=iƛ	in the house
=x°	passive
=o, u	terminal suffix for nouns
=zu	on a flat surface
=uyu	spine
=ayu, yu	instrument
= (!, ±)i,e	nominal
=eni	personal suffix (slang)
=ani	name of animal
=aX̌ci	away
=aci	thing, object
=aii	to die of
=nca	down into the water
(see =ns)	
=nak°la	gradual motion
=iga	strength, power

! suffixes

!X̌t	suffix referring to living being
!s	on ground outside
!s	sensual quality of body or mind
!as	tree
!imas	specific condition of things
!biƛ	personal suffix
!gaƛ	to start making noise
!ak	disposition
!iX̌	line, string
!iniX̌°	(member of) group or tribe
!bu	chest
!X̌u	neck
! (=, ±)i,e	nominal
!X̌awi, X̌awe	neck
!ini, ine	way of
!a	to try to get, to become
!X̌ʎa	hind end, afterwards
!eqla	certain mood
!ala	continuative

Aspects of Clallam Phonology and their Implications for Reconstruction

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Introduction

This paper[1] focuses on the internal reconstruction of Proto-Clallam (henceforth PC) phonology. I will argue that the PC phonemic inventory is considerably reduced from the synchronic surface phonemic system.

Integral for the reconstruction of the PC phonemic inventory is the behavior of proto-glides */ʔ, h, w, ẁ, y, ẏ/. The hypothesis is that phonological alternations involving the glide segments were morphologized which lead to the restructuring of allophonic segments. Consequently, the number of surface segments identified by the language learner as distinct (phonemic) increased as compared with the underlying phonology which can be reconstructed when specific morphophonemic processes are considered.

/ʔ/, /h/

The glottal glide is defined as [- continuant], [+ low], [- tense]; /h/ is a [+ continuant], [+ low], [+ tense] segment (see TABLE I). /ʔ/ and /h/ are closely related structurally; both are [- anterior], [+ low] segments distinguished by the [tense]. /h/ is positively marked for tenseness and /ʔ/ is negatively marked for tenseness. Tenseness may be viewed in an alpha relationship with the feature [continuant] making it a redundant feature. Within the system, however, all [+ tense] segments are redundantly [- continuant]; the problem of feature ordering within the matrix becomes apparent vis-à-vis the

TABLE 1. PHONOLOGICAL DISTINCTIVE FEATURE MATRIX FOR CLALLAM PHONEMES

(Feature matrix, rotated 90° on the page. Rows 1–8 are the distinctive features; columns are the Clallam phonemes.)

Feature	p	p̓	k̓	k	q̓	q	qʷ	q̓ʷ	t	c	c̓	ƛ	ƛ̓	s	š	x	xʷ	x̌	x̌ʷ	kʷ	m	n	ŋ	ʔ	h	w	y	i	ɪ	e	u	ɔ	a
1. Vocalic	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	+	+	+	+	−	−	−	+	+	+	+	+	+
2. Consonantal	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	−	−	−	−	−	−	−	−	−
3. Peripheral	−	−	+	+	+	+	+	+	−	−	−	−	−	−	−	+	+	+	+	+	+	+	+	+	+	+	−	−	+	+	+	+	−
4. Anterior	+	+	−	−	−	−	−	−	+	+	+	+	+	+	−	−	−	−	−	−	+	+	−	+	−	−	−	+	+	+	−	−	−
5. Continuant	−	−	−	−	−	−	−	−	−	−	−	−	−	+	+	+	+	+	+	−	−	−	−	−	+	+	+	+	+	+	−	−	+
6. Low	−	−	−	−	+	+	+	+	−	−	−	−	−	−	−	−	−	+	+	−	−	−	−	−	+	+	−	−	−	+	−	−	+
7. Tense	−	+	+	−	+	−	+	−	+	+	+	+	−	−	−	−	−	+	−	+	+	+	+	+	−	+	+	+	+	+	+	−	+
8. Strident	−	−	−	−	−	−	−	−	−	+	+	+	−	+	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−

distinctiveness of a feature. That is, for the segments /ʔ/ and /h/, is the feature [continuant] or [tense] distinctive?

If we assume that low segments tend to be tense, then given the opposition /ʔ/-/h/, /h/ would appear in neutralized environments as the unmarked member of the pair. From the point of view of marking theory, we can assert that,

$$[\text{U continuant}] \quad \rightarrow \quad [\text{+ continuant}] \ / \ \left[\underline{} \atop \text{+ low}\right]$$

As this rule must apply to all glide segments, it is apparent that an additional rule must be employed to correctly specify /w,y/.

