A LOWER CHEHALIS PHONOLOGY

by

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C.T.S.

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CHAPTER ONE

Classification of Lower Chehalis

The Lower Chehalis language,[1] spoken in a limited region of southwestern Washington, is a member of the Olympic Branch of the Coast Division of Salish, a North American Indian language family. Boas classified Salish into Interior and Coast "dialects" and regarded Lower Chehalis and Upper Chehalis as paired main dialects within the Coastal Group, giving Quinault, Humptulips, and Lower Chehalis as subdialects of a main dialect, Lower Chehalis.[2] Swadesh's classification of the Salish languages, based on the application of lexicostatistic dating to the data from Boas' "Comparative Salish Vocabularies",[3] put Lower Chehalis with the "Satsop Group" (that is, Upper Chehalis and Lower Cowlitz) and Quinault as coordinate units within

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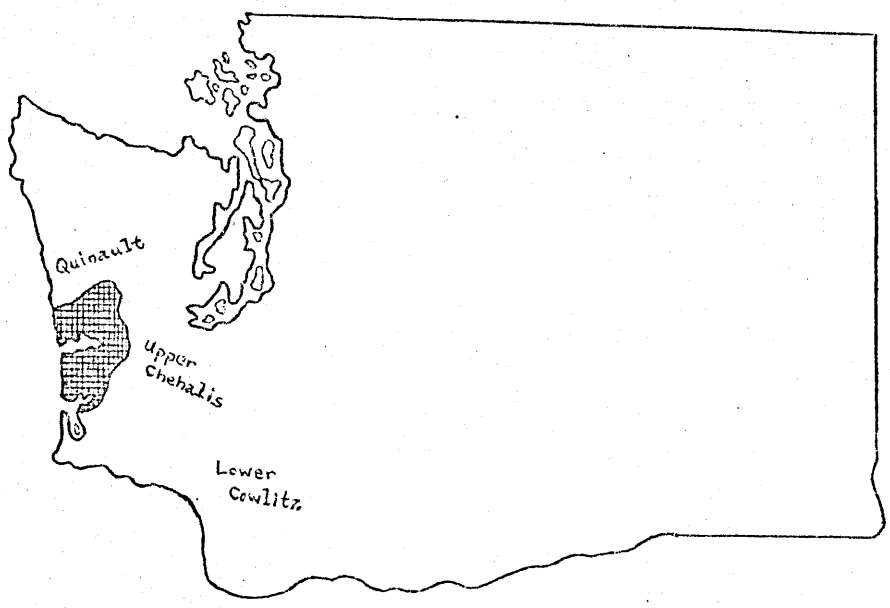
[1]Fieldwork for this project was conducted in the Spring of 1967 by M. Dale Kinkade and by the author during the summers of 1967 and 1968. The project was supported by a National Science Foundation Grant in coordination with the Survey of Linguistic Relationships. During the academic year 1967-1968, further research by the author was made possible by a half-time research assistantship administered by the Department of Anthropology of the University of Kansas.

[2]Boas, Franz, and Herman Haeberlin. "Sound Shifts in Salishan Dialects", International Journal of American Linguistics, 4: 117-136 (1927).

[3]Boas, Franz. "Comparative Salish Vocabularies", manuscript S2 in the Franz Boas Collection on American Indian Languages. The American Philosophical Society, Philadelphia, ca. 1925.

FIGURE 1

Map of Washington



The shaded area represents the approximate area occupied formerly by the Lower Chehalis.[4]

the Olympic Branch of the Coast Division.[5] Comparison of the Lower Chehalis materials obtained during the present investigation with data recently made available from Quinault[6]

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[4]Boas and Haeberlin, op. cit., p. 119.

[5]Swadesh, Morris. "Salish Internal Relationships", International Journal of American Linguistics, 16: 157-167 (1950).

[6]Gibson, James A. "Quinault Phonemics", Unpublished master's thesis, University of Washington, 1964.

and from Upper Chehalis[7] suggests that Lower Chehalis and Quinault are more closely related to each other than they are to Upper Chehalis (which Swadesh classified within the "Satsop Group"). Thus it would appear more correct to regard Lower Chehalis and Quinault together as constituting a sub-group of the Olympic Branch.

There may have been as many as five dialects of Lower Chehalis formerly: Copalis, Humptulips, Wynoochie, Grays Harbor, and Willapa.[8] Some of the informants have indicated that Humptulips was a dialect of Lower Chehalis, instead of a separate language; it will be treated in this report as one of the Lower Chehalis dialects, rather than according to Boas' classification. Nevertheless, the exact status of any of the dialects has yet to be determined, with the possible exception of the one(s) represented by the speech of the informants involved in this study.

Current Status of the Language

It is difficult to determine from the population figures that Powell gives how many Lower Chehalis were living at the time of his investigation; but it would

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[7]Kinkade, M. Dale. "Phonology and Morphology of Upper Chehalis", Parts I-IV, International Journal of American Linguistics, 29: 181-195, 345-356 (1963), 30: 32-61, 251-260 (1964); and "Vowel Alternation in Upper Chehalis", International Journal of American Linguistics, 32: 343-349 (1966).

[8]This was pointed out to me by Kinkade.

seem that the number was not large.[9]

The figures given by Chafe for the number of remaining speakers of Lower Chehalis appear to be approximately correct.[10] In 1967, only eight persons could be located who avowed knowledge of the language or were reputed to be speakers. From this group the four individuals who served as informants were: Mrs. Nina Charley Bumgarner, of Taholah; Mr. Lewis Hawks, of Bay Center; Mrs. Edna Clark Olsen, of South Bend; and Mr. Claude Waine, also of South Bend.[11]

The Aims and General Outline of the Report

In view of the fact that Lower Chehalis, like a number of other North American Indian languages, is imminently bound to become extinct within a relatively few years, the importance of recording as much data as possible is quite obvious. The availability of such data is a requisite for comparison with materials from other related

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[9] Powell, J.W. "Indian Linguistic Families North of Mexico", Seventh Annual Report, Bureau of American Ethnology, Government Printing Office, Washington, D.C., 1891, p. 100.

[10] Chafe, Wallace L. "Estimates Regarding the Present Speakers of North American Indian Languages", International Journal of American Linguistics, 28: 162-171, (1962). He gives the number of speakers as ten, all of them over fifty years of age.

[11] The average age of the informants at that time was sixty-seven; the oldest informant was sixty-nine, and the youngest was sixty-four.

languages for the purpose of determining the nature of their interrelationships.

Other than the limited information gathered by Teit and Boas around the turn of this century,[12] the only other published sources of Lower Chehalis are some sketchy forms recorded during the 19th Century. For example, Swan[13] lists chett'low "oysters", moo'ser "eyes", nar-whatl' "yes", par'nich "ten", and sartl "two", which have been recorded during the present investigation as c̓ə́ɬex̓ʷ , mú?su?, naxʷáɬ ("correct/true"), pá·n̓əč, and sal̓, respectively.

The intention of this thesis is to present a description of the phonology of Lower Chehalis based on the items obtained through interviews with the informants during the summers of 1967 and 1968. A thorough description of the language, including a complete statement on the semological component,[14] is not yet possible owing to the lack of sufficient primary data.[15] Although most of the data recorded consist of lexical items, the limited amount

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[12]Boas and Haeberlin, op. cit.

[13]Swan, James G. The Northwest Coast; or, three years' residence in Washington Territory, Harper and Brothers, New York, 1857, pp. 412-421.

[14]Cf. Wallace L. Chafe, "Language as Symbolization", Language, 43: 57-91 (1967).

[15]One of the main problems encountered during work in the field was the fact that each of the informants has spoken English to the virtual exclusion of Lower Chehalis for many years, and none of them could be considered to be fluent in the latter language.

of textual material which is available provides some information about the morphophonemics of the language.

Chapter Two includes a brief and informal characterization of the phonological component and of systematic phonemics. The chapter also includes an explanation of the distinctive features appearing in the report, the set of fully-specified phonemes of the language, and a short discussion of glottalized sonorants.

The phonological rules which are proposed for the language appear in Chapter Three. Due to the limitations of the field data (see footnote 15), the possibility of determining the syntactic structure to a reasonable extent, and hence the nature of the syntactically-determined phonological rules of the language, has been considerably restricted. In particular, the rules governing the placement of stress, on polysyllabic stems in isolation and on formatives in strings, are presently indeterminable. Throughout the report, forms given in systematic phonemic orthography are marked for primary stress, and phonetic data are marked for primary and, if occurrent, secondary stress.

In Chapter Four, irregular or otherwise unexplainable items in the data are discussed, and there are brief sections on reduplication and on loanwords.

The glossary lists all of the Lower Chehalis forms cited in the text of the report as well as the items from a lexicostatistical word list which it was possible

to elicit.[16] In general, the English glosses are the ones suggested by the informants.

Throughout the report, the orthographic symbols used in the systematic phonemic citation of forms correspond to the phonemic orthography used for Upper Chehalis,[17] except for the following: whereas the symbols /ɬ̓/, /e/, and /o/ are used for Upper Chehalis citations, ḷ, i, and u, respectively, are employed for the segments to which these symbols correspond in Lower Chehalis.

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[16] Samarin, William J. Field Linguistics, Holt, Rinehart and Winston, New York, 1967, p. 220.

[17] Kinkade, "Phonology and Morphology of Upper Chehalis", op. cit. See especially Part I, pp. 182ff. Not then reported for Upper Chehalis are: l̓, n̓, m̓, w̓ and y̓, but Kinkade now believes these to be necessary for an accurate description of Upper Chehalis phonology (personal communication). A phoneme /ə·/ is reported for Upper Chehalis; in Lower Chehalis the vowel ə is always nonlong.

CHAPTER TWO

The Phonological Component

Although there is a considerable diversity of opinion regarding the precise nature of the phonological component in a generative grammar, there are certain aspects of generative phonology about which there is relative agreement. Specifically, the theory states that for each language there exist phonological rules, or P rules, some of which can be stated in terms of universal interpretive principles and others which must be formulated as language-particular rules. The function of P rules is to derive phonetic representation from the more abstract level of systematic phonemics;[18] thus P rules map structures of one level onto those of another.[19] Furthermore, the P rules constitute an ordered set which apply cyclically, starting with the minimal elements of surface syntactic structure and working "outward" from the innermost constituents (or "upward" if the structure is represented in a tree-diagram) until they are exhausted, i.e., none apply.[20]

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[18] Stanley, Richard. "Redundancy Rules in Phonology", Language, 43: p. 407 (1967).

[19] Ibid., p. 424.

[20] Chomsky, Noam. Aspects of the Theory of Syntax, The M.I.T. Press, Cambridge, Massachusetts, 1965, p. 143. However, as Stanley, op. cit., p. 395, indicates, neither redundancy rules nor low level phonetic rules apply cyclically.

Systematic Phonemics and Phonological Redundancy

The level of systematic phonemics is not to be mistaken for one at which all of the predictable phonetic features have been extracted and only the "relative distinctions" are mentioned. The distinction between P rules, which change feature values, and redundancy rules, which state redundancies at the systematic phonemic level, is quite clear. As Stanley has pointed out, however, unless the inputs to the P rules are fully specified matrices, i.e., containing no blanks, specious generalizations can result from the improper use of blanks in which they acquire a "third" value which is neither plus nor minus (or, neither marked nor unmarked, as the case may be).[21]

Stanley's proposal for Morpheme Structure Conditions represents somewhat of a departure from previous work in generative phonology with regard to redundancy rules. Whereas phonological redundancy has usually been treated within generative phonology by Morpheme Structure rules and Blank Filling rules, each constituting an ordered subset of the P rules, Stanley's argument is that a set of unordered statements about the structure of morphemes---the Morpheme Structure Conditions---is adequate to account for phonological redundancy and that in keeping such statements separate from the phonological rules of a language,

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[21]Stanley, op. cit., pp. 409-411.

the problems which can arise from having the latter rules apply to matrices that contain blanks are avoided.[22] Thus while P rules change feature values and relate the level of systematic phonemics to phonetic substance, the Morpheme Structure Conditions, quite apart, are statements about the constraints on morpheme segment structure and morpheme sequence structure by which real economy can be achieved in dictionary entries.

