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Études/Inuit/Studies, vol. 29, n°1-2, 2005, p. 307-340.

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DOI: 10.7202/013947ar

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Historical antecedents of /h/, /s/, /j/ and /ř/ in Utkuhiksalik (Inuktitut)

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Résumé: Antécédents historiques du /h/, /s/, /j/ et /ř/ en utkuhiksalik (inuktitut)

L'utkuhiksalik est un sous-dialecte natsilik qui se situe dans le continuum dialectal de l'inuit de l'ouest du Canada. Contrairement à bien d'autres dialectes de l'ouest, l'utkuhiksalik démontre une opposition phonologique entre /h/ et /s/, /j/ et /ř/. Le but de cet article est d'esquisser comment ces contrastes se sont développés: nous décrivons les changements historiques à partir des sons proto-esquimaux *j, *ð, et *c jusqu'aux sons utkuhiksalik /h/, /s/, /j/, et /ř/.

Abstract: Historical antecedents of /h/, /s/, /j/ and /ř/ in Utkuhiksalik (Inuktitut)

Utkuhiksalik is a sub-dialect of Natsilik within the Western Canadian Inuit dialect continuum. Unlike many Western dialects, Utkuhiksalik contrasts /h/ and /s/, /j/ and /ř/. The goal of this paper is to show how such contrasts arose: we describe the sound changes from Proto-Eskimoan *j, *ð, and *c to Utkuhiksalik /h/, /s/, /j/ and /ř/.

Introduction

Utkuhiksalik¹ is a sub-dialect of Natsilik² within the Western Canadian Inuit (WCI) dialect continuum (Dorais 1990: 17, 41). Unlike many Western dialects,

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¹ Dorais (1990: 17), among others, refers to Utkuhiksalik as *Utkuhikhalik*. However, since there is a /ks/ cluster in the self-designation, we have employed the term Utkuhiksalik. Briggs's primary collaborator refers to Utkuhiksalik as *Utkuhiksalingmiutit* (employing the ending *-miutit* 'like people'); less commonly, she also uses the term *Utkuhiksalingmiutut* (with the ending *-miutut* 'like a person').

² The term *Natsilik* (also spelled *Netsilik*) denotes a dialect cluster that includes Natsilik, Utkuhiksalik, and Arviligjuaq. We use the term *Natsilik* to refer interchangeably to both the dialect of Natsilik proper and the dialect family. Finally, according to Janet McGrath, a speaker of Natsilik proper, the self-designation for Natsilik is *Natilingmiutut*; the < t > is pronounced like the < ch > in "church."

Utkuhiksalik contrasts /h/ and /s/, /j/ and /r/. The aim of this paper is to show how these contrasts arose by describing the relevant sound changes from Proto-Eskimoan (PE) or Proto-Inuktitut (PI) to Utkuhiksalik. These sound changes involve PE *ð, PE *c (PI *s), and PE *j. In this paper, we first describe the historical relationships between the Utkuhiksalingmiut and related groups. We then overview the historical development of the Utkuhiksalik consonant inventory, and continue with more detailed descriptions of the historical developments in following sections³.

Overview of dialect relations⁴

The traditional territory of the Utkuhiksalingmiut ('the people of the place where there is soapstone') lay along the Back River, between Chantrey Inlet and Franklin Lake. Utkuhiksalik speakers also lived in the interior, near a place called Kitikkat ('eskers'), which was southeast of Chantrey Inlet and towards Baker Lake.

Most sources, including current Utkuhiksalik traditions, agree that the Utkuhiksalingmiut moved into the Back River area from the west coast of the Adelaide Peninsula (Ukřulik, 'having bearded seals') where they had probably lived adjacent to the Iluiliqmiut. (The present name of the Adelaide Peninsula is Iluiliq.) From the mouth of the river, Chantrey Inlet, they spread westward along the river as far as Lakes Garry and Pelly, and southeastward towards Baker Lake. When exactly these movements occurred is not known. A Chantrey Inlet elder told Briggs that it was in the late nineteenth or early twentieth century, but Back (1836), for example, found habitations all along the river in 1833. Those who moved to Garry and Pelly Lakes, the Hanningařuqmiut ('the people of the place that lies across') and the Ualijaqlit ('the most western people') spoke dialects closely related to that of the Utkuhiksalik proper, who remained in Chantrey Inlet (Utkuhiksalik).

The traditional home of the Natsilik was to the north of the Utkuhiksalik-speaking area—King William Island and Boothia Peninsula, later concentrated in the settlements of Gjoa Haven, Spence Bay, and Pelly Bay. Utkuhiksalik speakers currently residing in Gjoa Haven (and some currently living in Baker Lake) consider the speech variety originally spoken in Chantrey Inlet to be "core" Utkuhiksalik. They consider the varieties spoken by the Ualijaqlit and Hanningařuqmiut to be more or less borderline. They also sometimes classify Iluiliq as being Natsilik.

Historical and dialectal relations between the above-mentioned groups were greatly complicated by famine-induced resettlement and other factors. In addition, whether or not one is *currently* designated as an Utkuhiksalingmiutaq can also depend on fine-grained considerations which are not necessarily linguistic, involving, for example, a person's history of residence and social affiliation.

³ The Utkuhiksalik data used in this paper consist of field notes written by Briggs between 1968 and 1972, and tapes made by her between 1992 and the present, in which the earlier words were corrected and new words added to the corpus. The paper was written by Dyck, with data and commentary provided by Briggs. Dyck takes responsibility for all errors. The findings in this paper are also tentative, as our conclusions are based on a limited number of examples.

⁴ This account is a condensed and revised version of Briggs (1970: 11-15).

Historical development of the Utkuhiksalik phonemic inventory

We now overview the main developments between the PE and Utkuhiksalik consonant inventories. Example 1 illustrates the PE consonant inventory (phonetic equivalents are provided where these are not identical to the spelling⁵).

1. PE consonant inventory (after Fortescue *et al.* 1994: xi)

	*p		*t	*c [ts, č] ⁶		*k	*q
*v		*ð	*l		*j	*g [ɣ]	*r [ʁ]
	*m		*l̥	*n			
						*ŋ	

The PE consonant inventory is similar to the Utkuhiksalik inventory, except for the following changes: PE *c became /h/ and /s/ (as well /ts/ and /tj/) in Utkuhiksalik (PE *c had previously become *s in PI; Fortescue *et al.* 1994: xvi, xiv). PE *ð became /r/, /s/, and /j/. /r/ is a voiced rhotic fricative; it also has the non-rhotic allophones [ð] and [ž]. Finally, PE *j became /j/, /s/, /ts/, or /i/, and also deleted.

Example 2 illustrates the present-day Utkuhiksalik consonant inventory arising from these sound changes.

2. Utkuhiksalik consonant inventory

		Labial	Coronal	Dorsal ⁷		Laryngeal
obstruent	plosive	p	t	k	q	ʔ
	vd fricative			g [ɣ]	r [ʁ]	
	vl fricative		ʃ, s			h
sonorant		v	ʃ j			
		m	l			
			n		ŋ	

⁵ We use [ž, š, and č] instead of the IPA [ʒ, ʃ, and tʃ] in this paper. Slash brackets // denote a phoneme, square brackets [] denote an allophone, and angle brackets <> denote a spelling convention. We make no claims about phonetic pronunciation in Inuit dialects, except where we use square brackets [] in the Utkuhiksalik forms. In several instances, the spelling convention used in a given source can reflect considerations that are not phonemic. For example, Dorais and Lowe (1982: 131, footnote 8) explain that they have spelled /j/ as < y > except when it follows a /t/ or precedes another consonant (in *Siglitan*), in which case it is spelled as < dj >: e.g., the phonemic cluster /tj/ is spelled as < tdj >. Dorais and Lowe explain that this departure from the spelling norms established by the Inuit Tapirisat of Canada arose from discussions with the speakers of the relevant dialects.