If, however, the following rule is used, marking theory shows that [tense], not [continuant], is the distinctive feature since [tense] and [low] correctly specify all glide segments with one rule.

$$[\text{U tense}] \quad \rightarrow \quad [\alpha \ \text{tense}] \ / \ \left[\underline{} \atop \alpha \ \text{low}\right]$$

The interplay of /h/ and /ʔ/ in particular environments is clear. A glottal glide becomes tense preceding another glottal glide (i.e., /ʔiʔ ʔaʔawkʷ/>[ʔiʔ aʔawǩʷ] 'running out of or using up something) or a pause (i.e., /šawiʔ/>[šawi ~ šawiʔ] 'growing').[2] The surface representation is a nonabrupt syllabic onset or offset.[3]

/w/, /y/

/w/ is defined as [- anterior]; /y/ is [+ anterior]
(see TABLE I). /w/ and /y/ become corresponding vowels between
consonants, and between a consonant and a following pause.
/w/ and /y/ occur predictably as [u] and [i], respectively.
Synchronically, /w/ and /y/ appear as [k^w] and [č] in environments
which are ill-defined. Similar variations probably occur with
*/w̥/, and */y̥/; however, the situation is further complicated
in that vowel clusters do not appear in the phonology. Conse-
quently, */w̥/ and */y̥/ are involved in a case of absolute
neutralization.

Productive diachronic variation in the semi-vowel class
is summarized as follows.

Conditioning

	Phonetic		Morphophonemic
(1)	w	u	k^w
(2)	w̥	u?,?u	$k̓^w$
(3)	y	i	č
(4)	y̥	i?,?i	č̓
(5)	h	h	a
(6)	?	?, h	h

Fleisher (1976:153-154) suggests that shwa is the only
PC pure vowel since it has no consonant allophones. Furthermore,
/e/ was not present in PC; its synchronic appearance is infre-
quent and consistently in the presence of postvelars (see
Jacobsen 1969:2 for a discussion of /e/ in Makah).

As an example of these process consider the derivation
of the surface forms,[4]
   (a) /hu?ak^w-ə?-aw?-ɬ/ 'be in front of something'

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   (b) /hu?ak^w-aw?-tx^w/ 'be in front of a house'

   (c) /hu?ak^w-axən/ 'front edge'

The underlying root is */hw?/ 'front, forward, location'.
The surface stem is derived as follows,

$$*/hw(?)/$$

(1)	Reduplication	hw?-hw(?)
(2)	MP-rule[5]	hw?-ak^w(?)
(3)	P-rule[6]	hu?-ak^w(?)

Step (1) reduplicates the underlying verb root. Step
(2) produces the morphophonemes /a, k^w/. Step (3) produces the
phonetically conditioned [u].

*[k_w], *[t_y]

The morphophonemes [k^w] and [č] are derived phonetically
through the intermediate step, *[k_w]<*[?w] and *[t_y]<*[?y].
Other morphophonemic affricates are derivable similarly (i.e.,
/s/>/t_s/>[c];*/s/>*/t_s/>[č]; */ɬ/>*[$t_ɬ$]>[ƛ]).

Variation of this sort is interesting in comparison to
data which do not show this type of assimilation (i.e.,
/k^{w}itšən/ 'spring salmon'; /sətšən/ 'animal trap'; /tše?k^{w}əŋ/
'comb').

Nonassimilation in these environments may be conditioned
by the morpheme boundary (+) occurring medially in the consonant
cluster (e.g., /k^{w}it+šən/, /sət+šən/, /t+še?k^{w}əŋ/). These data
suggest the need for examining morpheme structure conditions.

Implications and Conclusions
(1) PC has a greatly reduced phonemic inventory vis-à-vis
synchronic Clallam (see TABLE II).

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TABLE II. PHONOLOGICAL DISTINCTIVE FEATURE MATRIX FOR CLALLAM PROTO-PHONEMES

	*p	*p̓	*k	*k̓	*q	*q̓	*t	*t̓	*s	*x	*c̓	*?	*h	*y	*y̓	*w	*w̓	*m	*n	*ə
1. Vocalic	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	+
2. Consonantal	+	+	+	+	+	+	+	+	+	+	+	−	−	−	−	−	−	+	+	−
3. Peripheral	+	+	+	+	+	+	−	−	−	+	−	+	+	+	+	+	+	+	−	−
4. Anterior	+	−	−	−	−	−	+	+	+	−	+	−	−	−	−	−	−	+	+	−
5. Continuant	−	−	−	−	−	−	−	−	+	+	−	−	+	+	+	+	+	−	−	−
6. Low	+	+	+	+	+	+	−	−	−	−	−	−	−	−	−	−	−	−	−	+
7. Tense	−	+	−	+	−	+	−	+	−	−	+	−	+	−	+	−	+	−	−	−

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no evidence given for such a rule

(2) With the exception of */?/ > [h], the morphophonemics of PC are nonproductive in synchronic Clallam.

