i/ initial (rare), medial, final; stressed and unstressed.

    [ʊ] (ʊ̲) varies with [e] in one form: [ʊ] unstressed, following /p/,
          [e] stressed.

      bʊré(?) (4) bére(?) (2) béle? (1) péle? (1) pʊre? (1) pʊlé(?)
      (2) "big"

    [ɛ] (ʮ̲) initial; medial, stressed; final, unstressed.

      ʮ̲ (57) "go," pʮ̂tcî·? (2) "I spread it out," snʮ̲ (136) "Coyote"

    [e] (e̲) initial (rare), medial, final; stressed and unstressed.

      énai (3) "they go," me?m (62) "people," tcînte (54) tcîntʮ̲
      (5) "we will (?)"

    [ɪ] (i̲), [ɪ̯] (î̲) may not occur initially; medial, final; stressed
          and unstressed.

      înte (5) înte (2) "you, we will (?)," nîs(·)nî (3) nísni (1)
      nísniᶜ (1) "told to"

Variation: ʮ̲fi?t (2) ʮ̲ᶜfi?t (1) é·fi?t (1) î·fi(?)t (4) "they kept
       going"
      maúlʮ̲k· (1) maúlîk· (1) maúle·k (1) "ash tree"
      kumantʮ̲ (25) kumántʮ̂ (5) kumánte (6) kumántî (12)
       kumánti (22) kumánta (2) kumánti· (3) "again (?)"

Contrast: /i·/ mîts(·)îs (9) "I, he ran," mî·tcwa(ᶜ) (4) "year"

/i·/ initial, medial, final; stressed and unstressed.

    [e·] (e̅) initial, medial (especially if stressed), final (only as
         variant).

      é·fa?m̥ (5) "her, his father," mé·fo? (3) "hill, mountain"

    [i·] (i̅) initial, medial, final; stressed and unstressed.

      í·ct(E)fa(?)t(ᶜ) (2) "small," tcî·pkam (8) "long ago,"

ó·tni·hʉ?(5) "call him," yi· (54) "go home"

Variation: í·lakˤa (1) é·lakaˤ (1) "he felt cold," kwí·li·yu·wî (9) kwí·liyu·wi· (1) kwé·li·yu·wî (13) "again"

/a/ initial (rare), medial, final; stressed and unstressed.

[a] (a)

ála? (10) "dead, died," talq (4) "strong," po(́?)ya (4) "making"

Contrast: /a·/ ála? (10) "dead, died," á·na? (12) "his daughter"

/a·/ initial (rare), medial (especially if stressed), final (rare); stressed and unstressed.

[aˑ] (a)

á·na? (12) "his daughter," tá·tsi?t(ˤ) (8) "lived there," mánta·t (2) mánda·t (2) "looked at it," ma· (65) ma (1) ma·ˤ (1) "house"

/u/ initial, medial, final; stressed and unstressed.

[u] (u) medial; final only as variant; stressed and unstressed (somewhat more common unstressed).

muf (10) "grouse," túkulhu? (1) dúkulhu? (1) "owl"

[o] (o) initial, medial, final; stressed and unstressed (somewhat more common stressed).

ól·e·k·(1) ól(·)îk· (2) "acorn," móla·q (11) "ocean," táfo (2) "six"

Variation: múlma(·)tî(ˤ) (2) mó?lma·tîˤ (1) "held in her mouth," í·cto? (1) í·ctu·? (1) í·s·tu? (1) "small" yú·hu (15) yú·hu· (5) yú·hu? (1) yú·hu·? (1) "old man"

Contrast: /u·/ t(')óki(·)? (5) "he, I finished," tó·pi·? (3) tu·pi(·)? (2) "moon"

/u·/ initial, medial, final; stressed and unstressed.

[u·] (u) initial (rare, only as variant), medial (rare if unstressed) final; stressed and unstressed.

yú·wa(?)l (12) "hunting," yé·la?yu· (2) "get well"

[o·] (o) initial; medial, stressed; final only as variant.