The Distinctive Features

The distinctive features employed in this report are defined in Chomsky and Halle.[23] For the most part they are described in articulatory terms.

Among the major class features are "consonantal" and "vocalic". Consonantal sounds are produced with a radical obstruction in the central region of the vocal cavity; the obstruction must be at least as great as that found in fricatives. Sounds which are articulated without such an obstruction are nonconsonantal.[24]

Vocalic sounds are produced with an oral cavity in which the most radical constriction is less than that found in fricatives; and the vocal cords are positioned

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[22] Ibid., p. 424.

[23] Chomsky, Noam, and Morris Halle. The Sound Pattern of English, Harper and Row, New York, 1968, pp. 293-329.

[24] Ibid., p. 302.

to allow spontaneous voicing. Sounds which fail to meet one or both of these conditions are nonvocalic.[25]

Among the cavity features are "anterior", "coronal", tongue-body features, "rounded", and features involving secondary apertures. The feature "anterior" refers to sounds produced with an obstruction which is located in front of the palato-alveolar region of the vocal tract. Sounds produced without such an obstruction are nonanterior.[26]

The feature "coronal" refers to sounds in which the blade of the tongue is raised from its neutral position, i.e., the position of the tongue at rest. Sounds produced with the blade of the tongue in the neutral position are noncoronal.[27]

The tongue-body features are "high", "low", and "back". Sounds which are "high" are those which are produced with the body of the tongue raised above the neutral position; sounds produced with the body of the tongue in the neutral position are nonhigh.[28]

Sounds which are "low" are produced by lowering the body of the tongue below the neutral position; nonlow

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[25] Ibid.

[26] Ibid., p. 304. In consonants the feature "anterior" corresponds to the earlier feature "diffuse".

[27] Ibid. "Coronal" corresponds to earlier "nongrave" in consonants.

[28] Ibid.

sounds are produced without lowering the body of the tongue from this position.[29]

And sounds which are "back" are articulated by retracting the body of the tongue from the neutral position; nonback sounds are produced without such a retraction.[30]

Sounds characterized by the feature "rounded" are produced with a narrowing of the lip orifice; sounds articulated without such a narrowing are nonrounded.[31]

Features involving secondary apertures are "nasal" and "lateral". The production of nasal sounds involves a lowering of the velum with the effect that the air stream is directed through the nasal cavity; the velum is raised in the production of nonnasal sounds so that the air escapes through the oral cavity.[32]

Lateral sounds are produced by lowering the mid section of the tongue at one or both sides so that the air escapes over the sides of the tongue; nonlateral sounds are produced without such a side passage.[33]

"Continuant" and "glottalized" are manner of articulation features. Continuant sounds are produced with a maximal constriction not exceeding that of

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[29] Ibid., p. 305.

[30] Ibid.

[31] Ibid.

[32] Ibid., p. 316.

[33] Ibid., p. 317.

fricatives; thus the air flow past the constriction in the vocal cavity may be impeded, but it is not blocked. Noncontinuant sounds involve a constriction sufficient to effectively block the air flow.[34]

Glottalized sounds are produced by checking the air stream with an upward movement of the glottis, which is compressed or closed. Nonglottalized sounds are produced without such a movement.[35]

The feature "strident" is one of the source features. Strident sounds are characterized as being "noiser" than nonstrident sounds due to the increased turbulence at the point of articulation in the former.[36]

Jakobson, Fant and Halle define the prosodic opposition of "long" versus "short" (nonlong) as being based on the relative, rather than absolute, duration of the segments in a given sequence. The duration of long sounds is relatively greater than that of nonlong segments.[37]

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[34] Ibid.

[35] Ibid., p. 323. Chomsky and Halle subsume the feature "glottalized" under "ejection".

[36] Ibid., p. 329.

[37] Jakobson, Roman, C. Gunnar M. Fant and Morris Halle. Preliminaries to Speech Analysis, The M.I.T. Press, Cambridge, 1951, p. 14.

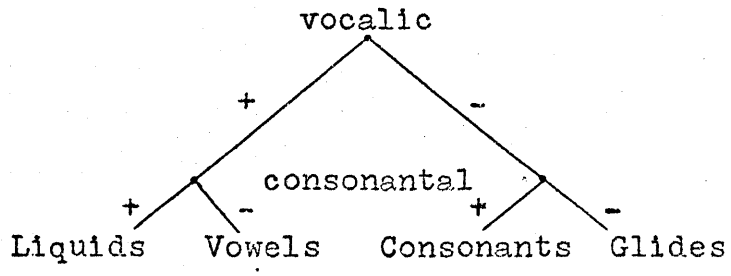
The Phonemes of Lower Chehalis

The distinctive feature representation for the systematic phonemes of Lower Chehalis in which each value is specified binarily for every segment as having either a plus or a minus value appears in Table 1.

This representation provides for four major classes of segments (Figure 2): Liquids, which are [+ vocalic + consonantal]; Vowels, which are [+ vocalic - consonantal]; Consonants, which are [- vocalic + consonantal]; and Glides, which are [- vocalic - consonantal].

FIGURE 2

The Major Natural Classes of Segments



Lines leading downward and to the left of the nodes represent plus values; and lines leading to the right represent minus values.

TABLE 1

THE FULLY-SPECIFIED SYSTEMATIC PHONEMES OF LOWER CHEHALIS

	l̓	l	a·	a	u·	u	i·	i	ə	ɬ	s	n̓	n	ɬ̓	c̓	c	t̓	t	m̓	m	p̓	p
vocalic	+	+	+	+	+	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-
consonantal	+	+	-	-	-	-	-	-	-	+	+	+	+	+	+	+	+	+	+	+	+	+
anterior	+	+	-	-	-	-	-	-	-	+	+	+	+	+	+	+	+	+	+	+	+	+
coronal	+	+	-	-	-	-	-	-	-	+	+	+	+	+	+	+	+	+	-	-	-	-
low	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
back	-	-	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
high	-	-	-	-	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
continuant	+	+	+	+	+	+	+	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-
rounded	-	-	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
nasal	-	-	-	-	-	-	-	-	-	-	-	+	+	-	-	-	-	-	+	+	-	-
lateral	+	+	-	-	-	-	-	-	-	+	-	-	-	+	-	-	-	-	-	-	-	-
strident	-	-	-	-	-	-	-	-	-	+	+	-	-	+	+	+	-	-	-	-	-	-
long	-	-	+	-	+	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
glottalized	+	-	-	-	-	-	-	-	-	-	-	+	-	+	+	-	+	-	+	-	+	-

	s̓	c̓	č	x̓ʷ	x̣	q̓ʷ	qʷ	q̓	q	xʷ	k̓ʷ	kʷ	k̓	k	w̓	w	y̓	y	h	ʔ
vocalic	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
consonantal	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	-	-	-	-	-
anterior	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
coronal	+	+	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
low	-	-	-	+	+	+	+	+	+	-	-	-	-	-	-	-	-	-	-	-
back	-	-	-	+	+	+	+	+	+	+	+	+	+	+	+	+	-	-	-	-
high	+	+	+	-	-	-	-	-	-	+	+	+	+	+	+	+	+	+	-	-
continuant	+	-	-	+	+	-	-	-	-	+	-	-	-	-	+	+	+	+	+	-
rounded	-	-	-	+	-	+	+	-	-	+	+	+	-	-	+	+	-	-	-	-
nasal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
lateral	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
strident	+	+	+	+	+	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-
long	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
glottalized	-	+	-	-	-	+	-	+	-	-	+	-	+	-	+	-	+	-	-	+

The distinctions among the segments of each major class are represented by the tree-diagrams of Figures 3, 4, and 5. The Liquids, l̓ and l, are distinguished by their having opposite values for the feature "glottalized".

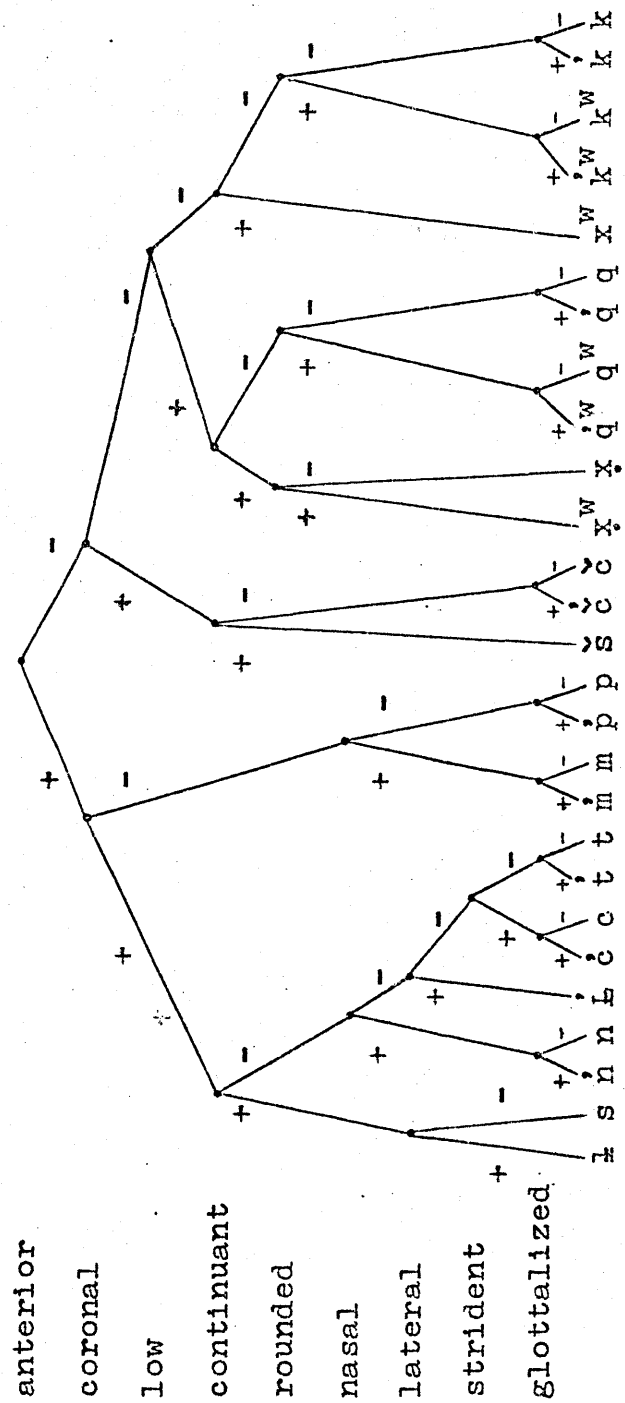


FIGURE 3

Consonants

FIGURE 4

Vowels

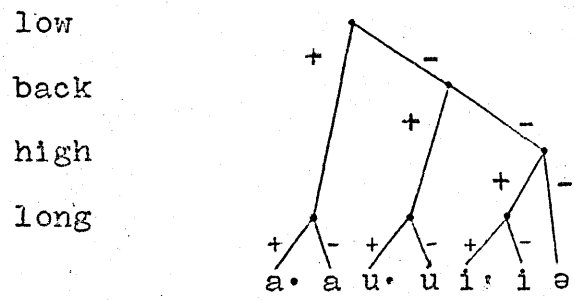
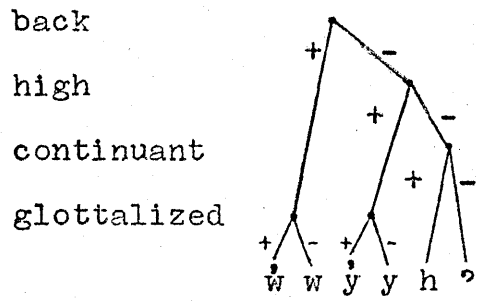


FIGURE 5

Glides



The Feature Hierarchy

Although there appears to be a clear notion of "hierarchy of features" in the theory of generative grammar, it is evident that our understanding of this hierarchy is presently deficient. But as Postal points out, even though the "trees" of phonological features which appear in many systematic descriptions are "neither actually a function of any phonological rules nor derivable in any systematic way from the grammar", they do seem to represent some "real facts about the relevant languages", and they "appear

to have much, if certainly not everything in common."[38]

It should be emphasized that although it is possible to schematize a unique "tree" based on the hierarchy of the phonological features in the matrix (Table 1), a change in the hierarchical arrangement of certain of these features would lead to a different tree. For example, the feature "strident" is redundantly specified for ḷ and all other segments in the matrix except ċ, c, ṭ, and t, for which it is distinctively specified. And each of the segments ḷ, ċ, c, ṭ, and t is distinctively specified for the feature "lateral". (See Figure 6.)

