It seems fairly certain that this phenomenon did not have a wider distribution than that delineated above (unless it extended on south of Chinook). Spread north of Comox was blocked by the Northern Wakashan languages, which have a three-way contrast among stops already, one of which is voiced stops, in addition to nasals. There is no evidence that Interior Salishan languages to the east or Upper Chehalis and Cowlitz to the south ever had this characteristic. Thus it is nicely hemmed in, except for Nootka on up the west coast of Vancouver Island from Nitinat. Within this area, there were at least twelve languages that had a sound intermediate between nasals and voiced stops--a rather unusual sound that was lost as it settled out in one direction or the other, presumably under the influence of English, where the sounds are in contrast. Just why some languages settled on nasals and others on voiced stops is not clear; Thompson and Thompson (1972) provide extensive discussion of this point, and I will not speculate on it further here.

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A Grassmann's Law for Salish*

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0. Introductory. Among the 23 languages of the Salish family[1], four show dissimilation rules that are very similar in spirit to those which Grassmann[2] noted as alike in Greek and Sanskrit. Where the Indo-European cases concern deaspiration, the Salishan rules involve mainly deglottalization, but the principle is obviously the same. In all the languages there is a series of glottalized stops (and affricates) corresponding to plain (unglottalized) counterparts, and the glottalized elements are replaced by those unglottalized counterparts when there is a glottalized element later in the stem. One of the languages has recently developed a contrast between aspirated and unaspirated stops. In that language, in reduplicative prefixes, underlying aspirated stops are deaspirated before the stem aspirate, behavior precisely corresponding to Grassmann's Law.

Now again as in the Indo-European situation, the languages involved are found in two quite separate areas, and there seems every indication that the dissimilation rules, despite their similarities, have developed independently in the two areas. We should like to show here the details of these cases and suggest that the phenomenon reflects a universally available principle likely to be found operative in other language families as well.

The languages involved (see map) are three Interior Salish languages (Kalispel, Okanagan, and Shuswap) on the one hand, and on the other Tillamook, an outlier of the family whose closest relationship is to the Central Coast subgroup.[3]

1. Interior Salish Deglottalization. Just as in Greek and Sanskrit, the effects of the dissimilation are observable partly only in comparative terms, but to some extent morpheme structure rules demonstrate the principle, and the effects also show up as alternations in paradigmatic material. Since reduplication is widely used in all the languages, reduplicated derivatives furnish good synchronic evidence.

1.1. Shuswap, spoken over a large area of south-central British Columbia, shows the most systematic and thoroughgoing applications of the principle. Gibson (1973:16) states the morphophonemic alternations for an eastern dialect. Kuipers (1974a), based mainly on western dialects, covers also the morpheme structure conventions. It is convenient to quote from the latter (p. 23; abbreviations are K any obstruent, R any resonant, V any vowel):

> **If a root has the shape K_1VK_2, K_1VRK_2, K_1RVK_2, and K_2 is glottalized, then K_1 is never glottalized. In any type of reduplication, the first occurrence of a reduplicated obstruent is never glottalized.**

(Implicit in this statement is something which should be explicitly stated here: glottalized resonants are not thus dissimilated. A different principle affects them, shifting position of underlying glottalization in terms of different stress patterns and syllable structures: Kuipers 1974a:21, 32-3. Note also that /ʔ/ here aligns with plain stops: it has no deglottalizing influence.) The following examples are culled from elsewhere in Kuipers' grammar and the accompanying dictionary (pp. 135-280):

t̓eχ-t 'tall' : tə-té-t̓χ-t 'taller'
c̓lut 'rushes' : cl-c̓ltútləxʷ 'tubular goosegrass'
k̓yey 'be cold, freeze' : t-ky-k̓iy-t 'chilled'
ʔs-t̓il 'to stop, quit' : tə-t̓il-t 'keeping still'
t̓ək?-ém 'support, prop up' : x-tək-t̓ək?-éχn 'crutches'
q̓iχ-t 'strong' : qə-qí-q̓χ-t 'stronger'
q̓iw-t 'to break' : qw-q̓íw 'brittle'

A few comparisons show that Shuswap has systematically deglottalized earlier glottalized obstruents in precisely the same terms. Forms for comparison are cited from neighboring (and closely related) Thompson River Salish (from our own field materials), where no such general deglottalizing rule operates.