ó·kʿắ? (3) "he fed her," wo·?k (59) "there, arrived"

Variation: ú·fo? (1) ó·fo? (4) "they looked for him"
tó·pi·? (3) tú·pi(·)? (2) "moon"
ókwu· (2) ókwo· (2) "feed us"

/ai/ medial, final; stressed and unstressed.

[aị] (ai) final, unstressed.

qó·tkai (24) "got up, woke up"

[a·ị] (aī) medial, final (rare); stressed.

waí·tap (6) "camped"

Contrast: /i·/ maí·tcơ? (24) "tomorrow," mí·tcwa(ʿ) (4) "year"
/a·/ qwaí·n‑ (4) "swim," kwai·k (2) "leaves, bushes,"
qwa·ɫ (2) "cottonwood"

/au/ medial, final; stressed, unstressed.

[aụ] (au)

tkắuwi· (4) "he, I threw it," á·lau?kam (2) "when did," nau
(24) "and"

Contrast: /a·/ wa·úso?, waú·so? (10) "nobody," wá·ts·a?tʿ (1)
wa·tsít (1) "hole"
/a·u/ káutcEma (3) "door," káu·watca(?)t(ʿ) (2) "Indian
money"
/u·/ mau (6) "white," mu· (1) mo·ʿ (1) "black"

/a·u/ medial, final (in one form); stressed.

[a·ụ] (aū)

káu·watca(?)t(ʿ) (2) "Indian money," wau· (1) "nobody"

/ui/ initial, medial, final; stressed.

[ʊ·ị] (ʊ̄i) varies with [o·i] in one form

1(·)ʊi·?, 1(·)ʊ·í? (6) 1ʊi? (2) 1·o·i·?, 1·o·i?, 1·oi·? (6)
"much, many"

[o·ị] (oi) elsewhere

ó·ihi, oí·hi (5) oíhî (1) "man, men," yó·i?nî (2) yó·i?nắ? (1)
yoi·?naʿ (1) "speaking," ho·i (13) "will be"

Contrast: /u·/ mó·ifi (5) "brother-in-law," mú·kî(?) (8) móki?
                      (1) "deer"
/i·/ ho·ic- (3) "smell," hi·tc (7) "fell down"

Discussion of Vowels and Diphthongs

Vowels. As can be seen, the distributions of vowel allophones are
not neat. There is a great deal of variation or inconsistency in vowel
length and quality in the manuscripts, and I may have failed to observe
what patterns do exist in some cases. The existence of rhetorical
length is a probable cause of some of the variations in length. Still,
length does appear to be phonemic for the simple vowels, and apparently
for /a·u/. On the analogy of the short diphthongs, long vowels would
best be treated as sequences of two short ones: /ii/, etc. Because
/au/ and /a·u/ seem to contrast, however, I prefer to avoid three-vowel
sequences by writing /i·/, etc., not /ii/.

No vowels are common initially (if the a-, an- noun marker prefixes
and the u·, um prefixes (adjectival? verbal?) are disregarded, as Frach-
tenberg does). Initial i·, e·, ʮ, o·, o and o·i (/i·/, /i/, /u·/, /u/,
/ui/) are found in at least three forms each. Vowels tend to be more
often short in final position: i·, i, ʮ, a, u·, o, and ai (/i·/, /i/,
/a/, /u·/, /u/, /ai/) are most common. They tend even more often to be
short in medial unstressed position. Although stress and length are
independent, there is some tendency for long vowels to appear stressed
more often than they appear unstressed.

[i] and [e] vary with each other, but perhaps less often than mem-
bers of other vowel phonemes do; [ɛ] and [i] vary even less. [ɛ] and
[e], and [ɛ] and [e·], vary quite commonly, however. (Tualatin may have
two phonemes in this area, /i/ and /e/ (Jacobs:n.d.), but Mary's River

does not.) Unstressed $\hat{\underline{\imath}}$ represents a non-phonemic epenthetic vowel a
number of times (probably [ɨ] rather than an allophone of /i/), and I
may have missed some of these.

/a/ occurs most often of any vowel. Shipley is probably right in
saying that it represents the falling together of some earlier vowels
(1970:98). It varies rather little with other vowels, as transcribed by
Frachtenberg; most variations are with a·, less often with E. /a·/ is
quite limited in distribution, being found mostly stressed medially.