FIGURE 6

	Redundancy				
	ḷ	ċ	c	ṭ	t
lateral	+	-	-	-	-
strident	(+)	+	+	-	-

The value given in parentheses represents a redundant specification.

But if this arrangement were altered so that "strident" preceded "lateral" in the feature hierarchy, it would no longer be possible to construct the tree-diagram in the fashion prescribed by the original matrix; now the segment ḷ would be distinctively

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[38] Postal, Paul M. Aspects of Phonological Theory, Harper and Row, New York, 1968, p. 61 and p. 165.

specified for the feature "strident" (as well as for the feature "lateral"), and the specification of values for the feature "lateral" for the segments t̓ and t would be superfluous. (See Figure 7.)

FIGURE 7

Reordering Two Features

	ɬ̓	c̓	c	t̓	t
strident	+	+	+	-	-
lateral	+	-	-	(-)	(-)

Thus the formulation of a full set of statements concerning phonological redundancy in the language will depend in large part upon determining the proper order in which the distinctive features are arranged.

Additionally, the features may have a different order in different parts of the tree. For example, the feature order might be "low", "back", "high" for vowels, but "back", "low", "high" for consonants. In general, the more even the breaks the fewer the number of specifications that are required.[39]

Asymmetry

The inventory of phonological segments in Lower Chehalis is very similar to the system of Quinault[40]

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[39]Hoard (personal communication).

[40]Gibson, op. cit., p. 2, p. 9.

and to that of Upper Chehalis,[41] although there are some differences. It should be noted that the system is by no means symmetrical. There is no unrounded *x to contrast with rounded x^{w}, a contrast that is present among all other back consonants in the system, just as there is no nonglottalized *ɬ (except as a possible variant of the glottalized form) to contrast with glottalized ɬ̓, a contrast which is found among all other noncontinuant (stop) consonants.

In addition, the contrast between long and nonlong vowels is not present in the segment ə, which is always nonlong. The contrast between long and nonlong vowels is illustrated by the following examples:

t̓a·q^{w} [t̓ɐ·q^{w}] "lick"	paw̓ [paw^{ʔ}] "one"
stq̓á·l̓əq [stq̓ɐ·l̓ʌq] "feather"	ɬək̓^{w}át [ɬək̓^{w}á̭t] "hair"
sá·cət [sá̭· ci̭t] "belly"	culpálq [culpá̭lq] "cow"
smulá·qəm [smulɐ́·qʌm] "summer"	
mú·səm [mú·si̭m] "sleep"	músm̓us [músm̓us] "cow"
	mus [mus] ~ [mos] "four"[42]
ʔí·l̓əš [ʔí·l̓i̭š] "tomorrow"	ɬ̓əpílqs [ɬ̓i̭pílqs] "Palix River"
	ʔiɬ [ʔiɬ] "eat".

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[41] Kinkade, "Phonology and Morphology of Upper Chehalis: I", pp. 181-182.

[42] The notation "~" means "alternates freely with".

Glottalized Sonorants

Glottalized sonorants have been attested in several languages in the Northwest: Haida (a member of the Nadene stock), which has ẏ, ẇ, ṁ, ṅ, ŋ̇, and l̇; Tsimshian (Penutian stock) and Kwakiutl (Wakashan family), which have ẏ, ẇ, ṁ, ṅ, and l̇; and Nootka (Wakashan family), which has ẏ, ẇ, ṁ, and ṅ.[43]

The status of glottalized sonorants in certain Salish languages has been somewhat of an unresolved problem, although perhaps marginal. Gibson identifies glottalized variants for Quinault which he does not consider as being phonemically distinct from the nonglottalized ones.[44] Vogt states that in Kalispel "many words, nouns and verbs, contain glottalized sonants where no non-glottalized forms exist".[45] In Coeur d'Alene, however, the following glottalized segments contrast phonologically with corresponding nonglottalized ones: ẏ, ẇ, Ṙ, Ṙ^{w}, ṁ, ṅ, l̇, and ṙ.[46]

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[43] Sapir, Edward. "Glottalized Continuants in Navajo, Nootka and Kwakiutl (with a note on Indo-European)", Selected Writings of Edward Sapir in Language, Culture, and Personality, David G. Mandelbaum, editor, The University of California Press, Berkeley and Los Angeles, 1949, pp. 225-250. See especially p. 226f. Sonorants are also termed "resonants" or "sonants" by various other writers.

[44] Gibson, op. cit.

[45] Vogt, Hans. The Kalispel Language, I Kommisjon Hos Jacob Dybwad, Oslo, Norway, 1940, p. 64.

[46] Sloat, Clarence. "Phonological Redundancy Rules in Coeur d'Alene", unpublished doctoral thesis, University of Washington, 1966, 34-35.

Although there are no minimal pairs among the items in the present Lower Chehalis corpus, there are some sub-minimal contrasts between glottalized l̓, n̓, m̓, w̓, and y̓ and nonglottalized l, n, m, w, and y:

(l̓/l) p̓álən [p̓á'l̓ɨn] "tree bark"/ q̓ʷəlán̓ [q̓ʷʌlá'nˀ] "ear";

(n̓/n) sn̓íčca [sn̓íčč'a'] (a character in a story)/ snáˀčəm [snáˀˀa'čɨm] "old woman";

(m̓/m) t̓əm̓áxʷqəs [t̓ɨm̓áxʷqʌs] "beads"/ múy̓ʷən [móy̓ʷʌn] "pay";

(w̓/w) səw̓íč [səw̓íč'] "cattail"/ wičán [wič'á'n] "where?";

(y̓/y) sq̓ʷúy̓əq [sq̓ʷóy̓ʌq] "belch"/ syəq [syʌq] "name".

Also, there is some free variation between glottalized and nonglottalized segments, especially among nasals in word-final position. For example:

q̓ʷəlán̓ [q̓ʷʌlá'nˀ] ~ [q̓ʷʌlá'n] "ear".

Furthermore, a few forms which are cognate in Lower Chehalis and Quinault show a glottalized segment in the former language corresponding to a nonglottalized segment in the latter. For example, Lower Chehalis təptán̓ [tɨptá'nˀ] "beach" corresponds to Quinault

təptá°n;[47] and Lower Chehalis šúwəɬ [šúwəɬ] "road/path" is cognate with Quinault [šúg^{W}əɬ] (phonetically) "road".[48]

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[47]Gibson, op. cit., p. 11.

[48]From personal field data on Queets, a dialect of Quinault.

CHAPTER THREE

Lower Chehalis Phonological Rules

As mentioned above, the phonological rules of a language are the means of deriving phonetic strings from the more abstract level of systematic phonemic strings. In the theory of transformational grammar, the rewriting rules of the base, in the syntactic component, generate deep structure which consists of preterminal strings of labelled and bracketed grammatical formatives. Lexical formatives, each of which consists of a set of phonological, semantic, and syntactic features, are inserted into the strings in accordance with the transformational rules specified by the contextual features belonging to the lexical entries.[49] Just those strings which are well-formed are mapped into surface structure by the sequence of singularly transformations, which "filter out" those strings which do not meet this condition.[50] Surface structure is then given a phonetic interpretation by the rules of the phonological component and a semantic interpretation by the rules of the semantic

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[49] Chomsky, op. cit., pp. 82-90.

[50] Cf. C.J. Fillmore, "The Position of Embedding Transformations in a Grammar", Word, 19: 208-231 (1963).

component.[51]

The phonological rules of Lower Chehalis appear to be at least partially ordered. If further syntactic information were available, it should be possible to determine the depth of ordering more exactly, if not totally.

Rule (1)[52] applies to bisyllabic verb stems in which primary stress falls on the vowel of the second syllable of the base form:

(1) $X_1V_1X_2\acute{V}_2X_3 \rightarrow X_1\acute{V}_1X_2X_3 / \left\{ \begin{array}{l} \_\_ + \text{'continuative intransitive'} \\ \text{'past'} \end{array} \right\}$.[53]

With the addition of the suffix -ẃən denoting continuative intransitive aspect (-ẃ- continuative intransitive, -ən third singular subject) or in the context 'past', the stress falls on the vowel (V_1) of the first syllable of the stem, and the vowel (V_2) of the second syllable of the stem is

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[51] Chomsky, op. cit. See, however, James D. McCawley, "The Role of Semantics in a Grammar", Universals in Linguistic Theory, Emmon Bach and Robert T. Harms, editors, Holt, Rinehart and Winston, New York, 1968, pp. 124-169; and Wallace L. Chafe, "Language as Symbolization", op. cit, for a different interpretation in which the place of separate syntactic and semantic components within a system of description is seriously questioned.

[52] The numbering is simply a means of labelling the rules; it is not meant to imply that the numbers reflect any sort of ordering unless that is specifically stated.

[53] + represents morpheme (and in some cases word) boundary; V stands for vowel; and X represents a segment other than a vowel (i.e., a nonvowel).

elided. If X_3 is a stop, it may be aspirated; otherwise an epenthetic [ə] may me optionally inserted after X_3. Examples are:

ʔi-[54] + qəɬéq "run (males)" + -ẇən → ʔiqéɬqẇən "He is running";

ʔi- + ɬəq̓éč "cry (males)" + -ẇən → ʔiɬéq̓čẇən "He is crying";

ʔi- + hanés "thunder" + -ẇən → ʔihánsẇən "It is thundering";

ʔi- + čəpáx̣ "lighten (referring to weather)" + -ẇən → ʔičépx̣ẇən "It is lightning";

tit (definite article) + yəléx̣^{W} "find" + 'past' + -ən (transitive marker) + -čən "I" → tyélx̣^{W}ənčən "I found it"; and

hílu (negative) + ʔac- (stative aspect) + yəléx̣^{W} + 'past' + -ən (transitive marker) + tat (definite article) + x̣áʔqaʔ → hílu ʔacyélx̣^{W}ən tat x̣áʔqaʔ "The children have not been found".