⁶ The phonetic value of this consonant was either [č] (Fortescue *et al.* 1994: xi) or [ts] (Dorais 1990: 15).

⁷ We assume that the dorsal class of consonants includes / k, g, ŋ / [k, ɣ, ŋ] and the uvulars / q, r / [q, ʁ], which are pronounced with the tongue dorsum (McCarthy 1994).

A few comments are in order. First, we classify /v/ as a sonorant on the grounds that it patterns like /r/: both /v/ and /r/ can be followed by /v/, /g/, or /r/, whereas obstruents cannot be. Second, while /s/ is a phoneme, it has a limited distribution, occurring only after the stops /p, t, k, q/. Third, we assume that the laryngeals /h/ and /ʔ/ are not true consonants phonemically (Chomsky and Halle 1968: 303); however, they are included in the ‘obstruent’ section of the table for convenience.

Several phonological environments influenced the sound changes from PE to Utkuhiksalik phonemes, as shown in example 3.

3. Phonological environments influencing the development of PE *ð, *c and *j

Intervocalic position /V__V		
Pre-consonantal position /__C		
Post-consonantal position /C__	/labial __	
	/coronal __	
	/dorsal __	/voiced dorsal __
		/voiceless dorsal __

The relevant environments were intervocalic, preconsonantal, and postconsonantal.⁸ The development of PE *ð, *c and *j was also influenced by the labial, coronal, or dorsal place of articulation of any preceding consonant. Finally, the development of PE *ð was influenced by the voiced or voiceless status of a preceding proto-dorsal consonant. We overview the major developments involving PE *ð in example 4, PE *c in example 5, and PE *j in example 6.

As shown in example 4, PE *ð became /r/ (and sometimes /j/) except after originally voiceless dorsals (*k and *q), where it became /s/.⁹

4. Reflexes of PE *ð

/V__V	/__C	/*labial__	/*coronal__	/*voiced dorsal__	/*voiceless dorsals __
/r/	/r/	/ps/ (rhoticized); /vj/, /př/	/řr/, /řr/	*gð, *rð —> /kř/, /qř/	*kð, *qð —> /ks/, /qs/

⁸ In Utkuhiksalik, as in other Inuktitut dialects, only two consonants occur in a cluster (Dorais 1986: 32); word-initial and word-final clusters do not occur.

⁹ We are indebted to an anonymous reviewer for this observation; for more details, see section on “Dorsals followed by *ð” under the heading “Clusters ending with *d, *c, and *j.”

Example 5 demonstrates that PE *c became /h/ (also the variant [hʲ]), /ts/ or /tj/ between vowels; PE *c became /s/ after labial and coronal consonants, and either /h/ or /s/ after dorsal consonants.

5. Reflexes of PE *c

/V__V	/__C	/labial__	/coronal__	/dorsal__
/h/, [hʲ], /ts/, /tj/	— ¹⁰	/ps/	/ts/	/ks/ [xs] /kh/ [xx] /qs [χs] /qh/ [χχ] (and intermediate sounds)

As shown in example 6, PE *j became /j/ and /ts/ between vowels, but had other reflexes after consonants.

6. Reflexes of PE *j

/V__V	/__C	/*labial__	/*coronal__	/*dorsal__
/j/, /ts/	— ¹¹	/ʔj/, /mi/, /vi/	/ts/	/ks/ [xs]; /qs/ [χs], /ts/ /qh/ [χχ] /gg/ [γγ] /ki/, /ri/ ∅ (deletion) /g/ (after /k/, in postbases) /r/ (after /q/, in postbases)

PE *j either remained as /j/ or vocalized to /i/ after proto-labials. PE *j became /s/ after proto-coronals. PE *j either became /s/ or vocalized to /i/ after originally voiceless *k (and possibly after *q, since both *k and *q are dorsal plosives). PE *j became a fricative, either /g/ or /h/ (phonetically, [χ], in the Utkuhiksalik /qh/ cluster) after originally voiced *g and *r respectively; it also vocalized to /i/ after *r (and possibly after *g, since both *g and *r are dorsal fricatives); finally, it also became /g/ and /r/ in postbases.

All of the changes described above will be discussed in greater detail. We begin by describing historical developments in intervocalic position.

¹⁰ Fortescue *et al.* (1994) list no *c-initial clusters for PE.

¹¹ *j did not occur as the first consonant in a sequence in PE, except in geminate *jj, described in the sections on “*j-initial clusters” and “Coronals followed by *c and *j.”

Intervocalic *ð, *c, and *j

PE *ð often became /r̥/ between vowels (example 7).¹² ([ð] remains as one of the allophones of /r̥/ in Utkuhiksalik.)

7. PE *ð became Utkuhiksalik /r̥/¹³

Utku īri ‘eye’

PE *əðə ‘eye’ (F94: 97)¹⁴

A parallel development occurred in Natsilik, where PE *ð became a fricative sound similar to [ž], but rhotic (Fortescue *et al.* 1994: xvi).

Intervocalic PE *j often remained as /j/ in Utkuhiksalik (Example 8), but it also became /ts/ alternating with /j/ (Example 9).

8. PE *j became Utkuhiksalik /j/

Utku qajaq ‘kayak’

PE *qajar¹⁵ ‘kayak’ (F94: 293)

9. PE *j became Utkuhiksalik /ts/ and /j/ in alternation

Utku qutsahiqtatka ‘I give them (as?) a thank-you present’¹⁶

Utku qujanaq ‘thank you (literally: it causes gratitude)’

PE *quja- ‘be thankful’; qujanar ‘thank you’ (F94: 321)

A comparison of examples 7 and 8 illustrates that Utkuhiksalik maintains a contrast between /r̥/ and /j/; these sounds were conflated in many dialects of Inuktitut. Geminate /r̥r̥/ also occurs in Utkuhiksalik (Example 10).

¹² /r̥/ also occurs in Uummarmiut (Lowe 1985: 276) and in Alaskan Iñupiaq (Dorais 1990).

¹³ Abbreviations for dialects are largely taken from Fortescue *et al.* (1994: xii-xiii). They include: WCI (Western Canadian Inuit) and its dialects—Utku (Utkuhiksalik), Net (Netsilik or Natsilik), Sig (Siglit), Cop (Copper), and Car (Caribou); GRI (Greenlandic Inuit); NAI (North Alaskan Inuit), and NU (Nunamiut, a subdialect of the North Slope dialect of North Alaskan Inuit); the Chap(linski) dialect of Central Siberian Yupik (CSY); CAY (Central Alaskan Yupik); SPI (Seward Peninsula Inuit); ECI (Eastern Canadian Inuit); PY-S (Proto-Yupik-Sirenik[ski]).

¹⁴ Fortescue *et al.* (1994) is abbreviated as F94 in the examples.

¹⁵ We use the symbols <j, g, r> instead of <y, ʏ, R> as in Fortescue *et al.* (1994).

¹⁶ The gloss recorded for this form is ambiguous between the two meanings; Briggs has not yet determined which is the correct one.

10. Utkuhiksalik /ři/

- a. Utku iřřit-tuq ‘his eye is injured’
 PI *əžžit- ‘get something in one’s eye’ (F94: 97)
- b. Utku uřřiq-tuq ‘he feels anxious, worried; he is worried’¹⁷
 PI *užžiq- ‘show what to do (by signs?)’ (F94: 359)¹⁸
 WCI¹⁹ ujjiq-tuq ‘watch over (so that something is not done to excess)’
 (F94: 359)
 WCI—Car ujjiq- ‘look after’ (F94: 359)

In contrast, the existence of a geminate counterpart to /j/ is doubtful; see the section on “*j-initial clusters” for further details.