There is no problem about the common phonemic membership of [u] and
[o], or [u·] and [o·]. They vary freely with each other, though the
long vowels vary more freely than the short.

Diphthongs. These are close-knit sequences, having the same free-
dom of occurrence as single vowels generally. They could be written with
/w/ and /y/ as second elements, but this would obscure the fact that the
vowel clusters with [u̯] and [i̯] in second position are distributed much
like single vowels, while those with [u̯] and [i̯] preceding other vowels
are like other consonant plus vowel sequences. For instance, those
diphthongs which are followed by /ʔ/ (the second element is never pre-
ceded by /ʔ/) in final position seem to behave like single vowels fol-
lowed by glottal stop in that the stop is often retained when suffixes
are added.

The diphthongs have even less neat distributions than single
vowels, however. Except for [o·i̯] , they are not found initially, and
[a·u̯] is only found finally in one form. They almost never vary with
single vowels, though Frachtenberg hints now and then that they should.
Jacobs says that "long diphthongs are perhaps rarely if ever found in

Kalapuya. The reason he [Frachtenberg] may have found for such indica-
tion of lengthening of vowels I have not been able to learn" (1945:147).
However, length is clearly conditioned by stress in the case of [a·i],
and [o·i] is consistently long. It would be convenient to get get rid of
the /a·u/ – /au/ contrast, but, though modal [a·u] tends to vary with
[au], they do not show any more conditioning than do short and long
single vowels.

The peculiarities of [o·i] suggest to me that it may consist of two
syllables rather than being a diphthong. One reason for thinking so is
that it is the only diphthong found in initial position. Another is the
way Frachtenberg marks length of diphthongs in the manuscripts--he most
often writes au and ai, with the second element long, but oi, with the
first long. It is true that in the typescript he moves the length mark
to the first element of au and ai, but the original difference in tran-
scription is interesting. However, if [o·i] really is two syllables, not
one, there is a problem in how to interpret it. Frachtenberg never varies
such forms as hoi "be" with anything like *howi or *huwi; other forms do
contain such sequences, as in yú·wi "again." Because of this probable
contrast, I am leaving [o·i] as /ui/, although I suspect this is not the
right solution.

The Problem of Schwa. [ə] is apparently not phonemic. It appears
in three types of contexts: (1) as a substitute for other vowels. It is
modal only twice, and in both cases is probably a variant of [e] in final
position (pí·nE appears 24 times, pí·neʿ once, pí·ni once; and kí·tE ap-
pears six times, kí·te once). It occurs short and unstressed with very
few exceptions, and varies more with other vowels than anything else

does. Since it occurs as a substitute for other short unstressed vow-
els (especially i medially and e/ʮ finally) it is often rather difficult
to sort out. Jacobs maintains [ə] is a variant of /a/ (and also of /i/
and /u/), but in this material it most often replaces /i/. An indica-
tion of which vowel is being replaced is sometimes given by the preced-
ing vowel, or by the surrounding consonants, as in the examples above.
î often appears varying with E, or in situations where E might be ex-
pected; it probably represents [ɨ] in these cases, as it seems to do in
Siuslaw (Hymes 1966:342).

(2) [ə] (and [ɨ]) occurs as an epenthetic vowel, serving as a tran-
sition in consonant clusters and possibly marking morpheme boundaries.
As mentioned earlier, Frachtenberg notes in his slip files that "all
suffixes are added to stems by means of a connective vowel (a, u) re-
gardless of whether cluster is permissible or not" (and then lists ex-
ceptions with no intervening vowel); he also gives i and E as such vow-
els. The variation may reflect consonant qualities: E ~ î mostly after
or between /t/ and /c/.

(3) A third use for [ə] is with a syllabic nasal. In Frachtenberg's
typescript, he has inserted E before nasals which were written without a
preceding vowel in the manuscript. Although both Jacobs and Frachten-
berg seemed to feel that a [ə] was "really" present before syllabic na-
sals, it is more economical not to postulate phonemic /ə/ just for this
position.