Sh s-péc̓-n 'Indian hemp, twine' : Th s-p̓éc̓-n 'id.'
Sh plek̓ 'to roll' : Th p̓yək̓ 'id.'
Sh x-cəp-cíp̓-s-m 'shut eyes tightly' : Th c̓íp̓-s-m 'blink'
Sh kip̓-m 'to pinch together' : Th k̓íp̓-m 'id.'
Sh qc̓-em 'weave' : Th q̓c̓-ém 'id.'

The prohibition does not, however, seem to operate between root and suffix. (Note that this again parallels the classical Grassmann's Law--aspirates in suffixes do not trigger the dissimilation in stems in Sanskrit and Greek.) There are not many suffixes having glottalized obstruents and they are inevitably lexical suffixes (i.e. bound compositional morphemes with regular lexical meanings). Of those Kuipers (1974a:61-71) lists (apparently an exhaustive listing from his analytical materials), the following examples all show a glottalized obstruent retained in the preceding stem:

-ic̓əʔ 'surface, hide':
t-k̓m-íc̓əʔ 'surface, bark of root' (√k̓em root occurring in many body part words)
-éstyeʔ 'grass':
k̓ʷsəxʷ-éstye 'goose grass' (k̓ʷsixʷ 'goose')
-esl̓p̓ 'house- or camp-fire':
s-q̓ʷəχ-esl̓p̓ 'smoke from house- or campfire' (cf. q̓ʷeχ-m 'smoke skins')
q̓ʷmp-esl̓p̓ 'be out of firewood' (√q̓ʷmp 'exhausted, gone')
-esq̓t 'day':
k̓ʷnx-esq̓t 'how many days?' (k̓ʷinx 'how many?')
cəkʷ-c̓k̓ʷ-esq̓t 'bright day' (√cek̓ʷ 'bright') (note deglottalization earlier in word)
-ełc̓ə 'inside, meat, game; character':
x-k̓m-éłc̓ə 'inside' (√k̓em; see above)

x-k̓ʷn̓-xn-éłc̓ə 'look for tracks of game' (cf. c-k̓ʷen-m 'check up, inspect', -xn 'foot')
x-k̓əs-éłc̓ə 'mean at heart' (cf. k̓is-t 'bad')
-eyl̓ək̓ 'skin, hide':
q̓ʷəχ-eyl̓ək̓-m 'smoke buckskin' (cf. q̓ʷeχ-m 'smoke skins')

Nor do there seem to be any examples involving roots with an underlying glottalized stop which is deglottalized before these suffixes.

The rule cannot be formulated in terms of stress, as it at first seems reasonable (i.e. operating to deglottalize only in pretonic syllables), because the conditioning glottalized stop may be in precisely the same position in terms of stress in the two different sorts of cases. Compare

s-péc̓-n 'Indian hemp, twine' (with deglottalization)
t-k̓m-ic̓əʔ 'surface, bark of root', cəkʷ-c̓k̓ʷ-esq̓t 'bright day' (with glottalization maintained before the suffixal glottalization)

Obviously these lexical suffixes are perceived as semantically distinct elements, and their basic consonantal structure is retained unchanged, while reduplicative elements are treated as integral parts of their stems, subject to the same dissimilation principle operating with the roots themselves.

A further subtle detail supports this view: there are two prefixes containing glottalized stops, and while one of them affords no cogent examples, the other specifically demonstrates failure to participate in deglottalization:

k̓ʷəl̓- 'under, below' : k̓ʷəl̓-k̓ém-t '(space) under' (√k̓em, see above), k̓ʷəl̓-k̓m-úseʔ 'cheek' (-useʔ 'small round object', here likely referring to the eye), k̓ʷəl̓-səp̓-useʔ 'get hit on the cheek' (səp̓ 'hit')

Here again we see an element with lexical force bound in as part of the word, but readily recognizable as semantically separable. In neighboring and closely related Thompson, such elements appear to be old roots now limited to first position in compound stems, paralleling a few such stems containing roots which are more productive; e.g.

Th c̓ək-súp̓ 'be out of breath' (cf. c̓ək-s-t-és 'use s.t. up, run out of it', súp̓-m 'breathe')

This exemplifies Grammont's (1895:16) principle #5: 'Il ne se produit pas de dissimilation quand l'étymologie des différentes parties du mot est évidente pour le sujet parlant.' The facts also lend some support to Egesdal's (1981) hypothesis that the Salish lexical suffixes have arisen from an old noun-incorporation pattern.