PE *c (PI *s) developed into /h/ and [h^j] between vowels (Example 11), as it did in Natsilik (Fortescue *et al.* 1994: xvi, xiv).

11. Intervocalic *c became Utkuhiksalik /h/, [h^j]

- a. Utku ahi ‘other of a different kind (including ‘another person’)’²⁰
 PI *aci ‘somewhere away from settlement’ (F94: 3)
 WCI—Cop ahi ‘somewhere else, away from settlement’ (F94: 3)
 WCI—Net ahi ‘another person’ (F94: 3)
- b. Utku i[h^j]uq- ‘be murky’²¹
 PE *əcur- ‘be murky’ (F94: 96)
 WCI isuq- ‘be opaque, unclear’ (F94: 96)
- c. Utku qa[h^(j)]u-nga-řuq ‘flabby, floppy, slack, not taut’
 PE *qacu- ‘become loose or slack’ (F94: 273)
 WCI qasu- ‘become loose, slack’ (F94: 273)

¹⁷ Forms glossed as ‘he’ can generally refer to ‘he,’ ‘she’ or ‘it.’

¹⁸ At various points, Fortescue *et al.* (1994) includes a question mark to indicate a tentative historical reconstruction or gloss. We have kept the question mark in the Fortescue *et al.* (1994) examples.

¹⁹ Fortescue *et al.* (1994) distinguish between pan-WCI forms, and forms particular to certain WCI sub-dialects. We observe this distinction as follows: unless otherwise indicated, pan-WCI forms are listed as “WCI.” In contrast, forms particular to a sub-dialect are listed as, for example, “WCI—Car.” Utkuhiksalik forms are simply listed as “Utku.”

²⁰ Here and elsewhere, there is a discrepancy between an Utkuhiksalik gloss, and a gloss given for the same form in a closely-related dialect. For example, compare the Utkuhiksalik and Natsilik glosses for *ahi* in example 11. It is possible that there is no difference in meaning in such cases.

²¹ We sometimes include phonetic detail (in square brackets) within an orthographic representation. This convention has several purposes: (a) to highlight the phonetic pronunciation of the sound(s) under discussion; or (b) to indicate that we have carefully listened to taped examples of the sound(s) in question.

- d. Utku i[h^(j)]u-lit-tuq ‘it has almost reached the end’
 PI *isu(k) ‘end’ (F94: 145)
 WCI isu ‘end’ (F94: 145)
- e. Utku a[h^j]u, a[hi]u ‘yes’ (the latter form used under emphasis)
 PE *acu ‘indeed’ (exclamation) (F94: 3)
 WCI—Net ahu ‘maybe, isn’t it’ (F94: 3)

Some words are pronounced exclusively with [h^j] (Example 11.b), while other words have [h] or [h^j] in free variation (Examples 11.c, d); there is also an instance of [h^j] in free variation with [hi] (Example 11.e).

Other reflexes of PE *c in intervocalic position were /ts/ and /h/ from the same proto-base (see Example 12).

12. Intervocalic proto-*c became Utkuhiksalik /ts/ in alternation with /h/
- a. Utku itsak-ha-i-řuq ‘it activates moulting’
 Utku itsa-vi-at ‘July-August (i.e., the season of moulting)’
 Utku iha-řuq ‘it is moulting’
 PI *ica- ‘moult’ (F94: 121)
 WCI—Cop iha- ‘moult’ (F94: 121)
- b. Utku tahi^q, tatsik, tatsit, tatsip ‘lake’ (singular, dual, plural, relative case)
 PE *tacir ‘spit or sand bar’ (F94: 323)
 WCI tasiq ‘lake’ (F94: 323)
- c. Utku atauhi^q ‘one’; atautsik(k)ut ‘together’ (atauhi^q ‘one’ -kkut- ‘vialis’)
 PE *atarucir ‘one’ (F94: 50)
 WCI atausiq ‘one’ (F94: 50)
- d. Utku pihⁱq, pitsit – pihⁱit ‘song, hymn’ (singular, plural)
 PE *picir ‘(song about) factual event?’ [sic] (F94: 261)
 WCI pisiq ‘dance song’ (F94: 261)

As shown in example 12.a, some proto-bases with intervocalic *c split into two closely-related bases, one containing /h/ and one containing /ts/. In other cases (Examples 12.b-d), PE bases with intervocalic *c became a single base with two allomorphs, one with /h/ and one with /ts/.

Finally, at least one instance of PE intervocalic *c became /tj/ in Utkuhiksalik (Example 13).

13. PE *c became Utkuhiksalik /tj/

Utku	utjuk	'vulva' ²²
PE	*ucug	'sexual organ' (F94: 358)
WCI	usuk	'penis'; utsuk 'vagina' (F94: 358)

The Utkuhiksalik /tj/ cluster shown in example 13 is pronounced somewhat like [tʃ̥]; the second consonant is not rhoticized, and the cluster is therefore distinct in pronunciation from /tř/. Furthermore, the pronunciation of /tj/ is distinct from that of a single, lightly-palatalized /t/ [tʃ̥] which is found in sequences such as /ti/ [tʃ̥i]²³.

The changes affecting PE *ð, *c, and *j between vowels are summarized in example 14.

14. Intervocalic development of single PE consonants *ð, *c, and *j in Utkuhiksalik

	*ð	*c	*j
/V__V	/ř/	/h/, [hʲ], /ts/, /tj/	/j/, /ts/

In many cases, PE *ð became /ř/, while *c became /h/ (as well as [hʲ], /ts/, and /tj/) and *j remained /j/ between vowels.

More reflexes of *ð, *c, and *j occurred in consonant clusters than in intervocalic position. We describe clusters that began with *ð or *j below. (Fortescue *et al.* 1994 list no *c-initial clusters for PE.) Clusters that ended with *ð, *c, or *j are discussed later on.

Clusters beginning with *ð or *j

*ð-initial clusters (as well as another cluster leading to Utkuhiksalik /řg/) and *j-initial clusters are discussed in the next sections.

²² Utkuhiksalik also has uhuk 'penis' from the same proto-base.

²³ It is possible that /tj/ is the geminate counterpart of /j/ in Utkuhiksalik: Fortescue (1983: 11) reports that for WCI in general, a cluster spelled as < dj > is the geminate counterpart of /j/. Thus, a < dj >-like cluster could also be the geminate counterpart of /j/ in Utkuhiksalik. (Phonemically, the relevant cluster would be represented as /tj/ in Utkuhiksalik, since there are no phonemically voiced obstruents in Utkuhiksalik.) However, examples 13 and 31 (the only instances of /tj/ in Briggs's database) do not provide any evidence that /tj/ is the geminate counterpart of /j/ in Utkuhiksalik.

**ð-initial clusters and other proto-clusters leading to Utkuhiksalik /r̥g/*

PE *ðg became /r̥g/ in Utkuhiksalik (as can be seen in example 15)²⁴.

15. PE *ðg became Utkuhiksalik /r̥g/

a. Utku ařgak ‘hand’

PE *aðga(r), aðgag ‘hand’ (F94: 4)
WCI—Net ařgak ‘hand’ (F94: 4)

b. Utku aqir̥giq ‘ptarmigan’

PE *aqəðgir ‘ptarmigan’ (F94: 39)
WCI—Net aqigžeq ‘ptarmigan’ (F94: 39)

Thus, PE *ð became /r̥/ when at the beginning of a cluster. Another source for /r̥g/ was PE *ɫg (Example 16).