In saying that [ə] replaces several vowels, I have violated a car-
dinal rule of the American descriptivist tradition: each segment of
sound must be assigned to some phoneme, and each segment must be assigned

to only one phoneme (the "biuniqueness criterion"), so that a phonemic transcription can be unambiguously and directly readable, and any utterance has only one phonemic transcription. For instance, Gleason (1961: 294-295) gives the example from some English dialects of the neutralization of alveolar stops in intervocalic position (e.g., "latter" and "ladder" sound alike). The solution, he says, is either to equate the neutralized stop (/T/) with one or the other alveolar stop (/t/ or /d/), or to maintain it as some sort of separate element. But if one takes the latter course, "what is the status of /T/ in the system?" American linguists prefer to match the anomalous stops, some Europeans would maintain /T/.

Thus, if I were to be methodologically correct, I would have to assign [ə]to some vowel phoneme, probably /i/ since [ə]occurs most often as a substitute for [e] or [ɛ]. Instances where [ə]occurs as a substitute for /a/ or /u/ would then have to be interpreted as phonemic variation. This is not a very satisfactory solution, since what happens is clearly not the substitution of one phoneme for another, but the loss of contrast between phonemes. (As some perhaps apocryphal linguist is supposed to have said, "Biuniqueness is a damn nuisance.") Other methods of linguistic analysis might well deal better with this problem, but since I am committed here to using a descriptive approach, the awkwardness remains. I have not listed [ə]in the phonemic inventory as an allophone of anything; depending on the reader's theoretical preference, it may be considered to belong to /i/, to all vowels, or to be a separate element.

Suprasegmentals

Frachtenberg occasionally does not mark stress, but he is remark-
ably consistent when he does show it. It occurs on both short and long
vowels, and is thus independent of length, even though in at least one
case (/ai/) it conditions length, and even though long vowels are more
often stressed than unstressed. In Mary's River, it falls on the first
syllable of a stem; in Tualatin and Yoncalla, stress is often shifted to
prefixed elements. If a prefix is added in Mary's River, stress does not
move: waú·tso?, kuwaú·tso?. Stress is accompanied generally by higher
pitch (sometimes perhaps by lower pitch), which Jacobs calls "pitch ac-
cent." He says that pitch accent falls on "every syllable felt to be an
independent root--nominal, pronominal, connective, or verbal" (1930:
n.p.). Since stress is not always predictable from the segmental con-
struction alone, it is considered to be phonemic.

Frachtenberg records two sorts of pitch: ` (falling) and ~ (ris-
ing). The ~ often varies or coincides with a length mark, and occurs on
medial (sometimes initial) vowels, usually o or u. The ` occurs most
often at the ends of syntactical units, but not always. In some cases
it seems to co-occur with stress to form the pitch accent; this may ac-
count for the fact that a few words are typically marked with falling
pitch--s·nä̀ "Coyote" and ä̀ "go" are probably the most common. Falling
pitch is a good deal more frequently marked than is rising pitch. It is
probably part of an intonation contour, and the ~ is probably stylistic.

Syllable Structure

Canonical form is evidently (C)V(C), where C represents one or two
consonants and V can be a short or long single vowel, diphthong, or

nasal. Since diphthongs, except for /ui/, do not occur initially, no VV or VVC sequences occur as monosyllables; neither, apparently, does NC. Otherwise, all possibilities are realized.

In final position, some vowel distinctions appear to be lost (short vowels may become [ə], for instance), as do the distinctions between glottalized and unglottalized consonants and /k/ and /k^W/.

Initial vowels are not common; it is possible that these are all preceded by glottal stops. In word-final position, particularly after short vowels, /?/ and /h/ may act to fill a final consonant slot; but short vowels also occur finally with nothing written following them, and long vowels and diphthongs occur followed by /?/ and /h/. Thus, the evidence is not clear enough to permit the conclusion that the canonical form is CVC rather than (C)V(C).