There are a number of other lexica of this type whose function seems to be essentially one of predication. For example:

kʷətéxʷ "swell"; ʔackʷétxʷəɬ "It is swollen" (-əɬ intransitive suffix);

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[54] ʔi- seems to be a prefix which also signals the continuative aspect in predication. It is, however, optional; thus ʔiqéɬqẇən ~ qéɬqẇən "He is running", etc.

nəx̣é́s "be sleepy"; ʔacnéx̣sy̓əq "(Someone) is sleepy" (-y̓əq lexical suffix);

c̓əlé́p "circle/be round"; ʔacc̓él̓pəɬtəm tat t̓əńíḿ "There is a circle around the moon" (c̓él̓pəɬ "round/circle around around the moon", -təm ?, t̓əńíḿ "moon"); and

ɬé́p(əɬ) "low/down/below"; siw ɬaɬ̓p "That is too low!" (siw "too (excessively)", ɬa- ?, ɬaɬ̓p "deep/low").

Rule (2) states that long vowels become short when unstressed:

(2) $[+\text{ long}] \rightarrow [-\text{ long}] / \begin{bmatrix} + \breve{V} \\ \_\_\_ \end{bmatrix}$.

For example, sá·cət "belly", phonetically [sá·cɨt] , but sa·cúl̓əč "intestines" [sa· cúl̓ɨč]. As a measure of economy in rule application, rule (1) preceeds (2); where rule (1) applies, theoretically rule (2) could only apply to V_1, the zero grade of V_2 nullifying the possibility of the rule applying to this segment in view of the condition that rules do not apply vacuously.[55]

Rule (3) applies to the formation of diminutives and, to a restricted degree, plurals. The rule, given informally in three parts is:

(3a) In the formation of the diminutive of trisyllabic

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[55]Postal, Paul. Constituent Structure: A Study of Contemporary Models of Syntactic Description, Indiana University, Bloomington, 1967, p. 10; and Chomsky, op. cit., p. 39.

stems by the addition of the suffix -u?, ? is inserted after the vowel of the stressed syllable of the stem.

(3b) In the formation of the diminutive of bisyllabic stems by the addition of the suffix -u?, ? is inserted after the vowel of the second syllable of the stem.

(3c) In the formation of the diminutive of monosyllabic stems by the addition of the suffix -u?, ? is inserted after the stem vowel.

Condition: the stem cannot contain ? in this position. If ? does occur in this position, the shape of the stem is not altered.

Exemplary of the application of rule (3a) are the following pairs, the second member of the pair being the diminutive form (or plural, as indicated):

łəwə́lm̓əš[56] "Lower Chehalis/Indian" and łəwə́?lm̓əšu? "a young Lower Chehalis person/a young Indian";

sk^{w}ənúłčič "owl" and sk^{w}ənú?łčiču? "little owl";

nułtálm̓əš "person" and nułtá?lm̓əšu? "teenage boy"; and

təl̓ápəš (?) and təlá?pəšu? "wild dog" (?).

Some examples of the application of rule (3b)

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[56] This was also recorded as [łəwə́l̓mɪš], [łəwə́ˀlmɪš], and [łəwə́ˀləmɪš].

to bisyllabic stems are:

syəlqín "slave" and syəlqí?nu? "little slave";

sk^{w}iyúh "squirrel" and sk^{w}iyú?hu? "little squirrel";

cəqáɬ "tree" and cəqá?ɬu? "sapling";

sqíqɬnəɬ "woman/female" and sqíqɬnə?ɬu? "little girl";

čít(an) "older brother" and číta?nu? "adolescent brother";

sná?čəm "old woman" and sná?ča?mu?[57] "little old woman"; and

łək^{w}án "earring" and łək^{w}á?nu? "earrings" (-an lexical suffix "ear").

And examples of the application of (3c) to monosyllabic stems are:

x^{w}uk^{w} "small" and x^{w}ú?k^{w}u? "small one";

man "son" and má?nu? "small son";

yay "older sister" and yá?yu? "adolescent sister";

sx̣^{w}ux̣^{w} "old man" and sx̣^{w}á?x̣^{w}u? "little old man"; and

nəsč "younger brother" and ná?sču? "little brother".

The application of the rule is blocked when the condition stated in the rule is not met, as in the following:

łətí? "spoon" and łətí?u? "teaspoon" (rather than *łətí??u?); and

pu?š "cat" and pú?šu? "kitten" (and not *pú??šu?).

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[57] See the comment on vowel alternation below.

There are, in addition, a limited number of forms which are not explained by rule (3) and for which there is not enough information at the moment to determine the manner of diminutive or plural formation with a reasonable degree of certainty. For example, the following derivations:

xʷáʔaq "child", xʷáʔqaʔ "children", and xʷáʔquʔ "small child";

stíʔixʷ "man/male" and stíʔxʷuʔ "young man/boy"; and

qáxʷʔa[58] "dog" and qáxʷʔu "dogs" ('small dog' ?).

In the case of xʷáʔaq and stíʔixʷ, an extension of rule (3c) to account for the deletion of the second (unstressed) vowel in the derivative formation of the diminutive or the plural might be appropriate, but only if additional data were available to confirm this.

Rule (4) is a rule of assimilation which states that the contrast between rounded and unrounded back consonants adjacent to u within a morpheme is neutralized, all back consonants being rounded in this position:

$$(4)\quad [-\text{ rounded}] \rightarrow [+\text{ rounded}] \;/\; \begin{bmatrix} +\text{ C} \\ +\text{ back} \end{bmatrix} \_\_\_\_ * \begin{bmatrix} +\text{ V} \\ -\text{ low} \\ +\text{ back} \end{bmatrix}.\ ^{59}$$

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[58] This was also recorded as [qəxʷʔ].

[59] The notation $\phi \rightarrow \psi / \alpha * \beta$ is an abbreviation of two (rules involving) symmetric environments: 1) $\phi \rightarrow \psi / \alpha\beta$, and 2) $\phi \rightarrow \psi / \beta\alpha$.

The contrast between rounded and unrounded back consonants is maintained when adjacent to other vowels. For example:

xáʔqaʔ "children" versus x̣^{w}aq^{w} "all";

xəs "bad" versus yəx^{w} "daylight";

sqíqɬn̓əɬ "woman/female" versus q^{w}iq "green/yellow";

q̓əɬ "sweet" versus q̓^{w}ə́hɬm̓əɬ "write";

spaq "flower" and qapə́s "salt/salty" versus q^{w}aq^{w} "raven"; and

kənčúč "Canadian" versus k^{w}ən "hold/grasp".

Therefore it seems unlikely that all of the underlying back consonants adjacent to u are systematically rounded. But because of the indeterminacy of the systematic value for the feature "rounded" in this case, all segments which are subject to rule (4) are treated, according to the phonetic output, as though they were in fact systematically rounded.[60]

There are a number of instances of alternation between [ɬ] and [l] in several items in the corpus, but it is unclear what the exact circumstances leading to this alternation are. Some examples are (phonetically):

[pá‹·n̓ɬɬ] "bark (dogs)" and [ʔipá‹·n̓ɬlɬn] "barking";

[q̓^{w}ʌ́hɬm̓ɬɬ] "write" and [ʔeq̓^{w}ʌ́hɬm̓ɬlɬn] "writing";

[sút̓m̓ɬɬ] "be sick/vomit" and [ʔisút̓m̓ɬlɬn] "'being' sick";

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[60] Additional morphophonemic information could reduce the problem considerably; for example, there is evidence that some phonetic [ʊ]'s are systematically derived from phonemic ə̲ occurring between rounded velars. (This was pointed out to me by Kinkade.)

and [pə́·tm̓i+] "weave (baskets, etc.)" and [ʔipə́·tm̓i+in] "weaving".

The evidence is insufficient to determine whether the alternation is syntactically determined merely by the presence or absence of -ən (third singular subject) or whether the conditioning factors are more general than this.

Furthermore, the contrast between glottalized and nonglottalized liquids, nasals, and nonlow glides following a long vowel within a morpheme is neutralized, all of the former segments being glottalized in this position. For example: pá·n̓ə+ "bark (dogs)", ʔí·l̓əš "tomorrow", sm̓á·n̓əč "mountain", etc. It is unclear whether this is strictly a sequence constraint and that all of the underlying segments are systematically glottalized or whether long vowels have the capacity to glottalize these segments in this context.

Low Level Phonological Rules

There is considerably more variation in the articulation of vowels than there is in the production of liquids, consonants, and glides in Lower Chehalis. And among the vowels, the production of the segment ə is the most variable.[61]

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[61] Aert H. Kuipers mentions a similar phenomenon in Squamish (Coast Salish) in The Squamish Language, Mouton and Company, The Hague and Paris, 1967, p. 25: "The Squamish vowels---especially /ə/---show more variation than the consonants, and they may vary mainly in the function of the latter."

The description of certain phonological processes involving systematic vowels will necessitate the introduction of the feature "tense", which is a manner of articulation feature. (See Figure 8.) Tense sounds are produced with greater articulatory effort than nontense (lax) ones. Tense vowels in particular are executed with a greater deviation from the rest position of the vocal tract during which the articulatory configuration remains stationary.[62]

FIGURE 8

The Values of Vowels for the Feature "Tense"

	a·	a	u·	u	i·	i	ə
tense	-	-	+	+	+	+	-

The systematic high vowels are thus [+ tense] and the systematic nonhigh vowels are [- tense].

Furthermore, it will be necessary to assign gradient values to the allophones of each systematic vowel in order to formulate some of the phonological processes in terms of gradience rules. (See Figure 9.) The phones associated with the segment a are [aˑ a ɐ]; those with u are [u o ɔ]; those with i are [i e ɛ]; and

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[62] Chomsky and Halle, op. cit., pp. 324-325.

the ones with ə are [ɨ ə ʌ ɪ ʊ].[63] The phones that belong to the segments u and i are in all cases [+ tense] in contrast to those that belong to the segments a and ə, which are [- tense]. (See Figure 8.)

FIGURE 9

Gradient Values

	0 back	1 back	2 back	
3 high	i	ɨ	u	0 low
2 high	e	ə	o	1 low
1 high	ɛ	ʌ	ɔ	2 low
0 high	a‘	a	ɐ	3 low

Rule (5) applies to vowels adjacent to low consonants. The first part of the rule, (5a), specifies that the segments u·, u, i·, and i are phonetically [o·], [o], [e·], and [e], respectively, in the context stated;[64]

$$(5a)\ [+\text{ high}] \rightarrow [-\text{ high}] \ / \begin{bmatrix} + \text{ V} \\ \_\_\_ \end{bmatrix} * \begin{bmatrix} + \text{ C} \\ + \text{ low} \end{bmatrix}.$$

Applying the rule:

stiqíw "horse" is phonetically [steqéw];

sk'wixs "blue huckleberry" is [sk'wexs];

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[63] [ɪ] and [ʊ] will be discussed below. The allophones of long vowels are of distinctively longer duration than those of corresponding nonlong vowels by definition.

[64] Or they may be even lower in the given context; thus u· → [o· ~ ɔ·], u → [o ~ ɔ], i· → [e· ~ ɛ·], and i → [e ~ ɛ].

sq^{W}u$^{?}$ "drink" is [sq^{W}o$^{?}$];

t̓uq̓^{W} "speak" is [t̓oq̓^{W}]; and

sx̣^{W}ux̣^{W} "old man" is [sx̣^{W}ox̣^{W}].