16. PE *ɫg became Utkuhiksalik /r̥g/

Utku nauřguti-řuq ‘fall or have a sudden, abrupt collapse, stumble, have one’s legs give out’

PE *narul̥gutə- ‘plunge or dart?’ (F94: 219)
CAY narul̥xutə- ‘die of a heart attack’ (F94: 219)

**j-initial clusters*

Historically, PE had a contrast between *j and geminate *jj—the latter representing the only type of *j-initial cluster listed in Fortescue *et al.* (1994). Geminate *jj tended to become /ts/ in Utkuhiksalik, instead of /j̥j/ (Example 17).

17. Reflexes of PE *jj

a. Utku natsiq ‘seal’

PE *najjir ‘ringed seal’ (F94: 223)
WCI natsiq ‘seal’ (F94: 223)

b. Utku natsiaq ‘baby seal’

PE *najjirar ‘young (ringed) seal’ (F94: 223)
WCI—Cop nattiaq ‘young seal’ (F94: 223)

²⁴ Utkuhiksalik /r̥g/ is sometimes still pronounced as [ðg] (e.g., <haunaar̥git> [haunaaðvit] ‘eggshells.’).

It is possible that the historical contrast between PE *j and *jj was preserved as a contrast between /j/ and /ts/ in Utkuhiksalik. Alternatively, the PE contrast might have been lost in Utkuhiksalik. We leave this matter aside for future research.

There is little evidence for a geminate /jj/ in synchronic Utkuhiksalik: Briggs's database of several thousand bases lists only one possible /jj/ geminate (Example 18).

18. Possible Utkuhiksalik /jj/ geminate

Utku	aa-ŋa- jj ak-ti-qattaq-tuq	'act crazily'; also aa-ŋa-jaa-qattaq-tuq 'act crazily'
PI	*aaŋa-	'be lightheaded' (F94: 6)
WCI—Car	aaŋajaaq-	'act silly or drunk' (F94: 6)

The possible /jj/ geminate shown in example 18 is not rhoticized, but is very fricative-like. An Utkuhiksalik consultant rejects the rhotic pronunciation for this geminate in favour of a long [žž]-like sound.

The antecedents of the possible /jj/ geminate in example 18 are shown in example 19 below.

19. Origin of Utkuhiksalik /aa-ŋa-jjaq- ~ aa-ŋa-jaa(q)-/ 'act silly or drunk'

- Utku /aa-/ from PE *aga- 'have convulsions or faint' (F94: 6)
- Utku /-ŋa-/ from PE *-ŋa⁻¹ 'be in a state of doing something' (F94: 417)^{25, 26}
- Utku /-jaaq-/ from PE *-tjag- 'little or thing resembling something' (F94: 429)
- ECI /-ŋajaaq-/ 'be in a state of repeatedly -ing' (F94: 429)

The /aa-ŋa-jjaq-/ or /aa-ŋa-jaa(q)-/ forms in example 18 developed from the proto-morphemes of PE *aga- (Example 19.a), *-ŋa⁻¹ (Example 19.b), and *-tjag- (Example 19.c). (Thus, the possible geminate /jj/ in example 18 likely descends from PE *tj.) Other developments from PE *tj are discussed in example 32.

Historically, then, PE *jj became /ts/ in Utkuhiksalik instead of /jj/, eliminating one possible source of j-initial clusters in Utkuhiksalik. Another possible source of j-initial clusters, PE *tj (Example 19), possibly developed into /jj/ in one instance, but also became either /h/ or /j/ (Example 32). Consequently, there are few, if any, j-initial clusters in Utkuhiksalik.

²⁵ Fortescue (1992) and Fortescue *et al.* (1994: 393) carefully distinguish between productive, semi-productive, and non-productive postbases; we have omitted this information from our examples and from the Fortescue *et al.* (1994) citations, except in the WCI postbases discussed below in section on "Postbases containing *ð, *c, and *j." Otherwise, we make a distinction between bases (followed by a dash '-'), postbases (shown as occurring between dashes) and terminal affixes (preceded by a dash).

²⁶ Fortescue *et al.* (1994) use superscripts to differentiate between morphemes with identical form but different meaning; *-ŋa⁻¹ is a different proto-morpheme than *-ŋa⁻², for example.

Our overall conclusions about PE clusters beginning with *ð or *j are as follows. First, *c and *j did not occur as the first member of a consonant cluster in PE (except for proto-*jj, which became /ts/ or /tj/). However, *ð existed as the first member of a consonant cluster in PE; this consonant (and also *l) became /r/ in cluster-initial position, resulting in a relatively uncommon /rɣ/ [rɣ] cluster in Utkuhiksalik. An /rv/ cluster, pronounced [rv] or [př], also occurs in Utkuhiksalik postbases (Example 42).

Clusters ending with *ð, *c, and *j

In this section, we describe how clusters *ending* with PE *ð, *c, or *j developed in Utkuhiksalik. The labial (p, v, m), coronal (t), or dorsal (k, q, g, r) place of articulation of the *first* consonant of the cluster was relevant in such cases, and so our description is organized according to the labial, coronal, or dorsal place of articulation of the first consonant of the cluster.

Proto-clusters with labials

First, we discuss proto-clusters consisting of a labial phoneme (*m, *p, *v) followed by *ð, *c, or *j.

*Labials followed by *ð*

The development of clusters of proto-labials followed by *ð is overviewed in examples 20-24.

In at least one case, PE *vð became a /ps/ cluster with a rhoticized /s/ (Example 20).

20. PE *vð became Utkuhiksalik /ps/

Utku	taaps ^(j) uma	‘of that one’s batch’
PE	*tað-uv-ðu ²⁷	
NAI	taavžuma, taafšuma, taaptuma ‘prefixed form used for listener centered reference rather than anaphora; relative singular’ (F94: 480, 483; see footnote 25 for clarification)	

²⁷ Our suggested reconstruction of the proto-form *tað-uv-ðu is based on the reconstruction of the NAI form < taamna > ‘prefixed absolutive singular pronoun in Fortescue’ *et al.* (1994: 480, note 261), which is related to the NAI relative singular forms < taavžuma, taafšuma, or taaptuma > (*ibid.*: 483). According to Fortescue *et al.* (1994: 323), the proto-form corresponding to these NAI forms consisted of a deictic prefix *ta(ð), plus a demonstrative root *uv-, plus an oblique case ending.

The /ps/ cluster in 20 consistently has a distinctly rhotic quality, and is pronounced as [pšʰ] or [ʰšʰ]; the latter pronunciation is similar to the NAI < taafšuma > pronunciation listed in 20.^{28 29}

Other PE *vð clusters became /vj/, pronounced as [bj, vj, βj] (Example 21).

21. PE *vð became Utkuhiksalik /vj/

Utku	kuvjat ‘net’
PE	*kuvðar ‘net’ (F94: 183)
WCI	kuvjaq ‘net’ (F94: 183)

Finally, other PE *vð clusters became /př/ in Utkuhiksalik (Example 22).

22. PE *vð became Utkuhiksalik /př/

Utku	apřaq ‘mattress, caribou hide mattress’
PE	*avðar ‘hindrance or protection’ (F94: 56)
NAI	avžat ‘bedding’ (F94: 56)

However, Utkuhiksalik /př/ clusters also arose from the metathesis of clusters beginning with a proto-liquid (/l/ or /l/) followed by proto-*p or *v (Example 23), as well as from the metathesis of *ðv clusters (Example 24).³⁰

23. Metathesis of PE *lp, *lv clusters

Utku	ipřit ‘you’
PE	*əlpət or *əlvət ‘you’ (F94: 106)
WCI—Net	ilvit, ižvit ‘you’ (F94: 106)

²⁸ Here, we use angle brackets to denote spelling conventions in order to avoid implying a phonemic analysis which the original source might not have assumed.