CHAPTER III

SUMMARY AND CONCLUSIONS

Summary

After considerable exposure to Frachtenberg's transcriptions, my
respect for his probable phonetic accuracy is rather high. When his
recordings appear to be inconsistent, it is likely that his informant
often was inconsistent in his speech. He, like Jacobs later (and
Gatschet earlier) had trouble with the velar stops and with vowels to
some extent, but Jacobs' judgment that Frachtenberg's phonetic work is
"seriously defective" (1945:204) seems considerably overstated. Frach-
tenberg evidently shared the common goal of linguists of his day, to re-
cord phonetic detail as accurately as possible; the concept of the pho-
neme, after all, was hardly in widespread use in 1914. Later, Jacobs
was influenced by phonemic theory; while his texts are not phonemicized,
they show evidence of considerable (perhaps intuitive?) regularization.

The problems I have faced in phonemicizing Frachtenberg's transcrip-
tions therefore are not, as far as I can tell, due to his lack of phone-
tic skill; rather, perhaps the reverse, since the material was not eli-
cited with a view to eventual phonemic analysis. Frachtenberg was not
concerned with whether ma and maᶜ ("thou") were "the same" or not, but
with whether those were accurate recordings of what Hartless said.

It is possible that an examination of more than the six myths with
which I worked would reveal more of the structure and help resolve the
remaining uncertainties. More likely, the ethnographic texts should be

examined, to compensate for whatever stylistic peculiarities the myths possess--in particular, some of the rhetorical lengthening might be sorted out in this way.

To recapitulate briefly: I tallied each occurrence of each form (Frachtenberg's "words," those items written with spaces on each side) in the first six Mary's River myths collected from William Hartless. Those forms which occurred most frequently--the "modal" forms--were first compared to reveal distributional patterns; tentative phonemic contrasts, or allophonic variations, were set up. Then the single instances and non-modal variants were examined, to help confirm or modify the emerging phonemic patterns.

I arrived at a system of 21 consonants, six vowels, four diphthongs, and phonemic stress. This includes two obstruent series, glottalized and unglottalized, five fricatives, three resonants (two nasals and one voiced lateral), and two glides. The vowels occur in three positions-- high to mid front, low center, high to mid back--with two degrees of length. Length is distinctive for one of the four diphthongs as well, since I was unable to account for the distribution of /au/ and /a·u/ other than by postulating contrast.

Four consonants had palatalized allophones: /c/, /s/, /k/, /l/. Two stops had voiced allophones: /t/, /p/ (and possibly /k/ as well; Frachtenberg's writing makes g, if it occurs, indistinguishable from q.) The velars were so distributed that it was necessary to put [q] and [k] together, although it is possible that they are really in contrast. I have no confidence that their distribution has been sorted out adequately from each other or from that of [q̓] and [k̓]. /kʷ/ and /k̓ʷ/ also

have rather random distributions and may not contrast. All glottalized

consonants have limited distributions, being found only initially. As

they are treated here, /w/ and /y/ also have only initial distributions.

Finally, sequences of glottal stop plus consonant (obstruent, fricative,

or resonant) vary with plain consonants. /ʔ/ and /h/, /ɬ/, and /x/ do

not cluster with other consonants initially or finally. /ʔ/ and /h/ ap-

pear to act importantly as boundary markers of syllables and/or mor-

phemes. /ʔ/, at least, is sometimes retained when suffixes are added.

/f/ seems to derive historically from a rounded velar fricative.

Clustering patterns are simple, clusters of two consonants being

the largest to occur initially or finally. Initially, obstruent plus

obstruent, fricative, or resonant, or fricative plus obstruent or reson-

ant, may occur; finally, disregarding glottal stop plus consonant, only

resonants and obstruents occur.

Several vowels have rather skewed distributions. None are common

initially, and no diphthong is found initially except /ui/. Long vowels

tend to be found stressed rather than unstressed, but this is only a

tendency. Stress entirely conditions length only for /ai/ ([aǐ] is un-

stressed, [a·i̯] is stressed).

[ə] is non-phonemic, occurring as an epenthetic vowel, with sylla-

bic nasals, and as a substitute for other vowels (especially /i/) in un-

stressed position.

Phonemic stress occurs on the first syllable of stems, and is ac-

companied by higher (or perhaps sometimes by lower) pitch. Other infor-

mation concerning pitch and intonation is substantially lacking.

