When Did the **k* > **č* Shift Occur in Central Salish?*

Ethan Pincott
Simon Fraser University

Abstract: The Proto-Salish velar series has fronted in all languages of the Central Salish branch. This leads Galloway (1988) to reconstruct the **k* > **č* shift as occurring between the Proto-Salish and Proto-Central Salish stages. However, this leaves some irregular sound correspondences unexplained, both within Central Salish and between Central Salish and neighbouring languages. This paper examines these sound correspondences and concludes that the shift must have occurred after Proto-Central Salish.

Keywords: sound change, velars, palatalization, Central Salish, loanwords

1 Introduction

One of the primary phonological divisions in the Salish family is between those that have retained the Proto-Salish (PS) velar series and those that have fronted them to palato-alveolars, or further. This shift was described very early on in the study of the language family by Boas and Haeberlin (1927), who noted its striking geographic distribution, with the majority of coastal languages having the *č*–series, while the Interior Salish languages are divided between *k*–languages in the west and *č*–languages in the east. Swadesh (1952) elaborated on this distributional pattern, concluding that since the shift cuts across divisions of the family, it must have occurred well after these branches had begun to diverge. Despite this widespread fronting of the plain velar series, the other dorsal obstruents have remained completely stable across the family. In addition to the plain velar series, Proto-Salish contrasted a labio-velar *k*^{w}–series, a uvular *q*–series, and a labio-uvular *q*^{w}–series, which are preserved in all modern Salish languages.

Central Salish forms one of the primary branches of the family, with ten languages spoken in an area from Bute Inlet in the north to the southern end of Puget Sound. These languages are closely related, and are said to form an old dialect continuum, with languages sharing features with their closest neighbours (Czaykowska-Higgins & Kinkade 1997:4). The languages of the Central Salish branch are all *č*–languages,[1] leading Galloway (1988) to conclude that the **k* > **č* shift was complete by the Proto-Central Salish (PCS) stage. He suggests that the few cases of the *k*–series that do occur in these languages result from borrowing, sound symbolic shifts of the *q*– and *k*^{w}–series, or unexplained residue (Galloway 1988:297). However, there are some issues with this account of the timing of the **k* > *č* shift, which are the subject of this paper. Section 2 presents evidence from borrowings between Central Salish and neighbouring languages. Section 3 deals with the primary evidence in the form of sporadic /k^{w}/ : /č/ correspondences that occur within Central Salish, particularly before PCS **u*. Finally, Section 4 discusses the implications of these findings, and Section 5 concludes.

[1] With the exception that PS **x* > x^{y} in the Musqueam and Chilliwack dialects of Halkomelem.

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2 Evidence from borrowings

2.1 Borrowings between Central and Interior Salish

The Interior languages Lillooet and Thompson share a significant number of lexical items with Central Salish languages (Kuipers 2002:10). Some of these are clearly recent loanwords, while others that belong to an older layer display characteristic sound changes of the languages involved (van Eijk 2014:197). Table 1 presents a few of the roughly two dozen cognate sets where Lillooet and/or Thompson have a *k*–form while neighbouring Central Salish languages have a *č*–form.[2]

Table 1: Borrowings between Central Salish and Lillooet/Thompson[3]

Gloss	Central	Interior
'stone maul'	Sq *ntáɬčis*, Ck *štáɬcəs*	Li *túɬkis*, Th *túɬkist*
'devil's club'	Se *č'áʔatay*, Sq *č'átiyaẏ*	Li *k'átlaẓ*, Th *k'etyeʔ*
'fireweed'	Sq *χač't*, Ck *χec'ət*, Ld *χáč'tac*	Li *(s)χak't*, Th *sχák'iʔt*
Cx/Se 'climb'; Li/Th 'high, area above'	Cx *šaʔ,* Se *šaʔ*	Li *xaʔ*, Th *xeʔ*
'twin(s)'	Se *sč'ič'iyúya*, Sq *(s)č'iyúy*, Cw *sc'iyáyə*	Li *sk'zuz*
'fish weir'	Sq *č'iyáq*, Ck *c'iyéq*	Li *sk'zaq*
'go upstream'	Sq *ʔúmič*	Li *ʔúmik*
'again, for a little while'	Sq *čaʔɬ*	Li *kaʔɬ*