²⁹ The distinction between rhoticized and non-rhoticized /ps/-like clusters is not predictable; since the rhoticized pronunciation is so rare, we spell both types as < ps >. Finally, we phonemicize this cluster as /ps/, rather than /vs/ because /v/ is otherwise only followed by voiced continuants such as /j/ and /r/ in Utkuhiksalik.

³⁰ The metathesis of *lp or *lv and of *ðv to /př/ could be the consequence of the lack of liquid+stop clusters in Utkuhiksalik. Today, the only Utkuhiksalik clusters beginning with liquids are /řr/, /rr/, /ll/ [ʰl, ll], /řg/, and /lr/. An /řv/ cluster also occurs in a postbase (Example 42); it has metathesized [vř] and non-metathesized [řv] pronunciations.

24. Metathesis of PE *ðv clusters

Utku	tapřa	'here, right now'
PE		*taðva 'there (you are)' (F94: 323)
WCI—Net		tavža 'there (you are)' (F94: 323)
Uummarmiutun		tařva 'voila!' (Dorais and Lowe 1982: 131; ř = j palatalisé)
Siglitun		tadjva 'voila!' (Dorais and Lowe 1982: 131)

In summary, PE *vð became /ps/, /vj/ and /př/; /př/ also derived from other PE sources, including *lp, *lv, and *ðv.

*Labials followed by *c*

Proto-clusters containing a labial (*p, *m) followed by proto-*c became /ps/ in Utkuhiksalik (Example 25).

25. Reflexes of proto-*pc, *mc

- a. Utku apsak-tuq 'a sound that is clearly and sharply defined'
- | | | |
|----------|--|---|
| PI | | *apcak- 'make loud noise (by pounding)' (F94: 36) |
| WCI—Car? | | apsaq- 'make a noise nearby (ice, ground, thunder)' (F94: 37) |
- b. Utku pipsi-t 'dried fish'
- | | | |
|-----|--|--------------------------------|
| PE | | *pimci 'dried fish' (F94: 262) |
| WCI | | pipsi 'dried fish' (F94: 262) |

In /ps/ clusters, the /p/ is pronounced either as [p], [p̥] or [f], and the /s/, as [s] or [sʲ]. The [s] is not fully palatalized to [š] in /ps/ clusters; in contrast, /s/ sounds more palatal in other types of cluster, described later.

*Labials followed by *j*

Several different reflexes are attested for clusters consisting of a labial consonant followed by PE *j (Example 26).

26. Reflexes of PE *pj, *vj, *mj

- a. Utku iʔja-nŋu-ʔuŋa ‘I’m suffocating (no air in room)’
 Utku iʔja-nŋu-naq ‘how stuffy it is in here!’
 PE *əpjalŋu- ‘feel suffocated’ (F94: 113)
 ECI ijjaŋu- ‘suffocate’ (F94: 113)
- b. Utku ivianiq ‘breast’
 PE *əvjaŋ(ŋ)ir ‘breast’ (F94: 120)
 WCI—Net ivianiq ‘breast’ (F94: 120)
- c. Utku niviuvak ‘housefly’
 PE *nəvjuvag ‘fly’ (F94: 233)
 WCI nuviuvak, niviuvak ‘housefly (the former given as an alternate form for Cop by Lowe, who gives the latter as ‘bluebottle’ for Sig)’ (F94: 234)
- d. Utku pamiuq ‘tail of a land animal’
 PE *pamjur ‘tail (of land animal)’ (F94: 248)
 WCI pamiuq ‘tail of a land animal’ (F94: 248)

First, *pj became /ʔj/ (Example 26.a). (This is also an instance of a general change reported for Natsilik, in which PE clusters of a stop followed by a sonorant became clusters of a glottal stop /ʔ/ followed by a sonorant; Fortescue 1983: 12; 20). Second, in some *mj and *vj clusters, *j vocalized to /i/ (Example 26.b-d).

In summary, the main outcomes of PE clusters of a labial followed by *j include /ʔj/, /mi/ and /vi/. These outcomes also reflect a general constraint against clusters of a true consonant followed by /j/ in Utkuhtsalik. (Recall that neither /ʔ/ or /v/ are true consonants; see example 2 for further discussion.)

Example 27 summarizes the main reflexes of PE clusters of a labial consonant followed by *ð, *c, or *j.

27. Reflexes of clusters containing PE labials followed by *ð, *c, or *j

PE	Utkuhtsalik
labial + *ð	/ps/ (rhoticized), /vj/, /pʃ/
labial + *c	/ps/
labial + *j	/ʔj/, /vi/, /mi/

Proto-clusters with coronals

In this section, we describe the development of PE clusters beginning with a coronal consonant (*t or *c) followed by *ð, *c, or *j.

Coronals followed by *ð

Clusters originating from PE *tð are shown in example 28.

28. PE *tð became Utkuhiksalik /ʔr/, /r̥r/

a. Utku iʔri-liq-tuq ‘the weather is very cold’

PE *itðə- ‘cold’ (F94: 146)

WCI ijji- ‘cold’ (F94: 146)

WCI—Net iʔri- ‘cold’ (Janet McGrath, pers. comm.)

b. Utku qařra-harapku ‘I throw a stick, snow beater, piece of antler, etc., at an object’

PE *kaðug- ‘strike (with instrument)’ possibly from *katðug- (katə- plus -ðug-) (F94: 151)

Some PE *tð clusters became /ʔr/ (Example 28.a).³¹ (The reflex in example 28.a is also an instance of the general change reported for Natsilik, in which PE clusters of a stop followed by a sonorant became clusters of a glottal stop /ʔ/ followed by a sonorant (Fortescue 1983: 12, 20). PE *tð also became /r̥r/ in some instances (Example 28.b).

Coronals followed by *c and *j

PE clusters of a coronal followed by *c or *j included *tc, *cc, *jj, and *tj. The distribution of PE *tc, *cc, and *jj largely overlapped with the distribution of *tt; however, while *tc, *cc and *jj occurred before *any* PE vowel, *tt did not occur before /i/ (Fortescue *et al.* 1994: xvi). These observations suggest an historical contrast, neutralized before /i/, between *tt and the other coronal clusters.

PE *tc, *cc, and *jj became /ts/ in Utkuhiksalik³², while *tt remained unchanged. Consequently, Utkuhiksalik now has a contrast between /tt/ and /ts/, which is analogous to the PE contrast. Utkuhiksalik /tt/ is pronounced with very little, if any, assibilation³³,

³¹ In some instances, [ʔr̥] could represent an underlying /ʔr/. We set this aside as a matter for future research, having found few data that bear on the issue.

³² Some instances of PE *j and *c also became /ts/, and possibly one instance of *jj became /tj/. See examples 9, 12, and 31.

³³ Short /t/ can optionally be lightly palatalized before /i/, but is not assibilated in this environment. /ti/ is generally a reflex of PE *tə. Some examples include Utkuhiksalik [nat̥iq, nat̥iq] ‘floor’ from PE *natər

while /ts/ is heavily assibilated. While it is clear that /tt/ and /ts/ contrast before /a/ and /u/ in Utkuhiksalik, it is unclear whether they contrast before /i/. We set this matter aside for future research.

Examples 29 and 30 illustrate the historical antecedents of the present-day contrast between /tt/ and /ts/ in Utkuhiksalik. Proto-**tt* (and also **lt*) became /tt/ before /a/ (Examples 29.a, b), while proto-**tt* (and also **lt*) became /tt/ before /u/ (Examples 29.c-e) in Utkuhiksalik.