The second part of the rule, (5b), specifies that the segment ə is approximately [ʌ] in the context stated:

$$(5b)\quad [-\ \text{low}] \rightarrow [2\ \text{low}] \;/\; \begin{bmatrix} +\ V \\ -\ \text{high} \\ \hline \end{bmatrix} * \begin{bmatrix} +\ C \\ +\ \text{low} \end{bmatrix}.$$

Applying the rule:

x̣əs "bad" is phonetically [x̣ʌs];

məqs "nose" is [mʌqs];

sx̣ə́p̓ləm "screech owl" is [sx̣ʌ́p̓liəm]; and

q̓^{W}ə́t̓ "burn" is [q̓^{W}ʌ́t̓].

The articulation of ə when adjacent to the segment x̣^{W} varies between phonetic [ʌ] and [ʊ], taking on the characteristic rounding of x̣^{W} in the latter case. For example:

yəx̣^{W} "daylight" may be phonetically [yʌx̣^{W}] or [yʊx̣^{W}];

yələ́x̣^{W} "find" may be articulated as [yiləx̣^{W}] or [yilʊ́x̣^{W}]; and

x̣^{W}ə́l̓á$^{?}$ "hot" as [x̣^{W}ʌ́l̓á$^{?}$] or as [x̣^{W}ʊ́l̓á$^{?}$].

It seems that the factor which distinguishes phonetic [ʊ], representative of the phoneme ə in this context, from phonetic [o] (or [ɔ]), representative of the phoneme u under the same conditions, is one of laxity; the segments u•, u, i•, and i are relatively tense at all times whereas the articulation of ə is in all contexts relatively

nontense.

The third part of the rule specifies that the segments a· and a are phonetically [ɐ·] and [ɐ], respectively, in the context stated:[65]

(5c) $[+\text{ back}] \rightarrow [2\text{ back}] / \begin{bmatrix} +\text{ V} \\ +\text{ low} \\ \_\_\_\_ \end{bmatrix} * \begin{bmatrix} +\text{ C} \\ +\text{ low} \end{bmatrix}$.

Applying the rule:

ƛ̓aq̓ʷ "good/pretty" is phonetically [ƛ̓ɐq̓ʷ];

xaš "house" is [xɐš];

qáw̓əq "(to) fly" is [qɐ́w̓ʌq]; and

xʷaqʷ "all" is [xʷɐqʷ].

Rule (6) applies to nonhigh vowels adjacent to back consonants and back glides which are nonlow. The first part of the rule, (6a), specifies that systematic ə is approximately [ɐ] in the stated context:

(6a) $\begin{bmatrix} -\text{ back} \\ -\text{ high} \end{bmatrix} \rightarrow \begin{bmatrix} 1\text{ back} \\ 2\text{ high} \end{bmatrix} / \begin{bmatrix} +\text{ V} \\ \_\_\_ \\ \_\_\_ \end{bmatrix} * \begin{bmatrix} -\text{ vocalic} \\ -\text{ low} \\ +\text{ back} \end{bmatrix}$.

Condition: the segment [+ V - back - high] cannot be adjacent to a segment which is [+ C + low].[66]

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[65] Or they may be articulated somewhat further back (and perhaps somewhat rounded): a· → [ɐ· ~ ɑ·] and a → [ɐ ~ ɑ].

[66] Note that "low consonant" appears in the environment of rule (5). Thus the application of rule (5) to any segment effectively "blocks" the application of rule (6) to the same segment, but not vice versa.

The rule can only apply when the condition stated in the rule is met (and when the context is satisfied). For example:

k^{w}ən "hold/grasp", which is phonetically [k^{w}ən];
sx^{w}ə́ntəm "white man", which is [sx^{w}ə́nt̬əm]; and
səẃíč "cattail", which is [səẃíč].

The condition stated is not met and the application of the rule is blocked in the following:

qáẃəq "(to) fly", which is phonetically [qə́ẃʌq]; and
tə?wá?ənəx^{w}əq "Upper Chehalis language", which is [t̬ə?wá?ə̬nəx^{w}ʌq].[67]

The second part of the rule, (6b), specifies that systematic a• and a are approximately [a•] and [a], respectively, in the given context:

$$(6b)\quad \begin{bmatrix} +\text{ back} \\ -\text{ high} \end{bmatrix} \rightarrow \begin{bmatrix} 1\text{ back} \\ 0\text{ high} \end{bmatrix} \Big/ \begin{bmatrix} +\text{ V} \\ \underline{\quad} \\ \underline{\quad} \end{bmatrix} * \begin{bmatrix} -\text{ vocalic} \\ -\text{ low} \\ +\text{ back} \end{bmatrix}.$$

Condition: the segment [+ V + back - high] cannot be adjacent to a segment which is [+ C + low].

Applying the rule:

paẃ "one" is phonetically [paw?];
ɬəkẃát "hair" is [ɬəkẃát]; and
?ípx^{w}a?ʌn "(to) hide" is [?ípx^{w}a?^{a}n].

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[67] The rule applies to the segment ə preceding x^{w} in this case but not to the segment ə preceding q.

Rule (7) applies to nonhigh vowels adjacent to liquids and nonback consonants and glides. The first part of the rule, (7a), specifies that systematic ə is raised to phonetic [ɨ] in the appropriate context:

$$(7a)\ [-\text{ high}] \rightarrow [+\text{ high}] \ / \begin{bmatrix} +\text{ V} \\ -\text{ low} \\ \_\_\_\_ \end{bmatrix} * \left\{ \begin{bmatrix} +\text{ L} \end{bmatrix} \begin{bmatrix} -\text{ vocalic} \\ -\text{ back} \end{bmatrix} \right\}.$$

Condition: the segment [+ V - low - high] cannot be adjacent to a segment which is [+ back].[68]

The rule can apply only when the condition stated in the rule is met (and when the context is satisfied). For example:

ʔá·l̓əs "boss/head man", which is phonetically [ʔá·l̓ɨs];

tém̓əš "earth/soil", which is [tɨ́m̓ɨš]; and

syəl̓q̓íṅ "slave", which is [syɨl̓qén̓ʔ].

The condition stated in the rule is not met throughout, however, in:

kʷénaʔən (~ kʷənáʔən) "Take it!", which is [kʷénaʔɨn];

ɬələ́kʷ "fall/topple", which is [ɬɨlə́kʷ];

səẃíč "cattail", which is [səẃíč];

ləqə́n "buy", which is [lʌqʌ́n];

sqʷə́qčus "forehead", which is [sqʷʌ́qčus]; and

x̣əs "bad", which is [x̣ʌs].

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[68] [+ back] here refers only to consonants and glides. The vowels a· and a are also [+ back], but morpheme structure conditions rule out the possibility of a morpheme containing a *VV sequence.

The second part of the rule, (7b), specifies that systematic a· and a are fronted to [a‹·] and [a‹], respectively, in the context stated:[69]

$$(7b)\ [\pm \text{back}] \rightarrow [0\ \text{back}] \ /\ \begin{bmatrix} +\ V \\ +\ \text{low} \end{bmatrix} \_\_\_\_ * \left\{ \begin{bmatrix} +\ L \end{bmatrix} \begin{bmatrix} -\ \text{vocalic} \\ -\ \text{back} \end{bmatrix} \right\}.$$

Condition: the segment [+ V + low + back] cannot be adjacent to a segment which is [+ back].

Applying the rule:

sal "two" is interpreted phonetically as [sa‹l];

sá·cət "belly" as [sá‹·cɨt];

paɬč "outside (the house)" as [pa‹ɬč];

ča?ɬ "three" as [ča‹ˀa‹ɬ];

tat "uncle" as [ta‹t]; and

yay "older sister" as [ya‹y].

The condition is not satisfied as stated in the rule throughout the following examples:

mák'^{w}at "corpse/dead", which is [mák'^{w}at];

ták^{w}a?ən "Close (it)", which is [ták^{w}a?ɨn];

x^{w}átaq "jump/hurry", which is [x^{w}átɐq];[70]

qal "water", which is [qɐl];

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[69] Phonetic [æ], which is articulated further forward than phonetic [a‹], occurs very infrequently. It was observed only in lat "very" [læt] ~ [la‹t] and in másI "thank you" [mǽsi] ~ [má‹si].

[70] Also recorded as [x^{w}ʌ́tʌq] and [x^{w}átʌq].

máq^{w}əm "meadow", which is [méq^{w}ʌm];

x̣aš "house", which is [x̣ɐš]; and

x̣^{w}aq^{w} "all", which is [x̣^{w}ɐq^{w}] (or [x̣^{w}ɑq^{w}]).

And rule (8) applies to high vowels adjacent to nonlow segments. The first part of the rule, (8a), specifies that systematic i• and i are phonetically [i•] and [i], respectively, in the context stated:

$$(8a)\quad \begin{bmatrix} -\text{ back} \\ +\text{ high} \end{bmatrix} \rightarrow \begin{bmatrix} 0\text{ back} \\ 3\text{ high} \end{bmatrix} \Big/ \begin{bmatrix} +\text{ V} \\ \underline{\quad} \\ \underline{\quad} \end{bmatrix} * \begin{bmatrix} -\text{ low} \end{bmatrix}$$

Condition: the segment [+ V - back + high] cannot be adjacent to a segment which is [+ low].

Applying the rule:

mí^{ʔ}a "grandfather" is phonetically [mí^{ʔ}aˤ];

skí^{ʔ}px^{w}a "rabbit" is [skí^{ʔ}^{i}px^{w}a]; and

c̓íc̓əɬ "short" is [c̓íc̓iɬ].

The condition stated in the rule is not satisfied, however, in the following:

q̓^{w}ic̓x̣^{w} "Queets", which is phonetically [q̓^{w}ec̓x̣^{w}]; and

qič "play (males)", which is [qeč].

The second part of the rule, (8b), specifies that systematic u• and u are phonetically [u•] and [u],

respectively, in the stated context:

(8b) $\begin{bmatrix} + \text{ back} \\ + \text{ high} \end{bmatrix} \rightarrow \begin{bmatrix} 2 \text{ back} \\ 3 \text{ high} \end{bmatrix} \begin{bmatrix} + \text{ V} \\ \_\_\_ \\ \_\_\_ \end{bmatrix} * [- \text{ low}]$.

Condition: the segment [+ V + back + high] cannot be adjacent to a segment which is [+ low].

Applying the rule:

tú$^{\text{ʔ}}$ux$^{\text{W}}$ "nine" is phonetically [tú$^{\text{ʔ}}$ux$^{\text{W}}$];

pu$^{\text{ʔ}}$š "cat" is [pu$^{\text{ʔ}}$$^{\text{u}}$š]; and

ɬuk$^{\text{'W}}$ "high/up/above" is [ɬuk$^{\text{'W}}$].

The condition is not satisfied in:

múx$^{\text{W}}$ən "pay", which is phonetically [móx$^{\text{W}}$ʌn]; and

sq$^{\text{W}}$u$^{\text{ʔ}}$ "drink", which is [sq$^{\text{W}}$o$^{\text{ʔ}}$].

Optional Phonetic Rules

Rule (9) specifies that systematic ə may be phonetically [ɪ] [71] when stressed and when adjacent to a palatal segment (š, č', č) or to systematic y' and y provided that it is not also adjacent to a low

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[71] Phonetic [ɪ], which is articulated relatively high and front, differs from the allophones of systematic i by the former segment's being nontense and the latter's being tense.

consonant:

(9) $[-\text{ back}] \rightarrow [0\text{ back}] / \begin{bmatrix} +\text{ V} \\ -\text{ low} \\ -\text{ high} \\ \_\_\_\_ \end{bmatrix} * \left\{ \begin{bmatrix} +\text{ C} \\ -\text{ anterior} \\ +\text{ coronal} \end{bmatrix} \atop \begin{bmatrix} +\text{ G} \\ -\text{ back} \\ +\text{ high} \end{bmatrix} \right\}$.