In any case, Shuswap emerges as a language characterized by retention of glottalization of only the last stop in the root portion of words (including reduplications), deglottalizing any prior glottalized stops within that complex.

1.2. Okanagan and Kalispel. For the other two languages exhibiting this sort of dissimilation, less full coverage is available, so

that it is not possible to be so specific. But it is clear that while both of them have deglottalizing rules of a similar nature, the effects are less extensive than in Shuswap.

Okanagan is the adjacent language extending southward from Shuswap territory. Describing a northern dialect, Head of the Lake Okanagan, Watkins (1970:323, 331) gives rules by which the first consonant of an unstressed prefix is deglottalized when the following root's second consonant is voiceless. (I.e., this takes place when the second consonant is an obstruent; apparently a resonant in that position creates a syllabic pattern in which the dissimilation does not operate.) But these rules are limited to older speakers, and many cases are optional even for them.

In his description of Colville, the southernmost dialect of the language, Mattina (1973:24) states the following rule (vowels in parentheses in underlying forms are subject to loss when unstressed):

> No reduplicated root initial consonant remains glottalized, except /ʔ/.
>
> //tn-tína?// təntína? 'They are ears.' [tína? 'ear']
>
> //pn-pína?// pənpína? 'They are baskets.' [pína? 'basket']
>
> //ʔ?-ʔa?kʷílx// ʔəʔʔa?kʷílx 'They are medicine men.' [ʔa?kʷílx 'medicine man']
>
> Non-initial //ʔ// of a reduplicative prefix is replaced by [t], which functions as its plain counterpart.*
>
> //s-kʷʔ-(ú)s// skʷʔús 'It's an eye.'
>
> //s-kʷʔ-kʷʔ-(ú)s// skʷtkʷʔús 'They are eyes.'

Kalispel extends eastward from southern Okanagan-Colville. Its deglottalizing rule is stated by Vogt (1940:18-19):

> Of two consecutive glottalized stops or affricates, the first one is deglottalized: t'áq̓en 'six' > tq̓ənčstá 'six days', esč'íč 'something long lies' > esənčč'ʔus 'something lies between'.
>
> This phenomenon is particularly important in reduplications
>
> a. Final reduplication. est'úk̓ʷ 'it lies' > tk̓ʷúk̓ʷ 'it falls' > ntk̓ʷk̓ʷétk̓ʷ 'it falls in the water', essaq̓ 'it is split' > sáqq̓ecən 'he opens his mouth', níc̓əm 'he cuts something' > níčč 'it gets cut accidentally'.
>
> b. Initial reduplication. iʔáq̓ 'it is warm' > iʔq̓ʔáq̓šən 'his feet are warm', esč'ɬq̓alí? 'lake' > esč'ɬqq̓alí? 'a little lake'.
>
> This deglottalization takes place even when the two consonants involved are not in direct contact: č'ɬp'amétk̓ʷ 'sea' > pl. č'ɬp'ɬp'amétk̓ʷ, čk̓ʷʔústən 'eye' > pl. čk̓ʷʔk̓ʷʔústən, ʔáqane? 'pocket' > pl. ʔq̓ʔáqane?.

These forms indicate that the deglottalization operates only when the affected obstruents are in a cluster which involves also the triggering later glottalized stop (although other consonants may intervene). In his description of Spokane, the southwesternmost dialect of the language, Carlson (1972:5) shows that the synchronic

deglottalizing rule is lacking, although all the recorded dialects to the north and east show it.