29. Proto-**tt* became /tt/ before /a/ and /u/ in Utkuhiksalik

- a. Utku -qattaq- ‘regularly, all the time, habitually’
 PE *-(k)attar-, -(q)attar- ‘repeatedly or habitually?’ (F94: 400)
 WCI -qattaq- ‘repeatedly’ (F94: 400)
- b. Utku pittaq ‘a hole in the spring ice which forms spontaneously but looks chiseled’
 PI *pøttaq ‘hole’ (F94: 257)
 WCI pittaq ‘hole in ice (as verb = ‘make hole in ice’)’ (F94: 257)
- c. Utku akuttu-řut ‘they’re far apart in space or time’
 Utku akuttuut ‘they’re far apart in space or time’
 PE *akultu- ‘be far apart’ (F94: 14)
 WCI akuttu- ‘be far apart’ (F94: 14)
- d. Utku hittuqit-tuq ‘he expels a little food’
 PI *cittuqit- ‘regurgitate’ (F94: 86)
 WCI sittuqit- ‘choke on food or liquid (food remaining in throat)’ (F94: 86)
- e. Utku hittu-ŋa-řuŋa ‘I’m sitting up straight with legs extended in front of me’
 PE *cittur- ‘sit with legs extended’ (F94: 86)
 WCI sittuq- ‘extend the leg after it’s been bent’ (F94: 87)

In contrast, proto-**tc* (Example 30.a), **cc* (Examples 30.b, c) and **jj* (Examples 30.d, e) became /ts/ in Utkuhiksalik.

‘floor’ (Fortescue *et al.* 1994: 220), and [tʰiʈiɣqat] ‘letters’ (<‘write, mark’) from PE *tətər- ‘mark’ (*ibid.*: 344).

30. Proto-**tc*, **cc*, and **jj* became Utkuhiksalik /*ts*/

a. Utku **itsaq** ‘skin tent’

PI **itcaq* ‘tent skin’ (F94: 146)³⁴
WCI—Net **itsaq** ‘skin tent’ (F94: 146)

b. Utku **atsa-ga** ‘my father’s sister’

PE **accag* ‘paternal aunt’ (F94: 2)
WCI—Net **atsak** ‘paternal aunt’ (F94: 2)
WCI—Cop **attak** ‘paternal aunt’ (F94: 2)

c. Utku **qitsuk-tau-guma** ‘if I am scratched’

PE **qəc(c)ug-* ‘scratch or dig claws into’ (F94: 294)
WCI—Cop **qitsuk-** ‘scratch’ (F94: 294)

d. Utku **natsiq** ‘seal’

PE **najjir* ‘ringed seal’ (F94: 223)
WCI **natsiq** ‘seal’ (F94: 223)

e. Utku **natsiaq** ‘baby seal’

PE **najjirar* ‘young (ringed) seal’ (F94: 223)
WCI—Cop **nattiaq** ‘young seal’ (F94: 223)

However, it is possible that one instance of PE **jj* became /*tj*/ rather than /*ts*/ (Example 31).

31. PE **jj* became Utkuhiksalik /*tj*/

Utku **natji-nahuaq-luŋa** ‘if I’m trying to give birth’³⁵

PI **na(ž)aq* ‘belly or abdomen’ (F94: 205)
WCI **najjak** ‘abdomen, belly [Rasmussen has Cop *naaq*, pl. *nagjat* — for *najjat* — ‘stomach’]’ (F94: 205)

The WCI reflexes in example 31 suggest that the older PE form, not provided by Fortescue *et al.* (1994), may have contained a geminate **jj*. If so, then one instance of PE **jj* may have become /*tj*/, rather than /*ts*/, in Utkuhiksalik. Alternatively, however, Utkuhiksalik /*tj*/ could have derived from PE **c* (see example 13) or, plausibly, from **tj*, although no examples are attested for the latter.

Finally, PE **tj* developed the reflexes shown in example 32.

³⁴ The ‘tent skin’ and ‘skin tent’ glosses are exactly as given in Fortescue *et al.* (1994: 146).

³⁵ Utkuhiksalik also has *naaq* ‘belly’ from the same proto-base.

32. PE *tj became Utkuhiksalik /h/ and /j/

- a. Utku kahuq-taq-tut ‘waves, moving in opposite directions, collide’
 Utku kahak- ‘touch, bump, or brush against another person’
 PE *katjug- ‘knock into or meet’ (F94: 161)
 WCI—Sig kasuq- ‘fight, meet’ (F94: 161)
- b. Utku tahiuq-tuq ‘take someone’s hand, hold hands, shake hands’
 PE *tatjur- ‘lead by the hand’ (F94: 335)
 WCI tasiuq- ‘lead by hand’ (F94: 336)
- c. Utku pijaari-řuq ‘say on purpose, joke’
 PE *pitjaqə- ‘do deliberately’ (F94: 264)
 WCI pisari- ‘do deliberately’ (F94: 264)

PE *tj developed into the single consonants /h/ (Examples 32.a, b) and /j/ (Example 32.c) in Utkuhiksalik.

In summary, proto-*tc, *cc, and *jj became /ts/ (the latter possibly also developed into /tj/); proto-*tt remained unchanged; and proto-*tj became /h/ or /j/.³⁶

The reflexes of PE clusters containing a coronal followed by *ð, *c, or *j are summarized in example 33.

33. Reflexes of PE clusters containing coronals followed by *ð, *c, or *j

PE	Utkuhiksalik
coronal + *ð	/řr/, /řr/
coronal + *c	/ts/
coronal + *j	/ts/, /tj/, /h/, /j/, /jj/

Proto-clusters with dorsals

We now describe the development of clusters containing a proto-dorsal consonant (*k, *q, *g, *r) followed by *ð, *c, or *j.

³⁶ These observations suggest that PE *tj was interpreted as a single consonant historically, and was thus distinct from, for example, geminate *jj. Moreover, the reflexes of intervocalic PE *c—namely, /h/ and [h̥] (Example 11), /ts/ and /j/ (Example 12) and /tj/ (Example 13)—partially overlap with the reflexes of *tj (Example 32). Based on these observations, it is possible that *c and *tj were the same proto-sound in PE, and that *tj was not a cluster. Further research is needed in order to settle the matter.

*Dorsals followed by *ð*

In clusters of a PE dorsal followed by *ð, *ð displays two reflexes, depending on the original voicing of the first member of the cluster: *ð became /s/ after originally voiceless dorsal consonants and /ř/ after originally voiced dorsal consonants. A similar development occurred in Alaskan Inupiaq (Dorais 1986: 37). Moreover, both in Alaskan Inupiaq (MacLean 1980) and, apparently, in Natsilik (Hitch 1994: 4-6) /ř/ still regularly devoices to (retroflex) [ʂ] after /k, q/. Examples of the Utkuhiksalik developments are provided in examples 34-36.

Proto-*ð became /s/ after voiceless proto-dorsal consonants (Example 34).

34. PE *kð, *qð became Utkuhiksalik /ks/, /qs/
- a. Utku **hiksik** ‘ground squirrel, marmot’
PE *cikðig ‘squirrel’ (F94: 76)
WCI siksik ‘squirrel’ (F94: 76)
- b. Utku **aksak-** ‘drop’
Utku **aksak-taili-?na** ‘don’t fall’
PE *akðag- ‘roll or turn over’ (F94: 10)
NAI akšak- ‘roll, slide like caribou killed on a slope’ (F94: 10)
- c. Utku **iqsuk-tuq** ‘he carries on shoulders’
PE *əqðug- ‘carry on shoulder’ (F94: 114)
WCI—Cop iχχuk- ‘carry on shoulder’ (F94: 114)
WCI—Sig iqsuk- ‘carry on shoulder’ (F94: 114)
- d. Utku **aqsaq** ‘ball’
PE *aqə- ‘kick (ball)’ (F94: 38)³⁷
and PE *-ðar- ‘habitually or repeatedly’ (F94: 396)
PI *aqšaq ‘ball’ (F94: 39)
WCI aqsaq, ‘aχχaq ball’ (F94: 38-9)
- e. Utku **uqsuq** ‘blubber or seal oil’
PE *uqður ‘blubber or seal oil’ (F94: 378)
WCI uqsuq ‘oil, blubber’ (F94: 378)

In /ks/ and /qs/ clusters, the plosives /k/ and /q/ are realized as [x] and [χ] respectively, through manner assimilation, and the /s/ is pronounced as [s], [š], or [sʲ].