Condition: the segment [+ V - low - high - back] cannot be adjacent to a segment which is [+ C + low].

The rule is not obligatory, however, for ə may be interpreted as [ɨ] in this context. For example:

t'əl'éč' "fall/topple" may be either [t'ɨl'íč'] or [t'ɨl'ɨ́č'];

łéčqyəm "elk/game (quarry)", [łíčqyɨm] or [łɨ́čqyɨm];

yə́n'əs "tooth/teeth", [yín'ɨs] or [yɨ́n'ɨs]; and

yə́twa? "salmonberry", [yítwa?] or [yɨ́twa?].

Moreover, it appears that the vowel must be stressed in order for the rule to apply; ə's occurring in this context in unstressed syllables are apparently not subject to the rule:

łə́q'Łəč "beaver" (łə́q'(əɬ) "wide", -Ł'əč suffix "belly") is phonetically [łʌ́q'Ł'ɨč];

č'ənp'úst "oyster tongs" is [č'ɨnp'úst]; and

wísay'əps "(sprig or widgeon ?) duck" is [wísa'y'ɨps].

Rule (10) states that in a sequence of vowel followed by "glottal stop" followed by nonvowel (any segment other than a vowel) within a word, an ephemeral "echo" vowel may intervene between the glottal stop and

the nonvowel:

$$(10)\ [+\ V]\ \begin{bmatrix}+\ G\\ -\ \text{continuant}\end{bmatrix}\ \left\{\begin{bmatrix}+\ \text{consonantal}\\ -\ \text{vocalic}\end{bmatrix}\right\} \rightarrow$$

$$[+\ V]\ \begin{bmatrix}+\ G\\ -\ \text{continuant}\end{bmatrix}\ \begin{bmatrix}+\ V\\ -\ \text{long}\end{bmatrix}\ \left\{\begin{bmatrix}+\ \text{consonantal}\\ -\ \text{vocalic}\end{bmatrix}\right\}.$$

The epenthetic echo vowel has the same feature-values as the full vowel except, of course, that the echo vowel is by its transient nature nonlong in all cases.

The contrast between full vowels and echo vowels in this context is quite clear. The duration of the unstressed vowel of each of the following examples is constant with that of unstressed vowels in general:

x̣á²aq "child", phonetically [x̣é²əq];
stí²ix^{W} "man/male", [stí²ix^{W}]; and
tú²ux^{W} "nine", [tú²ux^{W}].

In contrast, the duration of the echo vowel is markedly transient in the following forms:

x̣á²qa² "children", which is [x̣é²^{ə}qə²];
stí²x^{W}u² "boy", [stí²^{i}x^{W}u²];
cí²k^{W}əɬa² "Lie down!", [cí²^{i}k^{W}əɬa'²] (-a² imperative);
skí²px^{W}a "rabbit", [skí²^{i}px^{W}a];
smú²ləm "vegetables ('buried')" [smú²^{u}lim]; and
ya²ylú²pət "tell legends", [ya'² $^{a'}$ylú²^{u}pit].

The contrast is also evident in derived forms

involving the insertion of the segment ʔ:

yay "older sister" [yaʿy] vs. yáʔyuʔ "adolescent sister [yáʿʔaʿyuʔ] ;

nəsč "younger brother" [nɨsč] vs. náʔsčuʔ "little brother" [náʿʔaʿsčuʔ] ;

maɬ "son" [maʿn] vs. máʔɬuʔ [máʿʔaʿɬuʔ] "small son";

ɬálsəqaʔ "Stand up!" [ɬáʿlsʌqɐʔ] vs. ɬáʔlsəqaʔ "You all stand up!" [ɬáʿʔaʿlsʌqɐʔ] ; and

pástən "white man" [páʿstɨn] vs. spáʔstanɬ "white woman" [spáʿʔastaʿnɬ] .

Rule (11) states that post-velar (low) consonants which are valued as plus glottalized may be affricated rather than glottalized; and the rule specifies that the continuant which follows the stop segment in this case is valued identically as the stop except that the latter is noncontinuant:

$$(11)\begin{bmatrix} +\,C \\ +\,low \\ (-\,continuant) \\ \alpha\,rounded \\ +\,glottalized \end{bmatrix} \rightarrow \begin{bmatrix} +\,C \\ +\,low \\ -\,continuant \\ \alpha\,rounded \\ -\,glottalized \end{bmatrix} \begin{bmatrix} +\,C \\ +\,low \\ +\,continuant \\ \alpha\,rounded \\ (-\,glottalized) \end{bmatrix} .$$

For example:

q̓apə̓éʔs "soft/suave" may be articulated as [q̓ɐp̓ɛ́ʔɨs] or as [qx̣ɐp̓ɛ́ʔɨs] ;

sq̓ʷux̣ʷ "smoke" as [sq̓ʷox̣ʷ] or as [sqʷx̣ʷox̣ʷ]; and

ʔulq̓ "snake" as [ʔulq̓] or as [ʔulqx̣].

Rule (12) states that nonglottalized stop

(noncontinuant) consonants, particularly post-velars, may be aspirated (tensed) when no other segment follows (as in utterance-final position):

(12) $[-\text{ tense}] \rightarrow [+\text{ tense}] / \left[\begin{array}{l}+\text{ C}\\+\text{ low}\\-\text{ continuant}\\-\text{ glottalized}\end{array}\right] \#$.

For example:

xə́p̓yəq "dry" may vary between phonetic [xʌ́p̓yʌq] and [xʌ́p̓yʌq^{h}]; and

ʔá·šəq "snow" between [ʔá·šʌq] and [ʔá·šʌq^{h}].

Finally, the sequence sy may be articulated as [sy] or as [š], though the former is more general:[72]

(13) $\left[\begin{array}{l}+\text{ C}\\+\text{ anterior}\\+\text{ coronal}\\+\text{ continuant}\\-\text{ lateral}\end{array}\right] \left[\begin{array}{l}+\text{ G}\\-\text{ back}\\+\text{ high}\end{array}\right] \rightarrow \left[\begin{array}{l}+\text{ C}\\-\text{ anterior}\\+\text{ coronal}\\+\text{ continuant}\end{array}\right]$.

For example:

syələ́x^{w} "whale" may be rendered phonetically as [sy̓ɨlʌ́x^{w}] or as [šɨlʌ́x^{w}]; and

syəlq̓íṉ "slave" as [sy̓ɨlqén^{ʔ}] or [šɨlqén^{ʔ}].

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[72] There is no evidence to indicate how the rule would apply to sy̓.

Summary of the Rules

To recapitulate, the phonological rules proposed for Lower Chehalis are the following:

(1) $X_1V_1X_2\acute{V}_2X_3 \rightarrow X_1\acute{V}_1X_2X_3 \; / \; \left\{ \begin{array}{c} \_\_ + \text{'continuative intransitive'} \\ \text{'past'} \end{array} \right\}$,

which applies to bisyllabic verb stems in which primary stress falls on the vowel of the second syllable of the base form. In the appropriate context, the stress falls on the vowel (V_1) of the first syllable of the stem, and the vowel (V_2) of the second syllable of the stem is elided;

(2) $[+ \text{ long}] \rightarrow [- \text{ long}] \; / \; \left[\begin{array}{c} + \breve{V} \\ \_\_\_ \end{array} \right]$,

which states that long vowels become short when unstressed;

(3), which applies to the formation of diminutives and, to a restricted degree, plurals of mono-, bi-, and trisyllabic stems (cf. pp. 27-28);

(4) $[- \text{ rounded}] \rightarrow [+ \text{ rounded}] \; / \; \left[\begin{array}{l} + \text{C} \\ + \text{back} \\ \_\_\_\_\_ \end{array} \right] * \left[\begin{array}{l} + \text{V} \\ - \text{low} \\ + \text{back} \end{array} \right]$,

which states that back consonants are rounded when adjacent to u· and u within a morpheme;

(5) $$\begin{bmatrix}[+\text{ high}]\\[-\text{ low}]\\[+\text{ back}]\end{bmatrix} \rightarrow \begin{bmatrix}[-\text{ high}]\\[2\text{ low}]\\[2\text{ back}]\end{bmatrix} \Big/ \begin{bmatrix}[+\text{ V}]\\\underline{\quad}\\[+\text{ V}]\\[-\text{ high}]\\\underline{\quad}\\[+\text{ V}]\\[+\text{ low}]\\\underline{\quad}\end{bmatrix} * \begin{bmatrix}[+\text{ C}]\\[+\text{ low}]\end{bmatrix},$$

which states that systematic high vowels are lowered, that systematic ə is lowered, and that systematic low vowels are articulated further back adjacent to low consonants;

(6) $$\begin{bmatrix}[-\text{ back}]\\[-\text{ high}]\\[+\text{ back}]\\[-\text{ high}]\end{bmatrix} \rightarrow \begin{bmatrix}[1\text{ back}]\\[2\text{ high}]\\[1\text{ back}]\\[0\text{ high}]\end{bmatrix} \Big/ \begin{bmatrix}[+\text{ V}]\\\underline{\quad}\\\underline{\quad}\end{bmatrix} * \begin{bmatrix}[-\text{ vocalic}]\\[-\text{ low}]\\[+\text{ back}]\end{bmatrix},$$

Condition: the vowel cannot be adjacent to a low consonant,

which states that systematic ə is articulated mid-central and systematic a· and a low-central in the appropriate context if they are not also adjacent to a low consonant;

(7) $$\begin{bmatrix}[-\text{ high}]\\[+\text{ back}]\end{bmatrix} \rightarrow \begin{bmatrix}[+\text{ high}]\\[0\text{ back}]\end{bmatrix} \Big/ \begin{bmatrix}[+\text{ V}]\\[-\text{ low}]\\\underline{\quad}\\[+\text{ V}]\\[+\text{ low}]\\\underline{\quad}\end{bmatrix} * \left\{\begin{bmatrix}[+\text{ L}]\\[-\text{ vocalic}]\\[-\text{ back}]\end{bmatrix}\right\},$$

Condition: the vowel cannot be adjacent to a segment which is [+ back],

which states that systematic ə is raised and that systematic low vowels are fronted adjacent to liquids and nonback consonants and glides if they are not adjacent to a back segment;

(8) $$\begin{bmatrix} -\text{ back} \\ +\text{ high} \end{bmatrix} \rightarrow \begin{bmatrix} 0\text{ back} \\ 3\text{ high} \end{bmatrix} \Big/ \begin{bmatrix} +\text{ V} \\ \_\_\_ \\ \_\_\_ \end{bmatrix} * [-\text{ low}]$$

Condition: the vowel cannot be adjacent to a low segment,

which states that systematic high vowels are articulated high if and only if they are in the context of nonlow segments;

(9) $$[-\text{ back}] \rightarrow [0\text{ back}] / \begin{bmatrix} +\text{ V́} \\ -\text{ low} \\ -\text{ high} \end{bmatrix} * \left\{ \begin{bmatrix} +\text{ C} \\ -\text{ anterior} \\ +\text{ coronal} \end{bmatrix} \begin{bmatrix} +\text{ G} \\ -\text{ back} \\ +\text{ high} \end{bmatrix} \right\},$$

Condition: the vowel cannot be adjacent to a low consonant,

which states that systematic ə may be phonetically [ɪ] when stressed and when adjacent to a palatal segment or to systematic y and ý provided that it is not also adjacent to a low consonant;