Both languages (including Spokane dialect of Kalispel) also show evidence of deglottalization in comparative materials. Until more systematic coverage is available it is not possible to identify the pattern for certain, but it appears that the dissimilation operated only in weak roots containing no resonants. Proto-Interior Salish (PIS) WEAK roots had the characteristic vowel *ə. Those involving only obstruents, in a pattern reminiscent of Indo-European ablaut, regularly dropped that *ə in unstressed positions. It seems likely the deglottalization operated only in obstruent clusters: since these weak roots most commonly occur unstressed, they have a maximum of environments in which their consonants are clustered. Note the following examples:*

PIS Root	Okanagan	Kalispel	cf. Thompson
*k̓ʷəʔ	s-kʷʔ-ús 'eye'	s-č-kʷʔ-ús-tən 'eye'	s-k̓ʷʔ-ús 'face'
			n-k̓ʷʔ-ús-tn 'eye'
*c̓əq̓ 'throw and hit'	cq̓-ám	cq̓-ám	c̓q̓-əm
*p̓əq̓ʷ 'spill powdery substance'	s-n-pq̓ʷ-ítkʷ 'gravy'	pq̓ʷ-úm	p̓q̓ʷ-əm
*q̓əc̓ 'weave'	qc̓-ám	qc̓-ím	q̓c̓-əm 'braid'

These stand in contrast to STRONG roots, which characteristically take main word stress, and apparently retained their vowels even in unstressed positions in the proto-language (still evidenced in some of the historic languages). In these roots dissimilation of glottalized stops did not operate in either Okanagan or Kalispel, although it did consistently in Shuswap. E.g.

PIS Root	Okanagan	Kalispel	Shuswap	cf. Thompson
*k̓íp 'pinch'	k̓íp-əm		k̓íp-m	k̓íp-m
*q̓ʷác 'full'	q̓ʷíc-t	q̓ʷéc-t	q̓ʷéc-t	q̓ʷéc-t
*p̓úʔ 'fog'	s-púʔ-nt		s-pút-nt	s-púʔ-t
*c̓úq̓ʷ 'to point in slahal game'	cáq̓ʷ-m	c̓óq̓ʷ-m		c̓óq̓ʷ-m
*c̓ék̓ʷ 'shine'	√c̓ík̓ʷ	c̓ék̓ʷ	cək̓ʷ-cək̓ʷ-t 'bright'	c̓ék̓ʷ

With fuller coverage it may become possible to see a clearer historical picture. For the moment, the loss of the deglottalization rule in Spokane dialect of Kalispel and the more limited application of the dissimilation in the history of that language and Okanagan suggest that the innovation began in Shuswap, probably first affecting only sounds in clusters, later developing into a full dissimilatory principle within stems. The early limited rule likely spread to neighboring Okanagan and eventually to Kalispel, but was not extended to additional environments. In Spokane analogy

apparently restored glottalization in paradigms so that no synchronic dissimilation operates there, although the comparative evidence shows it must have at an earlier period.

Supporting the greater dissimilatory stance of Shuswap is another synchronic rule which is lacking from other Interior Salish languages: Kuipers (1974b:27) recognizes 'truncated' reduplicative prefixes which sometimes optionally, sometimes obligatorily, lose the first consonant of the copy when following certain prefixes consisting of obstruents. E.g.

kə-kéw 'far' : s-(k)ə-kéw 'its being far' (with optional loss)
x̌ʷə-x̌ʷystés 'he likes it' : s-ə-x̌ʷystés (‹ *s-x̌ʷə-x̌ʷystés) 'his liking it'

We shall have occasion to return to this matter below.

1.3. Other cases of obstruent deglottalization are minor, but should be noted.

In Columbian (south of Okanagan and west of Kalispel) Kinkade (1982:66) precises:

> The first of two glottalized obstruents juxtaposed by C_1-reduplication may be optionally voiced and deglottalized, and then there is usually an epenthetic ə between the consonants: k̓ʷúpəp [k̓ʷobəp] 'bent over with a cramp', spəq̓ʷq̓ʷmix [spəǧʷǧʷmix] 'it's spilling', k̓ʷə́ƛ̓ [k̓ʷəlƛ̓] 'it showed up' (of something lost).

In Thompson (southwest of Shuswap and west of Okanagan) we have observed sporadic optional deglottalization, especially in stems involving three or more glottalized obstruents or in cases where several obstruents are clustered. E.g. k̓ʷ-ƛ̓ək̓ ~ kʷ-ƛ̓ək̓ '[of boil] burst and pus oozes out'; x̌əc̓q̓qíns ~ x̌əcqqíns 'she snaps the tops off the (root) vegetables'. In a very few cases comparative material suggests that a stop has been deglottalized: Thompson k̓ʷətn̓íy 'mouse' seems likely cognate with Squamish k̓ʷə́t̓ən 'mouse', Straits (Klallam) k̓ʷə́t̓ən 'rat', and similar forms in several other Coast Salish languages. It is also surely cognate with Shuswap kʷək̓ʷtne and Kalispel k̓ʷək̓ʷtene? (but Spokane dialect k̓ʷək̓ʷtene?), all meaning 'mouse'. Note that the apparent deglottalization of original *t̓ reflects a different pattern from the one we have been observing: here it would be a later glottalized stop that is being deglottalized after one earlier in the stem.