³⁷ The base meaning ‘ball’ derives from PE *aqə-ðar-, with deletion of the *ə historically, resulting in the proto-form *aqðar-.

Proto-**ð* became /ř/ after the originally voiced dorsals **g* (Example 35) and **r* (Example 36). Both **g* and **r* then devoiced and became /k/ and /q/ respectively.

35. PE **gð* became Utkuhiksalik /kř/

a. Utku takřa-u-řugut ‘we travel away from water (i.e., away from the lake, sea, river)’

PE	<i>*tagðar(-)</i> ‘come up on shore (waves)’ (F94: 324)
NAI	tagžaq- ‘go up river’ (F94: 324)
WCI—Sig	tagjaq- ‘go upstream’ (F94: 324)

b. Utku ukřuk ‘bearded seal’

PE	<i>*ugðug</i> ‘bearded seal’ (F94: 360)
WCI	ugjuk ‘bearded seal’ (F94: 360)

36. PE **rð* became Utkuhiksalik /qř/

a. Utku aqřaq ‘ash, gunpowder’

PE	<i>*arða</i> ‘ash’ (F94: 41)
NAI	arža ‘ash, gunpowder’ (F94: 41)
WCI	arja ‘ash’ (F94: 41-42)

b. Utku uqřuk ‘reindeer moss’

PE	<i>*urður</i> ‘moss’ (F94: 381)
NAI	uržu(q) ‘moss’ (F94: 381)

c. Utku iqřiq ‘a tail-like fringe on arm or shoulder of woman’s parka’
iqři-uq-tuq ‘it flutters or flares (refers to flame, rope, or any other object blown in a draft)’

PE	<i>*ərði</i> ‘milt sac’ (F94: 115)
NAI	irži ‘milt sac [and iržisik ‘suspenders (dual)’ — note the white decorative strips on the shoulders of parkas like milt sacs]’ (F94: 115)

/kř/ is pronounced as [gř] and /qř/ is pronounced as [q⁰ř]; the first member of the [gř] cluster is lenis and at least partly voiced; the /qř/ [q⁰ř] cluster has a lenis release between the plosive and the /ř/.

*Dorsals followed by *c*

PE **c* became either /s/ or /h/ after proto-dorsals. The /s/ reflex is a more conservative one, retained from PI (recall that PE **c* became **s* in PI; Fortescue *et al.*

1994: xvi, xiv). In contrast, the subsequent change from PI *s to /h/ is an innovation shared by most WCI dialects, and is also partly shared by Utkuhiksalik.

Proto-dorsals followed by *c became /kh/ [xx, x̣x̣^c] or /ks/ [xs], and /qh/ [χχ], or /qs/ [χs] in Utkuhiksalik (Example 37).

37. Proto-*kc *rc, *qc became Utkuhiksalik /kh/, /qs/, /qh/

- a. Utku **makhaq-** [max̣x̣^caq-] ‘sing a lullaby’
 Utku **makhaīruq** ‘she sings a lullaby to a small child’
 PI *makcaq- ‘sing a baby to sleep’ (F94: 184)
 WCI—Cop max̣χχak- (for maxxak-?) ‘sing a baby to sleep’ (F94: 184)
- b. Utku **akhut-** [ax̣x̣^cut-] ‘try harder, do with effort’
 PI *akcut- ‘hard or with effort’ (F94: 10)
 WCI—Net ax̣xut- ‘hard, strongly’ (F94: 10)
- c. Utku **akhaaq-** [ax̣x̣^caaq-, ax̣xaaq-] ‘grab’
 PE *arcar- ‘grab or otherwise act excessively’ (F94: 41)
- d. Utku **aqsi-̄ruq** ‘he abandons game, leaves it on the ground without caching it’
 PI *aqci- ‘have plenty’ (F94: 38)
 WCI—
 Perry River aqsi- ‘waste food supply’ (F94: 38)
- e. Utku **iqhi-̄ruq** ‘he’s afraid’
 PI *iqci- ‘be afraid’ (F94: 142)
 WCI iqsi-, iχχi- ‘be afraid’ (F94: 142)

As shown in examples 37.a-c, while /kh/ clusters are often pronounced as [xx], they sometimes have an ‘s-like’ timbre, which we transcribe as a fronted velar fricative [x̣x̣^c]. The possible historical significance of s-like pronunciations is discussed below.

*Dorsals followed by *j*

Clusters of a PE dorsal followed by *j underwent several changes in Utkuhiksalik (Example 38).

38. Reflexes of proto-**kj*, **rj*, **qj*, **gj*

- a. Utku **kikiak** ‘nail’
 PI **kəkjag* or *kəkjar* ‘nail’ (F94: 167)
 WCI *kikiak* ‘nail’ (F94: 167)
- b. Utku **ukiuq** ‘winter, year’
 PE **ukjur* ‘winter or year’ (F94: 364)
 WCI *ukiuq* ‘winter, year’ (F94: 364)
- c. Utku **miriaq-tuq** ‘he vomits’
 PE **mirjar(-)* ‘vomit’ (F94: 202)
 WCI *miriaq-* ‘vomit’ (F94: 202)
- d. Utku **piksik-tuq** ‘it jumped, bounced’
 PE **pəkjag-*, *pəkjæg-* ‘fly off’ (F94: 254)
 WCI *piksik-* ‘jump, bounce’ (F94: 254)
- e. Utku **aniqhaaq-** [*aniχχaaq-*, *aniχχaaq-*] ‘pant’
 PE **anərja(C)ar-* ‘take a breath’ (F94: 28)
 WCI *aniqsaaq-* ‘breathe’ (F94: 28)
- f. Utku **manigguu-ti-řuq** ‘he appeases’
 PE **manəgjugar-* ‘sob (after crying)’ (F94: 189)
 ECI *manijjugaq-* ‘sob after crying, have a heavy heart’ (F94: 189)
- g. Utku **iniquanaq-** ‘look pretty’
 PI **inəqjunar-* ‘be cute’ (F94: 133)
 WCI—Net *iniquanaq-* ‘look pretty’ (F94: 133)

PE **j* was vocalized to /i/ after **k* and **r* (Examples 38.a-c). However, it also became /s/ after **k* (Example 38.d). PE **j* also became a fricative after **q* and **g* (Examples 38.e, f), and sometimes deleted (Example 38.g). These diverse historical changes resulted in a lack of clusters containing a dorsal consonant followed by /j/ in Utkuhiksalik.

Examples such as 38.e are particularly interesting: in the same elicitation session, one of the consultants pronounced the /qh/ [χχ] cluster with different degrees of s-like timbre (*i.e.* [χχ] versus a more fronted [χχ]).³⁸ Examples such as 37.a-c ([x] versus [x̣]) and 38.e ([χ] versus [χ̣]) suggest an intermediate stage in the historical change from PE **c* to PI **s* to WCI /h/, a stage in which PI **kh/* was pronounced as [χχ] and PI **qh/*, as [χχ̣]. The intermediate stage would have resulted from place assimilation

³⁸ As noted in footnote 41 accompanying example 45.f, an ‘s-like’ sound intermediate between [h] and [s] also occurs in some Natsilik postbases. A more detailed phonetic description of Natsilik is called for.