These cognate sets are significant because they display expected sound changes as if they had descended from PS, but their limited and largely geographically contiguous distribution strongly suggests borrowing. These loanwords are therefore likely ancient, and in most cases the direction of borrowing is difficult to determine, but in either case these etymologies strongly support a post-PCS date for the **k* > *č* shift. If the alternative hypothesis is correct, one would expect Central

[2] In addition to Kuipers (2002), data for this section come from Squamish Nation Education Department (2011) and van Eijk (1997).

[3] Abbreviations used for language names are based on Kuipers (2002) for ease of comparison: Cx Comox, Se Sechelt, Sq Squamish, Ck Chilliwack, Ms Musqueam, Cw Cowichan, Sn Saanich, Sg Songish, Sm Samish, Kl Klallam, Nk Nooksack, Tw Twana, Ld Lushootseed, Li Lillooet, and Th Thompson. The term "Straits" as used here includes the Northern Straits dialects Saanich, Songish, and Samish, as well as Klallam, while "Halkomelem" includes the Cowichan (Island), Musqueam (Downriver), and Chilliwack (Upriver) dialects. Abbreviations for non-Salish languages are Kw Kwak'wala, Di Ditidaht, Ch Chemakum, Qu Quileute.

Salish /k/ in these words if the direction of borrowing were Interior > Central (cf. Squamish *k'ə́xʷaʔ* 'lacrosse' from Lillooet *k'ə́xʷaʔ*), or Interior Salish /c/ if the direction of borrowing were reversed (cf. Lillooet *c'ə́ʔmiqʷ* 'removed, in a genealogical sense' from Squamish *sč'áʔmiqʷ* 'great-grandparent/grandchild'; van Eijk 2014:187). The large number of shared lexical items between these languages suggests that Lillooet, Thompson, and neighbouring Central Salish languages formed an ancient language area at a time when early Central Salish dialects still possessed the *k*–series.

2.2 Borrowings between Central Salish and neighbouring families

There are also some words found in the neighbouring Wakashan and Chimakuan language families that have /k/ or /kʷ/ where related words in Central Salish have **č*. Again, the direction that these words were borrowed is not always clear, but the implications remain the same. Assuming that PCS had already fronted the *k*–series, it would be expected that these forms should have /k/ in the modern Salish languages if they originated in Wakashan or Chimakuan; if the direction of borrowing went the other way, then there would be no PCS **k* to give /k/ in Wakashan or Chimakuan. Table 2 provides the loanwords that have been discovered so far.[4]

Table 2: Borrowings between Central Salish and neighbouring families

Gloss	Central Salish	Wakashan	Chimakuan
'type of basket'	PCS **spəču*ʔ	Kw *pəku*, Di *pukuʔ*	Ch *spčuuʔu*, Qu *pikʷoʔ*
'rock'[5]	Cw *ƛ'ə́c'a*, Ld *č'əƛ'əʔ*		Ch *č'aała*, Qu *k'aƛ'aʔ*
'harpoon'	Sq *miyáč*		Qu *bíyaʔk*

These words do not provide as strong of evidence for the late velar fronting shift, since there is always the possibility that borrowing took place prior to the PCS stage, with the words being lost in all other branches. Hopefully future research into borrowing between these three families will help clarify this question.

3 Evidence within Central Salish

3.1 /kʷ/ : /č/ correspondences

There are several cases within Central Salish of cognates with the *kʷ*–series in one language corresponding to the *č*–series in another, and occasionally occurring in doublets within the same language. These are presented in Table 3 below, with comments following. To simplify the data, I have omitted glosses for the reflexes in the modern languages. The PCS reconstructions are modified from Kuipers (2002) (see discussion below).

[4] Wakashan data are from Fortescue (2007) and Chimakuan data from Swadesh (1955).

[5] This form is also found in Lillooet *k'ə́ƛ'a*. It may be the case that this root predates Proto-Central Salish and is only preserved in these three languages.