Again in the divergent Spokane dialect of Kalispel, several cases show this same sort of pattern of deglottalization of a later obstruent in a stem. E.g. Spokane c̓q̓é$̓p 'Douglas fir (Pseudotsuga menziesii)' : Thompson c̓q̓ə$̓p 'id.' (cf. Shuswap cq̓é$̓p). More study of these phenomena are indicated, but it seems likely that deglottalizing patterns may have developed independently at different times and places.

2. Tillamook is a Coast Salish language, most closely related to the long string of languages along the British Columbia and Washington coast, but somewhat removed from them as a result of its isolation in a separate enclave (among Penutian and Athapaskan languages) on the Oregon coast. So it is separated both geographically and in apparent chronology from the Interior Salish languages we have been examining. It has unfortunately not been extensively studied, so that we can only begin to fathom the full effects of a dissimilation very similar to the major one we have just observed.

What is obvious is that, as in those Interior Salish languages, glottalized obstruents are deglottalized in anticipation of later glottalized obstruents in their stems. The deglottalised elements are regularly voiced before vowels. Reduplicative prefixes again provide the best examples. The morphemes involved are C_1VC_2- (with certain secondary reductions) 'augmentative' (including repetitive and continuative notions as well as pluralization) and C_1u- 'diminutive' (examples cited from our own field materials):

> ƛ̓éni 'ear' : den-ƛ̓éni 'ears'
> ƛ̓é?en 'he searched for it' : ƛə?-ƛ̓é?ən 'he searched and searched for it'
> súq̓i 'younger sister' : sq-súq̓i 'younger sisters'
> s-qeƛ̓éls 'earth-oven' : c-ǧəl-qeƛ̓əlsə́ni 'I'm baking in the earth-oven'

Before vowels (although not elsewhere) Tillamook contrasts aspirated with voiced unaspirated stops/affricates.[6] In reduplicative prefixes, the aspirated consonants are systematically deaspirated and voiced:

> tuqʷúsu 'beaver' : du-tuqʷúsu 'small beaver'
> c-kʷénən 'she takes hold of it' : c-gʷən-kʷénən 'they...'
> c-qixítu 'someone chased it away' : c-ǧəx-qixítu 'someone kept chasing it away'

Cases of deglottalization are also revealed in comparisons: Tillamook vdaƛ̓ʷ 'lie (down)' : Okanagan vt̓aƛ̓ʷ 'id.', Tillamook vǧʷac̓ 'wet' : Thompson vc̓áq̓ʷ 'id.' (with metathesis), Tillamook weǧéq̓ 'frog' : Klallam wéqeq̓ 'id.'

But no parallel cases of deaspiration have been found; two or more aspirated stops are regularly tolerated within stems (e.g. téči 'fall', táqʷ 'stink'). What probably happened is something like this: at an earlier stage Tillamook typically aspirated voiceless stops except directly before fricatives (a pattern observable in some other Coast Salish languages today). Next there developed a tendency to deaspirate these stops before vowels in monosyllabic particles and in reduplicative prefixes, all usually unstressed, and spontaneous voicing set in. Now there were nondistinctive unaspirated voiced stops regularly in those

positions, but always voiceless aspirated stops in stressed syllables. But then voiced velar stops [g, g^{w}] developed from another source (Proto-Salish *w) and these fell together with the deaspirated allophones of /k, k^{w}/, respectively. Since these new voiced stops from original *w occurred before vowels in stressed syllables, they contrasted with the aspirated allophones of /k, k^{w}/ in those positions. Stress shifts also brought originally unstressed elements into stressed positions, sometimes involving voiced stops, bringing about the limited contrast between voiced and voiceless stops characterizing the modern language. Tillamook thus shows the Grassmann type dissimilation of both glottalized and aspirated obstruents, but the latter cases have developed recently and are found only in reduplicative morphology.