The canonical form of syllables is (C)V(C), in which C = one or two

consonants and V = long or short single vowels or diphthongs, or nasals.

The probable segmental phonemes, then, are the following:

Consonants

	Obstruents		Fricatives	Resonants	Glides
	Plain	Glottalized			
Labial	p	p̉ :	f	m	w
Alveo-dental, Alveo-palatal	t	t̉ :	s	n	y
	c	c̉ ·	ł	1	
Velar	k	k̉ :	x		
Labiovelar	k^w	$k̉^w$.			
Glottal		ʔ	h		

	Vowels				Diphthongs		
	Front	Center	Back				
High	i i·		u u·		ai		ui
Low		a a·				au a·u	

The Areal Context

The interpretation of Mary's River Kalapuyan phonology offered ten-
tatively here has presented a rather simple system, compared to others in
the Northwest. In particular, glottalization, while not as sporadic and
unpredictable as Shipley claimed ("their occurrence is entirely unsystem-
atic" [1969:227-228]; Jacobs rightly objected to "this conclusion about
glottalizations ... popping and crackling unpredictably here and there"
[1970:67]), is not as important as it is in other regional languages;
neither do the consonant clusters reach the size they attain elsewhere.

It is of some interest to look at the phonemic systems of

neighboring languages. Molala appears to be highly similar to Mary's River, to judge by Rigsby's (1969:144) phonemicization of Frachtenberg's Molala. There are two series of obstruents, glottalized and unglottal-ized (p, t, c, k, q, however, not p, t, c, k, k^W); Molala lacks an /x/, but the other fricatives are the same; the resonants are the same except for the addition of /ŋ/. There are four vowels, with length phonemic. At a brief glance, the clusters look rather like Mary's River; Rigsby has only a table of phonemes and does not discuss clusters or other phenomena. In the Northwest, the /f/ is shared only by Molala and Kalapuyan. The remarkable similarity in phonemic structures is not paralleled by the same degree of lexical or grammatical similarity, however.

The related Takelma, as presented by Shipley (1969), has three series of stops, glottalized, aspirated, and plain, at the same articulatory positions as Kalapuyan (except that /c/ does not occur aspirated). It lacks the /f/ and /ł/, but the other fricatives and resonants are the same. There are five vowels, with length phonemic, and two pitches. Shipley appears to treat the diphthongs as vowel plus /w/ or /y/. This system too is much like Mary's River, if the aspirated stops are ignored.

Phonemic analyses are not available for all of the Oregon Coast languages, but Pierce (1971) reports, for Hanis Coos, three vowels plus length, diphthongs (number unspecified), and three complex-appearing obstruent series--voiceless, voiced, and glottalized--with three sets of affricates and two velar distinctions. Consonant clusters are not discussed. There is, in short, not much resemblance to Kalapuyan other than the vowels.

Chinookan is noted for its exuberance of Northwest-appearing clusters and glottalized consonants; in this respect, it is unlike Kalapuyan also.

Scherzer's discussion of areal traits for North American Indian languages (1973:766-773) is helpful in trying to relate Kalapuyan to other languages of the area, though his concern is not to present entire phonemic systems for particular languages. According to the traits he presents, Kalapuyan seems closer to the Plateau area phonologically, and somewhat less close to the Northwest Coast (Scherzer treats these separately but considers them part of a single linguistic area). California and the Great Basin, other possible regional affiliations, do not seem particularly close.

Of the six phonological features Scherzer lists as "central area traits" of the Plateau, all but the last are found in Mary's River. The six are: glottalized stop series, a q sound, labiovelars phonemically distinct, one fricative series, velar fricatives, and the sounds 1, ɬ, λ, and ƛ. ([1] and [ɬ], but not [λ] and [ƛ], are found in Kalapuyan). He mentions two other traits as rarely found outside the Plateau: pharyngeal phonemes and glottalized continuants. The first is not found in Kalapuyan, the latter is, though not phonemically. The six Plateau area traits and the two typical ones are also shared by the Northwest Coast, which has in addition s/š and c/č oppositions; these are not found as phonemic distinctions in Mary's River, nor is the [λ], which is not a central area trait but is seldom found outside the Northwest Coast. Both Northwest Coast and Plateau are said to lack languages (except Kutenai) with one stop series and voiced fricatives.