(3) Clallam morphophonemes appear sufficiently disparate from their underlying forms as to reinforce the distinction in relation to the language learner (TABLE III summarizes PC morphophonemics).

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TABLE III. PROTO-CLALLAM MORPHOPHONEMES

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*p   *t   [c]        *k   *q
*p̓   *t̓   [č] [ƛ̓]    *k̓   *q̓    *ʔ  [h]

     *s              *x         *h  [a]

     *ł

*m   *n

*y   [i, č]           *w   [u, kʷ]

*y̓   [ʔi, iʔ, č̓]      *ẃ   [ʔu, uʔ, k̓ʷ]

*ə
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(Brackets enclose morphophonemes)

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[2] Glottal glide dissimilation preceding another glottal glide is a phonetically conditioned rule; however, glottal glide dissimilation preceding a pause can be interpreted as phonetic or nonphonetic conditioning. In the case of nonphonetic conditioning, the pause would be interpreted as a word or morpheme boundary. The varying interpretations are theoretical and related specifically to constructing a phonological or morphophonemic rule, or both.

[3] Comparative data from two Halkomelem dialects, Cowichan and Musqueam, also illustrates this phenomenon (Elmendorf and Suttles 1960:13-27).

Cowichan	Chilliwack	
swəy̓qɛ	swəy·qɛ	'man'
swiw̓ləs	swiw·ləs	'teenage boy'
səy̓səy̓	si·si·	'be afraid, fear'

[4] /-axən, -awʔ, -txʷ/ are lexical suffixes; /-axən/ 'side, edge', /-awʔ/ (group viewed distributively [see Hess 1976:13-14]), /-txʷ/ 'building'. /-ł, -ʔ/ are aspectual markers; /-ł/ (durative), /-ʔ/ (continuative).

[5] The morphophonemic rule (MP-rule) can only be weakly formulated at this time; in reduplicated verb stems, the reduplicated syllable undergoes one or more of these morphophonemic variations--*/h/>[a], */w/>[kʷ], */ẃ/>[k̓ʷ], */y/>[č], */y̓/>[č̓]. The MP-rule also seems to operate in a similar fashion in the derivation of [kʷ-eʔ-wn-ti]>*/wən/ 'fight'. Much more additional data are necessary to understand this nonproductive process.

*/w,ẃ/ seem to play an important role in the underlying phonology. Any phonological rule constructed with /w,ẃ/ as part of the structural description has a corresponding result in articulation. This is an important point because it raises two sources for /kʷ, k̓ʷ/, one morphophonemic and the other phonetic (/w,ẃ/ tends to create an environment within which segments lower; therefore, */k/>[kʷ], */q/>[qʷ]). Similarly, /č/ may also have a morphophonemic (*/y/>[č]) and phonetic (*/k/>[č]) source.

⁶This phonological rule (P-rule) is common in Clallam; the glides /w, y/ become corresponding vowels, /u, i/, between consonants and between a consonant and a pause.

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Morphemes of Possession in Twana[1]

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This paper gives a short description of morphemic structures which can be used to denote possession in Twana. Not included in this discussion are cooccurence constraints or a discussion of main verbs of the type 'own', 'possess' since my research has not progressed to that point.

This paper makes available certain data which should enable limited comparison to be made in the future of structures which designate possession in Twana and those found in other Salish and non-Salish languages. Forms cited in this paper were ellicited by me from Louisa Pulsifer, referred to as (LH), or Lee Cush (CH), or they are Professor Elmendorf's forms (WE) or forms ellicited by Nile Thompson also from Louisa Pulsifer (LT).

In Twana, possession is commonly expressed in three ways: by possessive pronouns typically glossed in English in the manner 'my, mine etc.'; by a peripharastic prefix of possession bIs- in the sense of 'have, has'; by a genitive noun phrase suffix -(V)s (where V stands for either the vowel [a] or [I]) constructions which can be glossed in English with the use of the preposition 'of'. In conclusion a note is made of adjectives, compounds and certain special sentence types which involve the notion of possession.

First consider the possessive pronouns. The first and second person singular possessive pronouns are represented in two ways: as an adjectival affix and