Tillamook also has a pattern of truncating reduplicative prefixes, similar to the minor one observed in Shuswap (in 2.1 above). Edel (1939:15) considers it a separate type of reduplication, but it seems certain it must have developed as a kind of dissimilation under specific conditions. The circumstances under which it happens are at present obscure.' A few examples will show the pattern:

c-ʔəhéwin 'he/they carry it': c-h-ʔəhéwin 'they carry them'
s-líq̓in 'he buries it': s-q-líq̓in 'they bury it'
(note also deglottalization)
c̓x^{w}əs 'five': x^{w}-c̓x^{w}és 'five people'

3. Implications. This dissimilatory pattern has obviously operated quite independently in this family remote from Indo-European, and apparently in at least two independent enclaves within it. DeReuse (1981) has called attention to a similar deaspiration pattern in Ofo, a Siouan language of what is now southeastern U.S., remote from both Salishan and Indo-European. As Hamp (1979:1007) has commented, 'Grassmann's Law is really a special case of a phenomenon to which heavily marked segments must be prone.'

In these terms Kiparsky's (1973:126ff) contention that such unusual changes as the deaspiration in Greek and Sanskrit must be historically linked loses much of its cogency when one realizes that such dissimilations are not in fact so rare.[6] This is not the place to debate the logic of an innovation somehow spreading in Wellen-theorie fashion through Indo-Iranian and Greek without apparently leaving any trace in Armenian or especially Anatolian, at least the latter of which must have intervened geographically. (Note, too, that the facts are different in Iranian: Schindler 1976:625-6.) But these analogs of Grassmann's Law in historically unconnected and geographically remote languages reaffirm the plausibility of independent development of similar phenomena in Sanskrit and Greek. And the Tillamook and Columbian patterns of concomitant voicing of the dissimilated stops in very similar circumstances is also instructive. It suggests the possibility of a parallel early pattern for Greek without presuming that the Greek aspirates had to be voiced

at the point where the deaspiration developed (or, for that matter, that Indo-European ever had voiced aspirates).

Perhaps even more important, we can recognize from these data that systematic dissimilation is not so rare, as Grammont (1895) showed for many Indo-European cases so long ago. The tendency to consider dissimilation as by nature sporadic and unsystematic can perhaps be curbed by investigation of such cases. Kinkade (1973) has shown its importance in another Salishan case, and he offers discussion and further references on the matter (p. 226, fn. 5). Labov (1981:301f) signals the value of Kinkade's study in the documentation of a sound change that is phonetically discrete but lexically gradual. In any case, these diverse examples emphasize the universal tendency of heavily marked segments to simplify when they come to fall in closely bound sequences. And that this simplification often comes about by means of systematic dissimilation should not surprise us unduly.

FOOTNOTES

*This paper was prepared as a contribution to the Festschrift for our colleague and friend Gordon Fairbanks. We had intended to expand the topic with consideration of some additional data for presentation at this Salish Conference, but pressure of other work has left us insufficient time. On the other hand, since Festschriften are so often delayed, we have thought it worthwhile to submit this version now for discussion.

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[1]The Salish languages were spoken aboriginally in a large area extending along the modern Canadian-U.S. border from the Pacific coast back to western Montana, and occupying a large part of the state of Washington, southern British Columbia, and northern Idaho, plus a small enclave on the north Oregon coast. We are grateful to the many speakers of these languages who have shared with us their knowledge and expertise. We are likewise grateful to several agencies for supporting our research on them since 1958: the University of Washington Graduate Research Fund, the Melville and Elizabeth Jacobs Research Fund, the British Columbia Provincial Museum, and, especially, the National Science Foundation and the National Endowment for the Humanities. We acknowledge with much gratitude the Guggenheim Fellowship during the 1979-80 sabbatical year, which supported much of the background work on which this study draws.

[2]The recognition of this Salishan analog is not original with us. In particular, over the years Eric Hamp has mentioned it in oral discussions a number of times; he refers to it specifically in his prospectus of North American comparative studies (Hamp 1979:1007). The Indo-European phenomena have been much discussed in recent years, particularly with respect to rule ordering in synchronic description of Sanskrit (see Sag 1976 and references cited there). Schindler (1976) offers a diachronic summary of rule development for Indo-Iranian (q.v. also for further references). Kiparsky (1973; interestingly enough not mentioned by either Sag or Schindler) raises again the question of whether the Greek and Sanskrit developments are properly considered independent. We shall have occasion to return to this matter in 3.