Similarities to Molala and to the Plateau are not in the least sur-
prising, since it is well known that phonological features can spread
across lines of genetic relationship, and indeed have done so in the
Northwest. Similarities in phonological features thus indicate more
about communication networks than about common ancestral ties. In par-
ticular, the degree of similarity to Molala would seem to indicate a
rather high degree of social interaction between Kalapuyan and Molala
speakers over a considerable period of time. Perhaps a closer examina-
tion of phonological systems in surrounding areas could shed light on
former historical contacts between Kalapuyan speakers and other groups.

Conclusion

My analysis is not a complete solution of Mary's River phonology;
a number of uncertainties remain. It is only a beginning step in the
understanding of the Kalapuyan languages. A necessary next step must be
a description of the morphology; this will be of considerable help in
solving some phonological problems. The other two Kalapuyan languages
remain to be described, as well; the relationships between the three,
and internal dialect differences and relationships, have to be dealt
with. Eventually, I hope, the genetic relationships within Takelman,
.and between Takelman and other Penutian languages, can be worked out.

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Mary's River texts, Vol. I, p. 2.   Page 2 of "Coyote and the Gamblers"

APPENDIX

The preceding page is a copy of page two of the first volume of the
Mary's River texts, and is a fair sample of the Frachtenberg manuscripts.
Following is a list of the forms on this page, together with variants of
the forms found elsewhere in the manuscripts, and the number of times
each one occurs. Modal forms, if they exist, are starred. I have pro-
vided a phonemic transcription for each form; in some cases I am not sure
if the transcription is correct.

an (not tallied; three instances   "the" (noun prefix)   /an/
    on page 2 alone)

ó·tni·kwan (1)   "looking"   /ú·tni·k^{w}an/

pá·si· (1)   "thus"   /pá·si·/ ?
    pás·i· (1)
    pá·si (1)

pási·yu· (2)   "thus also"   /pási·yu·/
    pás·i·yu· (1)

tᵫ' (2)   "I (?); how"   /ti/
    tᵫ (16) *
    tᵫ·
    te· (1)

tEm (32)   "his, her; my (?)"   /tm̩/

tu· (49)   "to, over, in, from" /tu·/

tóqya (1)   "fire"   /túkya/

tcîm (9) *   "I'd better, I will" /cm̩/ ,
    tcim (2)
    tc·îm (1)
    tcEm (1)
    tcum· (1)

tcí·pkam (8) *   "long ago"   /cí·pkam/
    tcí·pkan (1)

<u>tcámbᵾk·</u> (1)	"chief"	/cámpik/
<u>tcámbek</u> (1)		
<u>tc·ámbek·</u> (1)		
<u>tcámbek·</u> (16) *		
<u>tcámbᵾk</u> (1)		
<u>tcámpᵾk·</u> (1)		
<u>tsámbek·</u> (2)		
<u>tsámbek</u> (1)		
<u>tcòʿ</u> (3)	"where"	/cuh/
<u>tco</u> (1)		
<u>tcoʿ</u> (14) *		
<u>tc·oʿ</u> (3)		
<u>tc·o</u> (3)		
<u>tc·ò</u>		
<u>ts·oʔ</u> (1)		
<u>tsuʿ</u> (1)		
<u>kᵘm</u> (493) *	"he, it was (?)"	/kʷm̩/
<u>kum</u> (116)		
<u>kuᵐ</u> (1)		
<u>kEm</u> (1)		
<u>qan</u> (16)	"went"	/kan/
<u>kamán</u> (6) *	"will be; was"	/kamán/
<u>kamán</u> (1)		
<u>káni·</u> (4)	"they (go?)"	/káni/ ?
<u>kanne</u> (4)		
<u>kane</u> (1)		
<u>kanni</u> (2)		
<u>kínne·</u> (2)	"they are" (?)	/kíni/ ?
<u>kínne</u> (12)		
<u>kînne</u> (17)		
<u>k·inne</u> (1)		
<u>k·înne</u> (5)		
<u>kine</u> (118) *		
<u>kíne</u> (36)		
<u>k·îne</u> (28)		
<u>k·ine</u> (48)		
<u>kînt</u> (71) *	"I, he, (we?) went"	/kint/
<u>k·înt</u> (48)		
<u>kîntʿ</u> (13)		
<u>kint</u> (45)		
<u>k·întʿ</u> (1)		
<u>k·int</u> (7)		
<u>kaú·ni·</u> (6) *	"road, tracks"	/ká·uni?/
<u>kaᵘni·ʔ</u> (1)		