(10) $$\begin{bmatrix}+\text{ V}\end{bmatrix}\begin{bmatrix}+\text{ G}\\-\text{ continuant}\end{bmatrix}\left\{\begin{bmatrix}+\text{ consonantal}\end{bmatrix}\right.\left.\begin{bmatrix}-\text{ vocalic}\end{bmatrix}\right\} \rightarrow$$

$$\begin{bmatrix}+\text{ V}\end{bmatrix}\begin{bmatrix}+\text{ G}\\-\text{ continuant}\end{bmatrix}\begin{bmatrix}+\text{ V}\\-\text{ long}\end{bmatrix}\left\{\begin{bmatrix}+\text{ consonantal}\end{bmatrix}\right.\left.\begin{bmatrix}-\text{ vocalic}\end{bmatrix}\right\},$$

which states that in a sequence of vowel followed by glottal stop followed by a segment other than a vowel within a word, an ephemeral echo vowel may intervene between the glottal stop and the nonvowel;

(11) $$\begin{bmatrix}+\text{ C}\\+\text{ low}\\(-\text{ continuant})\\\alpha\text{ rounded}\\+\text{ glottalized}\end{bmatrix} \rightarrow \begin{bmatrix}+\text{ C}\\+\text{ low}\\-\text{ continuant}\\\alpha\text{ rounded}\\-\text{ glottalized}\end{bmatrix}\begin{bmatrix}+\text{ C}\\+\text{ low}\\+\text{ continuant}\\\alpha\text{ rounded}\\(-\text{ glottalized})\end{bmatrix},$$

which states that glottalized low consonants may be affricated rather than glottalized;

(12) $$\begin{bmatrix}-\text{ tense}\end{bmatrix} \rightarrow \begin{bmatrix}+\text{ tense}\end{bmatrix} / \begin{bmatrix}+\text{ C}\\+\text{ low}\\-\text{ continuant}\\-\text{ glottalized}\end{bmatrix} \#,$$

which states that a nonglottalized low stop consonant may be aspirated when no other segment follows; and

(13) $$\begin{bmatrix}+\text{ C}\\+\text{ anterior}\\+\text{ coronal}\\+\text{ continuant}\\-\text{ lateral}\end{bmatrix}\begin{bmatrix}+\text{ G}\\-\text{ back}\\+\text{ high}\end{bmatrix} \rightarrow \begin{bmatrix}+\text{ C}\\-\text{ anterior}\\+\text{ coronal}\\+\text{ continuant}\end{bmatrix},$$

which states that systematic s + y within a word may

be articulated as [š].

Rules (5)-(9) are low level rules; and rules (10)-(13) are non-obligatory rules (i.e., alternate realizations are possible). Of the optional rules, (10) and (11) are much more general in terms of actual realizations than the others are.

Rule Application

The relevance of having the phonological statements apply in the order indicated above should become clear when a number of items are subjected to the sequence of rules. In working from the abstract systematic phonemic level to the level at which the phonetic output is attained, only those statements which are relevant to the items being described are mentioned.

The derivation of ʔiqə́ɬq̓wən táʔan tat x^{w}úʔk^{w}uʔ "That little boy is running" is:

ʔi- + qəɬə́q + -w̓- + -ən + táʔan + tat + x^{w}úk^{w} + -uʔ

→ ʔiqə́ɬq̓wən táʔan tat x^{w}úk^{w}uʔ by rule (1)

→ ʔiqə́ɬq̓wən táʔan tat x^{w}úʔk^{w}uʔ by rule (3)

→ ʔeqʌ́ɬq̓wən táʔan tat x^{w}úʔk^{w}uʔ by rule (5)

→ ʔeqʌ́ɬq̓wən táʔan tat x^{w}uʔk^{w}uʔ by rule (6a)

→ ʔeqʌ́ɬq̓wən táʕaʕn taʕt x^{w}úʔk^{w}uʔ by rule (7)

→ ʔeqʌ́ɬq̓wən táʕaʕn taʕt x^{w}úʔk^{w}uʔ by rule (8b)

→ [ʔeqʌ́ɬq̓wən táʕaʕn taʕt x^{w}úʔ$^{u}k^{w}$uʔ] by rule (10).

And the derivation of ł̓áḵʷaʔən tit cúl̓qəns łəc x̣áʔaq "Wipe the little girl's tears off!" is:

ł̓áḵʷ + -aʔ + -ən + tit + cúl̓q + -əns + łəc + x̣áʔaq

→ ł̓áḵʷaʔən tit cúl̓qʌns łəc x̣éʔəq by rule (5)

→ ł̓áḵʷaʔən tit cúl̓qʌns łəc x̣éʔəq by rule (6a)

→ ł̓áḵʷaʔɨn tit cúl̓qʌns lɨc x̣éʔəq by rule (7a)

→ [ł̓áḵʷaʔɨn tit cúl̓qʌns lɨc x̣éʔəq] by rule (8).

CHAPTER FOUR

Vowel Alternation and Reduction

A number of things among the data are not accounted for by the phonological rules in the preceding chapter and for which there is insufficient information at the present time to explain. Among these are vowel alternations in such pairs as:

sná?čəm "old woman" and sná?ča?mu? "little old woman";
sx̣ʷux̣ʷ "old man" and sx̣ʷá?x̣ʷu? "little old man";
nəsč "younger brother" and ná?sču? "little brother"; and
pástən "white man" (<English 'Boston', possibly through Chinook Jargon) and spá?stanɬ "white woman".

In addition there is not yet sufficient material to characterize the processes which govern the reduction or elision of certain unstressed vowels and the loss of certain nonvocalic segments in unstressed syllables or particles from the canonical forms. For example:

xʷátaq "jump/hurry" was recorded as [xʷátaq], [xʷátʌq], and [xʷátʌq].

Although the unstressed vowel of -čəp "fire" is not reduced in ɬə?áyčəptə "axe", it may be reduced to a zero grade in məčəp "fire", phonetically [mə́čɨp] or [mɨčp] (or [míčp]), and in sx̣ʷá?čəp "wood", phonetically [sx̣ʷə́?čɨp] or [sx̣ʷə́?čp]. As two of several examples of the loss of a nonvocalic segment from an unstressed form,

tit ʔík^{w}təqtəm "(Something) was stolen" was recorded as [titík^{w}tʌqtɨm] and [tʔík^{w}tʌqtɨm]; and wáwi ɬaq̓^{w} tat ɬək̓^{w}átəns tat x̣áʔaq "That boy has very nice hair" was recorded as [wâwi ɬəq̓^{w} ta't ɬk̓^{w}átns ta't x̣ə́ʔəq] and as [wawi ɬəq̓^{w} tɬɨk̓^{w}átɨns ta't x̣éʔəq].

Reduplication

In general, the pattern of reduplication is that the reduplicated item follows the stem on which it is formed (and it is unstressed). Most of the reduplicated forms recorded express, as the term suggests, some form of reiterative activity. For example:

k̓^{w}ay̓ "chew", k̓^{w}áy̓ən "chewing", and k̓^{w}áy̓k̓^{w}ay̓ən "continually chewing";

k^{w}iw "crawl" and k^{w}íwk^{w}iwiʔ "crawl around (as when picking berries)";

*cəx̣^{w}č "drip", ʔicə́x̣^{w}č̓wən "dripping", and ʔicə́x̣^{w}cəx̣^{w}č̓wən "continually dripping";

čəpáx̣ "lighten", ʔičə́px̣̓wən "lightning", and ʔičəpáx̣čəpax̣̓wən "continually lightning";

yíl̓iʔ "walk" and yíl̓yil̓iʔ "walk around";

t̓uk̓^{w} "bite" (also recorded as [t̓ə'k̓^{w}]) and t̓úk̓^{w}t̓uk̓^{w} "spicy/pepper"; and

yəx̣^{w} "daylight" and yəx̣^{w}áx̣^{w}yəx^{w}ax̣^{w}̓wən "blinking lights" (?).

Other reduplicated forms do not suggest the idea

of repititious activity so clearly:

x^{W}átaq "jump/hurry", x^{W}átaqa? "Jump/Hurry!", and
x^{W}átx^{W}ataqa? "Hurry up!" (-a? imperative);
k^{W}əlík^{W}əli "mouse";
k̓^{W}ík̓^{W}iyaʼnst "straight pin" (recorded as [k̓^{W}ík̓^{W}iyaʻnst]);
and músm̓us "cow".

Although certain details remain to be explained, the pattern of reduplication is generally clear. It is not entirely clear, however, how the rules must be revised to account for it.

Loanwords

It is probably best to enter loanwords in the lexicon with the specification that they are not in fact native items. Although some loanwords such as šúk^{W}ə? [šúk^{W}ə?] "sugar", kápi [kápi] "coffee", and mustk^{W}áta [mustk^{W}áta] "silver dollar" (mus "four", t indefinite article) conform to the phonological patterning of the native vocabulary, a good many others violate native root patterns and/or phonetic rules. For example:

lipoá "peas", which is phonetically [lipoá];
sántihəm "get dressed up", which is [sántihəm]; and
?úlman "old man", which is [?úlman].

Conclusion

The addition of further material to the present corpus would probably bring about the need to expand the

phonological rules stated above. Additionally, future comparative studies will most likely reveal historical processes which are not now evident. For example, in comparing Lower Chehalis p̓əqʷ "brown" with Quinault /p̓aqʷ/[73] "gray", Lower Chehalis -čəp "fire" with Quinault [q̓ʷʌ́t̓čup][74] "burn", and Lower Chehalis q̓ʷəlán̓ "ear" with Quinault [q̓ʷeɬá·n],[75] there is good reason to believe that under certain conditions the segments which have developed into Quinault o, u and e merged into ə in Lower Chehalis. Correspondences such as these suggest the existence of historical rules which must be revealed before a thorough phonological description of the language can be accomplished.

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[73] Gibson, op. cit., p. 22.

[74] Personal datum. Cf. footnote 48.

[75] Ibid.

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GLOSSARY OF FORMS CITED

A

all	x̣ʷaqʷ
animal; insect; misbehaved	skəkʷáʔmuʔ
definite article	tat; tit
definite article (feminine)	ɬəc
indefinite article	t
ashes	x̣éɬ̓stəq
axe	ɬ̓əʔáy̓čəpt̓ə

B

bad	x̣əs
bark (dogs)	pá·n̓əɬ
bark (tree)	p̓ál̓ən
beach	təptán̓
beads	t̓əm̓éx̣ʷqəs
beaver	ɬéq̓ɬ̓əč
belch	sq̓ʷúy̓əq
belly	sá·cət
belly, lexical suffix	-ɬ̓əč
big	táʔwəɬ; naw ~ náwa
bird	sm̓ay̓kʷ ~ sm̓áy̓kʷuʔ ~ sm̓aykʷ
bite	t̓uk̓ʷ
black	čəsnéq
blood	sqʷiɬ
blow; breathe	puxʷ
blow (wind)	ɬ̓əxʷ; ɬ̓əxʷá·
bone	t̓iq̓

boss; head man	ʔáˑl̓əs
teenage boy	nułtáʔlm̓əšuʔ
breast (woman's)	qámtən
older brother	čít̓(an)
adolescent brother	čít̓aʔnuʔ
little brother	náʔsčuʔ
younger brother	nəsč
brown	čəsp̓éqʷ
burn	q̓ʷət̓
buy	ɬəqén