[3]For discussion of subgrouping and a survey of comparative work on the family, see L. Thompson (1979). Languages other than those in focus here are occasionally mentioned in the discussion; in particular comparative forms are cited from Thompson River Salish. Some consonant inventories will help make the discussion clearer.

It is convenient to begin with the inventory of Thompson consonants and show how the other Interior systems differ from it. Thompson has plain stops and affricates /p t c ç k q kʷ qʷ ʔ/, glottalized ejectives /p̓ t̓ ƛ̓ c̓ k̓ q̓ k̓ʷ q̓ʷ/, fricatives /ɬ s ŝ x χ xʷ χʷ h/, plain resonants /m n l y z ɣ ʕ w ʕʷ/, glottalized (laryngealized) resonants /m̓ n̓ l̓ y̓ z̓ ɣ̓ ʕ̓ w̓ ʕ̓ʷ/. Of these /t̓/ is rare, occurring only in loanwords; /ƛ̓/ is a lateral affricate, /ɬ/ the corresponding fricative; /ç, ŝ/ are [ts, s] produced with tongue-root retraction; and /ʕ ʕʷ ʕ̓ ʕ̓ʷ/ are open semivocalic entities with pharyngeal constriction and often uvular involvement. (For further details see Thompson and Thompson In press.)

The Shuswap system is essentially the same, except that it lacks /z, z̓/ and has [ƛ̓] and [t̓] in a variation pattern (Kuipers 1974a, b writes /t̓/ covering this variation). Okanagan has a full contrast between /ƛ̓/ and /t̓/, and, in addition, apical flap/trills /r, r̓/; it lacks /z, z̓, ç, ŝ/, and has /ɣ, ɣ̓/ only in northern dialects. Kalispel lacks /z, z̓, ç, ŝ, ɣ, ɣ̓/ and has /r, r̓/ only in the Spokane dialect; it replaces /k, k̓, x/ by /č, č̓, š/, respectively, and, like Okanagan, contrasts /ƛ̓/ and /t̓/. The Tillamook system is quite different: plain stops and affricates /t c č k q kʷ qʷ ʔ/, glottalized ejectives /t̓ ƛ̓ c̓ č̓ k̓ q̓ k̓ʷ q̓ʷ/, fricatives /ɬ s š x χ xʷ χʷ h/, voiced lenis stops /d g ǧ gʷ ǧʷ/, plain resonants /n l y w/, glottalized resonants /n̓ l̓ y̓ w̓/. Examples from the various authors are here readjusted to a uniform transcription system and on occasion some further analysis has been supplied for greater clarity.

[4]This relationship between the glottalized lateral affricate [ƛ̓] and unglottalized [t] is not unique with Okanagan. Actually, while all the other stops and affricates oppose glottalized and unglottalized pairs, no Salish language has a distinctive unglottalized counterpart for /ƛ̓/ except Comox, which has a few words with plain /ƛ/, almost certainly borrowings from neighboring Kwakiutl. In the Northern Interior languages PS *t̓ and *ƛ̓ have merged; in Shuswap the reflex is more commonly pronounced [ƛ̓] by older speakers, but younger speakers more often have [t̓]. In any case, Kuipers writes /t̓/ for this phoneme, and we follow his usage here for Shuswap.

Okanagan, however, has both /t̓/ and /ƛ̓/, but, like most other Salish languages, lacks the plain lateral affricate. We shall see that other languages (Kalispel, Columbian, and Tillamook) retain the lateral quality in the deglottalization of /ƛ̓/, thus having phonetic unglottalized lateral affricates which occur only as realizations of the glottalized phoneme. This is interesting in connection with Grammont's (1895:16) principle: 'La dissimilation ne crée pas de phonèmes nouveaux, c'est à dire inconnus à la langue dans laquelle elle se produit: si l'ensemble des éléments qui restent du phonème attaqué, après la dissimilation, ne constitue pas un phonème existant, il est remplacé par le phonème le plus voisin que possède la langue; si les éléments qui subsistent ne sont pas suffisants pour constituer un phonème, ils sont éliminés avec ou

sans compensation.' This correctly predicts the substitution of /t/ in Shuswap and Okanagan, but does not really anticipate the non-distinctive unglottalized affricates thus created in Kalispel, Columbian, and Tillamook.