ka·^u·ni·ʔ (2)
ka^u·ʔni·ʔ (1)
k'a^uni·ʔ (1)
k'auniʿ (1)
k'au·ni· (1)
kaú·ni· (3)
k'aúni· (1)

hoi· (1)   "be"   /hui/
  ho·i (12) *

haʔyu· (1)   ?   /haʔyu·/

hɛ̈k· (32) *   "went on, go"   /hik/
  hɛ̈k (1)
  hɛ̈·k· (10)
  haik (1)
  ha·ik· (1)

ma· (68) *   "house"   /ma·/
  ma·ʿ· (2)
  mà·ʿ (1)
  ma (1)

ma·i· (1)   "fire"   /mai/ ?
  mai· (2)   (house?)
  maî (1)
  ma· (11) *

ména· (1)   "out"   /ména·/

nak (164)   "say, said"   /nak/

la^uʔ (87) *   "then, now"   /lauʔ/
  l·a^uʔ (2)
  la^u· (1)
  la^u (1)

la^uʔm̩tɨ (119)   "then, now (I?)"   /laúʔm̩ti/
  la^{uʔu}m̩tɨ (1)
  la^uʔmîtɨ (2)
  la·^um̩ta (1)
  la^um̩tɨ (23)
  la·^um̩tɨ (1)
  la^uʔm̩tɨ (42)
  la·^uʔm̩tɨ (2)
  la^um̩tɨ (48)
  la·^{uʔu}m̩tɨ (1)
  la^u·m̩tɨ (1)
  la^uʔm^îtɨ (1)
  la^umîtɨ (3)
  l·a^uʔm̩tɨ (1)

la·$\overset{\acute{a}}{}$mt_ɥ (1)
lá·mtɥ (2)
l·á·mⁱtɥ (2)
lá·ɱtɥ (2)
lá·mEtɥ (1)
l·á·mtɥ (115)
l·a·mîtɥ (4)
lá·mⁱtɥ (4)
lá·mtɥ̃ (81)
lámtɥ (1)
l·a·ɱtɥ (5)

Lá·mo (2)   "inside"   /lá·mu/
  Lámo (1)
  lá·mo (30) *
  lámo (1)
  lámo (1)
  lá?mo (1)
  ɫámo (1)
  Lá·ma (1)

wo·ʔk (58) *   "there"   /wu·k/
  wo·ʔk (1)
  woʔk (1)

wáʔna (13) *   "to another"   /wáʔna/
  wána‘ (2)
  wá‘na (1)

wa^ú·sô? (1)   "nobody"   /wá·usuʔ/
  wa·^ú·(·)soʔ (2)
  wa·^úsô? (1)
  wa·^{ú(·)}soʔ (3)
  wa^ú·(·)soʔ (3)

k^uwa·^{ú(·)}soʔ (1)   "nobody is there"   /kuwá·usuʔ/ ?
  kuwa^{ú·(·)}s·oʔ (1)
  kuwa^{ú·(·)}soʔ (2)
  kuwa^{ú·(·)}s·u·ʔ (1)

wa·^{úʔ(·)}si·yu· (1)   "nobody there also"   /wá·usi·yu·/
  wa^ú·si·yu· (1)

wa·^{ú(·)}si·yu·wi· (1)   "nobody there also   /wá·usi·yu·wi·/ ?
  wa·^ú·si·yûwi· (1)   indeed"

wa·? (7)   "no, not"   /waʔ/
  waʔ^a (1)
  waʔ (102) *

yú·wi· (8)   "again"   /yú·wi·/ ?
  yú·wî (8)

yú·wî· (2)
hyú·wi· (1)