Table 3: /kʷ/ : /č/ correspondences in Central Salish

	Reconstruction	Gloss	/kʷ/ reflexes	/č/ reflexes
a.	PCS *kul	'borrow'	Cx *kʷuɬəma,* Se *kʷułtn*, Sq *kʷułn*	Cw *cálaʔɬ*, Ms *cáɬtn*, Ck *cáɬte*, Ld *čul'álc*
b.	PCS *kum	'go up/ashore'	Cx *kʷúmšin*, Se *kʷum*, Sq *kʷum*	Cw *cam*, Ms *ca:m*, Sm *saŋ*, Sn *θaŋ*, Kl *cuŋ*, Ld *čubə*
c.	PCS *kusan	'star'	Cx *kʷusnʔ,* Se *kʷusn*, Sq *kʷusn*, Cw *kʷasn*, Ms *kʷasn*, Ck *kʷasl*, Nk *kʷúsen*	Ld *čúsad*
d.	PCS *k'útəp	'flea'	Nk *kʷ'út'əp*	Ld *č'út'əp*
e.	PCS *xul	'spin, drill'	Ck *xʷəlkʷ'*, Sn *xʷələkʷ't*, Sg *xʷələkʷ't*, Kl *xʷəyəkʷ't*	Sq *šiʔúkʷ'*, Ms *xəlákʷ'*, Ck *xa:lt*, Sn *šəlakʷ'*, Sg *šəlakʷ'*, Kl *šaʔyaʔkʷ'*, Ld *šuláʔkʷčup*
f.	PCS *xup$_1$	'a night bird'	Ld *xʷupšəd*	Cw *šapšəp*, Sa *šapšəp*, Kl *šupšp*
g.	PCS *xup$_2$	'whistle'	Cx *xʷupt,* Se *xʷúpum*	Sq *šupn*, Cw *šapəs*, Ms *xápəm*, Ck *xa:pm*, Sn *šapt*, Kl *šupt*
h.	PCS *xuyaʔ	'maggot, insect'	Cw *xʷəxʷiyémʔ*, Ck *xʷəxʷíye*, Sn *xʷəxʷəyem*	Cw *šáyaʔ*, Ms *xáyeʔ*, Sn *šayəʔ*, Sm *šáyeʔ*, Ld *šuǰəʔ*
i.	PCS *–kup	'fire, firewood'	Cx *–awkʷup*, Se *–ikʷup*, Sq *–ikʷup*, Tw *–ayqʷp*	Se *–ičup*, Sq *–čəp*, Cw *–əlcəp*, Ms *–əlcəp*, Ck *–əlcəp,* Sm *–ečəp*, Sn *–čəp*, Ld *–čup*, Tw *–čup*
j.	PCS *–ku[6]	'water'	Cx *–kʷu*, Se *–kʷu*, Sq *–ałkʷu*, Tw *–akʷ*	Sq *–ałč,* Ms *–əlcə*, Ck *–əlce*, Sm *–əlsə*, Sn *–əlsə*, Kl *–ałc*
k.	PCS *sk'úłaʔ	'leaf'	Tw *qʷ'iłuʔáy*	Sq *sč'úłaʔ*, Cw *sc'áłeʔ*, Ck *sc'á:łe*, Sn *sθ'áθ'əʔ*, Sg *sc'ałə*, Kl *sc'úc'łaʔ*, Ld *sč'uləy*
l.	PCS? *xʷikʷ'	'grey'	Sq *xʷikʷ'*, Cw *cxʷikʷ'*, Sn *nəxʷíkʷ'*, Kl *ʔənəxʷíkʷ'*	Ld *šukʷ'*
m.	*k'uł–	'fellow, co-'	Sq *kʷ'əł–*, Sa *kʷ'əł–*	Cw *c'ł–*, Ms *c'ł–*

Kuipers (2002:7) reconstructs these forms with initial **kʷ*, stating that they have become unrounded before a following **u*. However, Kinkade (2003:246) suggests that these cases should be reconstructed with plain velars, which can then become labialized before the rounded vowel, or front as expected. The fact that this pattern of labialization is attested in most modern Salish languages that preserve both series, as well that Kuipers reconstructs no Proto-Salish, Proto-Coast Salish, or Proto-Interior Salish roots with initial **ku, *k'u, or *xu* suggests that the reconstruction with plain velars is correct.