[5]Reconstructions of Proto-Interior Salish are from our own comparative materials, largely based on Kinkade and Sloat's (1972) pioneering study of vocalisms in the Southern Interior subgroup (at that time called 'eastern'). Forms are cited from Vogt (1940) and from dictionaries in preparation, for use of which we are grateful to their compilers: Colville dialect of Okanagan (Mattina), Spokane dialect of Kalispel (Carlson). Thompson comparisons are from our own dictionary of that language. Forms in -(V)m are grammatically intransitive words which, however, often suggest transitivity; they are called 'middle' in some Salish grammars. (Varying vowels before -m in this suffix in Kalispel are regular reflexes of PIS *ə in different consonantal environments.)

[6]In our earlier study (Thompson and Thompson 1966) we treated aspirated stops as sequences of plain stops followed by /h/. It now seems preferable to consider these unit phonemes--voiceless stops aspirated except before fricatives (and when optionally unreleased in final position)--opposing the voiced stops which occur only before vowels.

[7]The details of a similar formation in Twana have been worked out by Drachman (1969:53ff), and it seems likely that similar constraints govern the cases in Tillamook. It is conceivable that the truncation rules in these two languages are historically related, but this can be determined only after the historical development of both is more fully understood. The Shuswap truncation, however, can hardly be connected.

[8]In his footnote 8, Kiparsky (1973:127) refers to another innovation which he considers must have spread across language boundaries, affecting both Greek and Sanskrit--'the Greek-Indo-Iranian change of syllabic nasals to a--a change so unusual that the possibility of independent development in each of the languages is highly unlikely'. Actually, Salishan again offers a parallel. Boas and Haeberlin (1927:136) recognized the replacement of word-final [-ən] by a low central vowel [a] in Bella Coola, and [a] appears in other cases where comparisons would lead us to expect a syllabic nasal. Similar developments are to be seen in several other languages. In Thompson River Salish there is still a productive alternation between /n/ and /e/ (representing a recent fronting of earlier *a), indicating underlying //n//; and there is a similar clear case of modern /e/ from old syllabic *m which verges on an alternation pattern (the suffix marking 2d pl. possessive 'your' appears regularly as /-mp/ following a vocalic stem, but as /-ep/ after a consonant). Comparisons reveal other cases where /e/ supplants an expected syllabic nasal. In neighboring Shuswap, Gibson

(1973:18, 23) recognized in an eastern dialect wholesale vocalization of nasals which became syllabic in recent times in unstressed word-final position (details now refined and presented for eastern dialects generally by Kuipers 1980). Carlson (1976) notes the vocalization of syllabic //n// to /i/ under certain circumstances in Kalispel (although this probably implies a shift of *n > /y/, regularly vocalized to /i/ between consonants). Kinkade (1982) has studied patterns of nasal vocalization more generally in Interior Salish. It seems likely that the vocalization of nasals will figure importantly also as the history of various Coast Salish languages is worked out. Much more work is necessary before it will be possible to see whether this tendency to vocalize syllabic nasals was a common innovation early in the history of the family or whether, as we now suspect, it is necessary to recognize two or more independent developments. But the Salish evidence suggests that the vocalization of nasals is not such an unusual change.

As a matter of fact, the overall resonant system of Salish languages bears striking resemblances to that of Indo-European. The system of Proto-Salish resonants must have been very similar to that posited for Proto-Indo-European by Edgerton (following up Sievers; cf. Edgerton 1943, 1962), with allophonic variation among nonsyllabic, syllabic, and syllabic plus nonsyllabic states, and the system has carried down into the historic languages to a great extent. Such similarities (see Kuipers 1967:401-5, 1969:98, for an inspired listing and discussion) offer important clues about universal dynamics and tendencies of linguistic change. Just as the Indo-Europeanist heritage has been valuable to students of change in other families, the systems found elsewhere may now be stimulating to scholars advancing the understanding of Indo-European problems. In particular the relationships of vowels and pharyngeal resonants in Interior Salish languages (which differ in distribution from other resonants) and various patterns of retraction may be suggestive to Indo-Europeanists in their consideration of problems relating to laryngeal theory.

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