C

Canadian	kənčúč
cat	puʔš
cattail	səẃíč
(a character in a story)	sn̓íča
chew	k̓ʷay̓
continually chewing	k̓ʷáy̓k̓ʷay̓ən
child	x̣áʔaq
small child	x̣áʔquʔ
children	x̣áʔqaʔ
circle; be round	c̓əlép
circle around the moon; round	c̓élpəɬ
close	takʷ
cloudy; foggy	pétkʷəɬ
coffee	kápi
cold	pamás
come	ʔihs

continuative intransitive	-ẇ-
continuative aspect marker	ʔi-
cook	ʔuqʷs; q̓ʷəɬ ~ q̓ʷəl̓; q̓ʷix̣; kʷukʷ
corpse; dead	mák̓ʷat
correct; true	naxʷáɬ
cow	culpálq; músm̓us
crawl	kʷiw
crawl around	kʷíwkʷiwiʔ
cry (females)	ʔuk̓ʷ ~ suk̓ʷ
cry (males)	ɬəq̓ə́č
cut	q̓ʷiɬ̓

D

dance	láqʷsəq
day	sk̓ʷəɬ
daylight	yəx̣ʷ
blinking lights (?)	yəx̣ʷáx̣ʷyəx̣ʷax̣ʷ̓wən
die	ʔátəm̓
dig; clams	ciqʷúʔs
diminutive; plural	-uʔ
dirty	q̓ʷíc̓əɬ
dog	qáx̣ʔa
dogs (?)	qáx̣ʔu
wild dog (?)	təlá̓ʔpəšuʔ
silver dollar	mustkʷáta
get dressed up	sántiləm
drink	sqʷuʔ

drip	*cəx̣^{W}č
continually dripping	ʔicéx̣^{W}cəx̣^{W}č̓wən
dry	x̣épy̓əq; x̣épəɬ
duck (sprig or widgeon?)	wísay̓əps
dull	t̓áʔaʔəɬ

E

ear	q̓^{W}əlán̓
ear, lexical suffix	-an̓
earring	ɬək̓^{W}án̓
earrings	ɬək̓^{W}áʔn̓uʔ
earth; soil	téḿəš
eat	ʔiɬ
chicken egg	sq^{W}úx^{W}təmiɬ
fish egg	sacc̓
'cured' salmon eggs	q̓^{W}əlúluɬ
eight	cá·mus
elk; game (quarry)	ɬéčqyəm
eye; four	mus
eyes	múʔsuʔ

F

fall; topple	t̓əl̓éč; ɬəlék^{W}
fall backward (females)	təwátqy̓əq
fall backward (males)	təq̓^{W}álx̣y̓əq
fall overboard	təpéx̣^{W}
far	taʔx^{W}; sayá·s ~ sayá·
fat; grease	qix^{W}
father	qax̣t

fear; frighten	xiẇ; xiẇíw
feather	stq̓á·l̓əq
feet	cúʔɬuʔ
few	x^{w}aċ
find	yələ́x^{w}
fire	mə́čəp
fire, lexical suffix	-čəp
make a fire	púk̓^{w}čəp
fish	q̓ə́mq̓ən
fish with hook and line	q̓it̓
fish with net	taʔyán
five	cíl̓əč ~ síl̓əč
(to) fly	qáẇəq
flower	spaq
foot	cuɬ
forehead	sq^{w}ə́qčus
four; eye	mus
freeze	čuẇ
full	ləč̓

G

ghost; dead person	tit ʔátəm̓
little girl	sqíqɬn̓əʔɬuʔ
give	k̓^{w}iʔ; čaɬč; ʔumɬt; ʔumċ ~ ʔux^{w}; páɬač
good; pretty	ɬaq̓^{w}
grandfather	míʔa

grass; weeds	pə́cc̓əɬ
green; yellow	q^{w}iq

H

hair	ɬək̓^{w}át
hand	sx̣úʔməc̓
he; she	cən
head	mat
hear; listen	qənáy̓; túʔələš
heart	sq^{w}ə́ləm
heavy	tə́səɬ
here; near	ši ʔ; ši ʔši ʔ
(to) hide	ʔípx^{w}aʔn
high; up; above	ɬuk̓^{w}
hit with club	səp̓
hit in face	t̓ə́q̓x̣^{w}us
hit by throwing something	q̓^{w}á ʔlə
hold; grasp	k^{w}ən
horse	stiqíw
hot	x̣^{w}əlá ʔ
house	x̣aš
blue huckleberry	sk̓^{w}ix̣s
hurry up	x^{w}átx^{w}ataq
husband	šən

I

I	ʔə́nc; -c̓ən
ice	sc̓uw̓

imperative	-aʔ
intestines	sa·cúl̓əč̓
intransitive suffix	-əɬ

J

jump; hurry	xʷátaq

K

kill	tixʷ
kitten	púʔšuʔ
knee	táʔnəs
know; be able	k̓ʷápm̓ən

L

lake	liɬ
laugh	míxʷqəs ~ mixʷs
left	c̓íʔwəq
tell legends	yaʔylúʔpət
lexical suffix	-y̓əq
lick	t̓a·qʷ
tell lie (females)	y̓ul̓áq̓əm ~ y̓ulaʔq̓əm ~ yulaʔq̓əm
tell lie (males)	q̓éx̣əp
lie down	cíʔkʷəɬ
lighten	č̓əpáx̣
continually lightning	ʔič̓əpáx̣č̓əpax̣w̓ən
live	wiṅs ~ w̓ins
body louse	qʷətíx̣ə ~ qʷətíx̣əʔ
head louse	másč̓ən

low; down; below — ɬ̓ép(əɬ)

low; deep — ɬaɬ̓p

Lower Chehalis; Indian — ɬəwélm̓əš̓

Lower Chehalis young person; young Indian — ɬəwé?lm̓əš̓u?

M

man; male — stí?ix^{w}

young man; boy — stí?x^{w}u?

old man — sx̣^{w}ux̣^{w}; ?úlman

little old man — sx̣^{w}á?x̣^{w}u?

white man — sx^{w}éntəm; pástən

many — qéx̣əɬ

meadow — máq^{w}əm

moon — t̓əńím̓

mother — kəh

mountain — sm̓á·n̓əč̓

mouse — k^{w}əlík^{w}əli

mouth — qənš̓

N

name — syəq

narrow — k̓á?əm

neck — č̓əsp

net — ta?y

new — məyén

nine — tú?ux^{w}

night — ?úli?əs

no; not — hílu; miɬt

nominalizer	s-
nose	məqs
O	
one	paw̓
other	tətapáw̓
outside (the house)	paɬč
owl	skʷənúɬčič
little owl	skʷənúʔɬčičuʔ
screech owl	sx̣ə́p̓ləm
oyster	č̓ə́ɬ̓əx̣ʷ
P	
Palix River	ɬ̓əpílqs
pay	múx̣ʷən
peas	lipoá
person	nuɬtálm̓əš
straight pin	k̓ʷík̓ʷiyaʼnst
play	qaʔníč
play (males)	qič
possessive, third singular	-əns
pull	c̓ən
Q	
Queets	q̓ʷic̓x̣ʷ
R	
rabbit	skíʔpxʷa
rain	tulʔs

raven	q^{w}aq^{w}
red	čəsc̓íq̓ ~ c̓yəq̓
road; path	šúẃəɬ
root	t̓əq̓íx̣əɲ̓
rope	ɬə́mə́ɬʔə
rotten	núʔəɬ
rub; paint	čəɬə́n
run (females)	pá·səq
run (males)	qəɬə́q

S

salmonberry	yə́twaʔ
salt; salty	qapə́s
sand	pəq^{w}t
sapling	cəqáʔɬuʔ
say; speak	šək^{w}s
scratch	sa·q
see	ʔax̣ə́n; ʔáx̣mə́ɬ
seven	c̓ups
sew	t̓áč̓(mə́ɬ)
sharp	ɬəčax̣
shoot arrow	ẃáyələ́x̣
shoot gun	c̓íč̓mə́ɬ ~ c̓íč̓ə́mə́ɬ
short	c̓íc̓əɬ
be sick; vomit	súṫmə́ɬ
sing	miyí·n̓at ~ miʔí·n̓at
little sister	páʔsuʔ
older sister	yay

adolescent sister	yáʔyuʔ
sit	čím̓(əɬ)
skin	šw̓əm
slave	syəl̓qín̓
little slave	syəl̓qíʔn̓uʔ
sleep	mú·səm; nəx̣és
small	$x^{W}uk^{W}$
small one	$x^{W}úʔk^{W}uʔ$
smell	ɬéčqəwəš
bad-smelling/-tasting	x̣əsásqəm
good-smelling/-tasting	Ła̓q̓^{W}ásqəm
smoke	sq̓^{W}ux̣^{W}
snake	ʔulq̓
snow	ʔá·šəq
speak	t̓uq̓^{W}
spicy; pepper	t̓úk̓^{W}t̓uk̓^{W}
spit; alive	stéx̣^{W}sč
split	páx̣ačan
split fish	níx̣ač
split in two	cəlʔq
split wood	pax̣áʔyčəp
spoon	ɬət̓íʔ
teaspoon	ɬət̓íʔuʔ
soft; suave	q̓ap̓éʔs
son	man̓
small son	máʔn̓uʔ
squeeze; rinse; dirt	q̓^{W}ic̓
squirrel	sk^{W}iyúh

little squirrel	sk^{W}iyú^{ʔ}hu^{ʔ}
stand up	ɬ̓álsəq
stand up (plural)	ɬ̓á^{ʔ}lsəq
star	sx^{W}ak^{W}
stative aspect	^{ʔ}ac-
steal	^{ʔ}ík^{W}təq
straight	cə́səɬ
suck	mu^{ʔ}t̓
sugar	šúk^{W}ə^{ʔ}
summer	smulá·qəm
sweet	q̓əɬ
swell	k^{W}ətə́x^{W}
swim	səčə́m

T

tail	súpsn̓əč
tears	cúlq̓
ten	pá,n̓əč
thank you	másɨ
that	t̓ís^{ʔ}ən; ɬak^{W}
that (non-feminine)	tá^{ʔ}an
there	šan̓
they	-ti^{ʔ} ~ -iti; cənti-
thick	pə́ɬəɬ
thin	yá·k̓^{W}əɬ
think	k̓^{W}í^{ʔ}x^{W}ənwət
third singular subject	-ən
this (feminine)	cí^{ʔ}ən

this (non-feminine)	tíʔən; tíʔənšiʔ
three	čaʔɬ
throw	ɬəqʼməšəxʷ
thunder	hanə́s
tie	ɬəmə́ɬ
tomorrow	ʔíʼləš
too (excessively)	siw
tooth; teeth	yəʼnəs
tongue	tíxʷcəɬ
oyster tongs	čənpʼúst
transitive marker	-ən
tree	cəqáɬ
turn around	yáčusəʔəməh
two	salʼ

U

uncle	tatʼ
Upper Chehalis language	təʔwáʔənəxʷəq

V

vegetables ("buried")	smúʔləm
very	xʷə́ɬʼ(ən); lat

W

walk	yílʼiʔ
walk around	yílʼyilʼiʔ
wash	cʼəx̣ʷ
water	qalʼ
we	ʔənímˑ; -čəɬ

weave	p̓ə́t̓məɬ
wet	sə́xʷəɬ
whale	syələ́x̓ʷ
what?	tam
when?	q̓awát ~ q̓awát?i
where?	(wi)čán
white	čəsɬáq̓ʷ
who?	wat
wide	ɬə́q̓(əɬ)
wife	nəkʷlákʷ
wind	sɬ̓əxʷ
wipe	ɬak̓ʷ
woman; female	sqíqɬn̓əɬ
old woman	sná?čəm
little old woman	sná?ča?mu?
white woman	spá?stanɬ
wood	sx̓ʷá?čəp
work; do	x̓əɬm̓əɬ
worm	nəpə́lm̓əš
write	q̓ʷə́hɬm̓əɬ

Y

you	nú?; -čš
you all	?əláp; -čup

(unidentified)	ɬa-
(unidentified)	təl̓ápəš
(unidentified)	-təm