Some specific words in Table 3 call for comment. The form (d) **k'útəp* 'flea' is inferred from the Nooksack and Lushootseed forms; however, Kuipers reconstructs PS **kʷ'ət'*, presumably to account for reflexes in Interior Salish such as Moses-Columbian *kʷ'ət'akʷ'ít'ps* and Shuswap *kʷətkʷit'p*. However, this leaves the /u/ in the Nooksack and Lushootseed forms unexplained, while the schwa in Interior can easily be derived from **u* via unstressed vowel reduction. The Straits reflexes for words (e), (f), (g), (h), and (i), contain phonemes /š/, /č/, and /p/ instead of expected /s/, /c/, and /č/, which likely reflects borrowing. Form (l) is tentatively reconstructed to PCS based on the forms cited, but I have not been able to check if it occurs in the northern languages of the branch. The Lushootseed form is also problematic, since the expected vowel is /i/ not /u/. However, it does appear to derive from the same etymon, since derived forms such as *šúkʷ'us* 'loon' (lit., 'grey-face') have clear cognates in other Central Salish languages (e.g., Squamish *xʷikʷ'us*). Form (k) shows an irregular uvular > velar shift in Twana which is sporadically attested in the language (Kuipers 2002:6): cf. (i) *–ayqʷp*. Form (m) appears to be limited to Squamish, Straits, and Halkomelem, so this is likely an innovation in these languages postdating PCS.

3.2 Areal patterns

The *č*–reflexes of the etyma in Table 3 have a strong areal pattern: in all cases where multiple languages have *č*, these languages are spoken in a contiguous area. Furthermore, the frequency of *č* also seems to have an areal pattern. Generally, the languages from Squamish south to Lushootseed have more instances of *č*, which decreases as one goes north (Table 4). Note that for Nooksack, lexical materials are currently quite limited, and it may be the case that the language does have cognates for some of the forms in Table 1.

Table 4: Number of /č/ forms

Comox-Sliammon	0
Sechelt	1
Squamish	5
Halkomelem	10
Northern Straits	8
Klallam	6
Nooksack	0
Twana	1
Lushootseed	9

[6] This morpheme has several variants, which sometimes co-occur in the same language as doublets. These include **-qu*, **-ka*, and **-qa*. It is therefore possible that the fronted forms actually derive from **-ka*.

This suggests that the labialization shift of *k > k^w before *u is regular in the northern languages Comox and Sechelt, while in the southern languages this shift did not occur, or occurred only sporadically. This is complicated by the problem of doublets, where one language has both k^w and *č* reflexes of the same root. These could be interpreted in two ways: firstly, that one phonological form is inherited directly from PCS while the other is borrowed; or secondly that the *k^w ~ *k alternation was already present in the proto-language and caused a split into phonologically distinct forms in some roots following the *k > *č shift. Both scenarios require the existence of a *k*–series in PCS, with the fronting shift occurring after the languages had already begun to diverge.

The southern bias towards *č*–forms in interesting, since the Tsamosan and Tillamook branches spoken to the south of Central Salish often have the *č*–series where other branches have the k^w–series. The Tsamosan languages occasionally unround and/or palatalize PS *x^w word-finally, as in Cowlitz *təmx*, Chehalis *təmš* 'earth' (cf. Squamish *təmíx*^{w}) (Kinkade 1993:180). Unfortunately, it is unclear exactly how common this is, since Kinkade (1993:180) states that it "is not a widespread development" and gives only four examples. Additionally, he shows that Chehalis has *–či/–ča* in four morphemes which correspond to *–*k^w*u* elsewhere in Salish, although this too is clearly not a regular change (Kinkade 1993:181). Tillamook appears to also have frequent *č*–forms, including *t'č'əws* 'seven' (cf. Squamish *t'ak*^{w}*'usáč*), *–əš* '2SG.SUB' (cf. Squamish *–ax*^{w}), and *nəš–* ~ *š–* 'LOC' (cf. Squamish *nəx*^{w}*–* ~ *x*^{w}*–*).[7] Further comparisons between these languages and Central Salish will allow for a better understanding of how and when the *k > *č shift spread through Salish languages of the coast.

3.3 Irregular labio-velar reduplication in Halkomelem

A related piece of evidence comes from the reduplication patterns in Halkomelem observed with certain roots with an initial /c/ followed by /a/, which derives historically from *u. When these roots are reduplicated, the consonant appears as /k^w/: *cam* 'go ashore' > *cák*^{w}*əm* 'going ashore' (Suttles 2004:20). In Suttles' (2004) Musqueam grammar, he points out that these forms must derive from labialization of the second *k under influence of the preceding rounded vowel, a process which is attested in languages like Lillooet (van Eijk 1997:10) which have both velar series. The historical process Suttles (2004:20) outlines is: **kúkum* > **kúk*^{w}*um* > **čúk*^{w}*əm* > *cák*^{w}*əm*. This shows that the *k*–series must have remained relatively late in the evolution of the Halkomelem language, since closely related Squamish and Northern Straits languages show no trace of this process.

4 Discussion

The evidence presented in this paper shows that PCS had not yet fronted the *k*–series, contrary to Galloway (1988). This is significant because the *k > *č shift is the only sound change separating PCS and PS in Galloway's paper, leaving the branch without any shared phonological innovations. In fact, the Central Salish branch has not been rigorously defined by any set of shared innovations (Czaykowska-Higgins & Kinkade 1997:4), but instead by general morphosyntactic similarities (Kroeber 1999), and shared lexical items (Jorgensen 1969:19). The latter type of evidence is particularly problematic, since early lexicostatistical studies failed to distinguish between borrowings, shared retentions, and shared innovations, when only shared innovations are useful for defining subgroups. Further research will be required to discover what shared phonological innovations, if any, occurred in the transition from PS to PCS.

[7] Tillamook data are from Egesdal and Thompson (1996).

This fronting shift occurs not only in Salish, but in the neighbouring language families as well. The Chemakum language, one of two members of the Chimakuan language family, forms a linguistic enclave spoken on the Hood Canal, surrounded by Coast Salishan speakers. Here, Proto-Chimakuan plain velars have fronted to palato-alveolars in the same way as neighbouring Salish languages (Andrade 1953:215). Likewise, the other dorsal series have not shifted to fill the gap, leaving Chemakum with a phonological inventory that is nearly identical to most Central Salish languages. The Southern Wakashan languages, spoken on the west coasts of Vancouver Island and the Olympic Peninsula, have also fronted earlier velars to palato-alveolars. However, these languages have phonemic plain velars as well, which derive from earlier labio-velars that have become unrounded before /u/ and some consonants, as well as word-finally (Fortescue 2007:8). Whether the velar fronting shift spread from one family to the others through contact, or simply developed independently due to drift because of similar phonological pressures in the languages must remain a question for future research.

This paper demonstrates how both comparative reconstruction and loanword analysis can be used together to establish a relative chronology of sound change. These methodologies could be useful to examine sound change within the Central Salish branch, particularly in the Straits-Halkomelem area. These languages are very phonologically innovative, and Halkomelem in particular is a source of many loanwords in Northern Straits and other neighbouring languages. By analyzing these borrowings and sound changes in an areal context, a clearer picture of when certain developments occurred and how different languages influenced one another over the course of their histories will emerge.

5 Conclusion

A re-examination of cognates and loanwords shows that the **k* > **č* shift in Central Salish must have occurred after the languages had already started to diverge, and not in the transition from PS. This explanation accounts for the occurrence of /k^{w}/ to /č/ correspondences within Central Salish, and clarifies why loanwords between Lillooet, Thompson, and Central Salish show /k/ to /č/ correspondences that give the illusion of inheritance from PS. These facts are otherwise difficult to explain assuming Galloway's theory that PCS lacked /k/.

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