(that is, from PI *s becoming more like /k, q/ for place of articulation). Utkuhksalik preserves this intermediate stage in some isolated pronunciations. In summary, PE *j became /s/ (or an s-like sound), /h/, or /i/ after dorsals. It also deleted.

Example 39 summarizes the development of PE *ð, *c, and *j when these occurred as the second consonant in a cluster.

39. The development of PE *ð, *c, and *j in cluster-final position

Environment	*ð	*c	*j
/labial __	/ps/ (rhoticized), /vj/, /př/	/ps/	/ʔj/, /mi/, /vi/
/coronal __	/ʔř/, /ř/	/ts/	/ts/, /tj/, /h/, /j/, /jj/
/dorsal __	originally voiceless *kð, *qð —> /ks/, /qs/	/ks/ [xs], /kh/ [xx] /qs [χs], /qh/ [χχ] (and intermediate sounds)	/ks/ [xs] /qs [χs] /qh/ [χχ] /gg/ [Y Y] /ki/, /ri/ ∅ (deletion)
	originally voiced *gð, *rð —> /kř/, /qř/		

Example 39 illustrates that the place of articulation influenced the preceding consonant in the historical development of *ð, *c, and *j, as did the voiceless or voiced status of preceding dorsals.

Up to this point, we have described the historical development of *ð, *c, and *j in bases, but not in postbases. We have chosen this strategy because historical reconstruction is typically more straightforward for bases than for postbases. In our final descriptive section, we sketch out some basic trends in the historical development of *ð, *c, and *j in postbases.

Postbases containing *ð, *c, and *j

The historical development of Inuit and Yupik postbases is complex: for example, “[...] different affixes *with the same original shape* may end up with different morphophonemic behaviour. Even more commonly, the same historical affix may end up with different properties (*and allomorphs*) in different [Inuit and Yupik] languages and dialects or one affix may split both semantically *and morphophonemically* in the same language” (Fortescue 1992: 18; emphasis added). Consequently, modern Inuit and Yupik languages and dialects often have several postbases descended from a single proto-form, with at least one of the modern postbases being fossilized or less productive. For example, PE *nər ‘one that is more or most’ is the proto-form for two WCI forms: (1) productive -niχχaq- ‘the one that - most, more’ and (2) unproductive, non-truncating -niq- ‘the one that - most, more’ (Fortescue *et al.* 1994: 414).

We do not yet have enough information to make claims about the productivity of Utkuhiksalik postbases. Moreover, without this information, we cannot postulate any intermediate stages in the development of PE *ð, *c, and *j in postbases. In the interim, however, we provide examples of how PE *ð, *c, and *j developed in Utkuhiksalik postbases, making generalizations where possible.³⁹

**ð in postbases*

The historical development of *ð in postbases is exemplified in 40-44. PE *ð developed into /r/ and /s/ in postbases (Example 40).

40. PE *ð became /r/ and /s/ in postbases

- a. Utku -řaq-, -liřaq-, -hiřaq-, -siřaq- ‘hold, carry, wear, be covered with, carry with one, be supplied with, etc.’
- | | | |
|------|-----------------|--|
| Utku | apu?řaq-tuq | ‘it’s buried in deep snow’ |
| Utku | pualu-liřaq-tuq | ‘he’s wearing mittens’ |
| Utku | pualu-řaq-tuq | ‘he’s wearing mittens’ |
| PI | *-liža(a)q- | ‘have along with one (possibly from PE *-li- and *-ðar-)
(F94: 407) ⁴⁰ |
| GRI | -lišar- | ‘have with one; -lišaar- ‘be wearing’ (F94: 407) |
- b. Utku -(k)saq- ‘potential, material for’
- | | | |
|------|---------------------|--|
| Utku | ui-ksaq | ‘fiancé’ |
| Utku | a?nuraaq-saq | ‘clothing material’ |
| Utku | igalaaq-saq | ‘window material’ |
| PE | *-kðar- | ‘(something for the) future’ (F94: 401) |
| WCI | (productive) -xxaq- | ‘future (verbal = ‘get material for’) ⁴⁰ (F94: 401) |

Postbase-initial *ð also became /r/ alternating with /t/ in some postbases and in some inflectional affixes (Example 41).

³⁹ As mentioned in footnote 25, the information about the productivity and morphophonemic patterning of postbases (e.g., the ability to truncate the preceding morpheme) provided by Fortescue *et al.* (1994: 393) has been omitted from the citations, except in the case of WCI postbases, where it has been included in order to compare the WCI and Utkuhiksalik morphophonemic patterning.

⁴⁰ The Utkuhiksalik forms are consistent with the hypothesis presented by Fortescue *et al.* (1994: 407) that PI *-liža(a)q- descended from two separate postbases, PE *-li- and *-ðar-.

41. PE postbases and inflectional affixes in which initial *ð became Utkuhiksalik /ř/, t/

- a. Utku -řaq (after vowels), -taq (after consonants) ‘transitive (passive) participial (in noun forms)’
- Utku -řau- (after vowels), -tau- (after consonants) ‘transitive (passive) participial (in verb forms)’
- Utku hana-řaq ‘something that has been made’
- Utku qimak-taq ‘something that was left behind’
- Utku hana-řau-řuq ‘it was made’
- Utku qimak-tau-řuq ‘it was left behind’
- PE *-ðar- ‘passive participial’ (probably alternating with *-tar- after a consonant in PE...) (F94: 395)
- WCI (productive, non-truncating) -jaq (after vowels), -taq (after consonants) ‘passive participial’; (also the productive, non-truncating, transitive indicative passive’ -jau-) (F94: 396)
- b. Utku -řuq (after vowels), -tuq (after consonants) ‘intransitive (active) participial’
- Utku ani-řuq ‘he went out, the one who went out’
- Utku ihiq-tuq ‘he came in, the one who came in’
- PE *-ður-, -tur ‘intransitive participial’ (F94: 397)
- WCI (productive) -juq (after vowels); (productive, non-truncating) -tuq (after consonants), ‘intransitive participial or indicative marker’ (F94: 397)

However, as noted in the Fortescue *et al.* (1994) glosses in example 41, the allomorphs beginning with /t/ likely arose from PE *t, rather than *ð. The examples in 41 thus only provide instances of PE *ð becoming /ř/ in Utkuhiksalik.

Metathesis sometimes affected postbases beginning with PE *ð as demonstrated in example 42.

42. Metathesis of PE *ðv, Utku /řv/ clusters

- Utku -vřik, -řvik, -vik ‘place or time of’
- Utku aqpavřik; aqpařvik ‘a place to which people race, a base (in baseball)’
- Utku tii-liuq-vik ‘tea kettle’ (literally: ‘place for making tea’)
- PE *-ðvig or *-vig ‘place or time of’ (F94: 398)
- WCI -vik ‘place or time’ of (F94: 398)
- WCI—Net (productive, non-truncating, geminates after vowels, and causes preceding /t/ to become /z/ in Natsilik) -vik ‘place, time of’

As shown in example 42, PE **ð*vig ‘place or time of’ has three reflexes in Utkuhiksaliq: unmetathesized [řvik], metathesized [vřik], and the form [vik], in which /ř/ has been deleted. The developments shown in examples 40-42 are consistent with the historical development of **ð* in bases (which was summarized in example 4). As in bases, **ð* became /s/ after originally voiceless dorsal consonants (Example 40.b), but became /ř/ elsewhere (Examples 40.a, 41, 42).

In contrast, examples 43-44 illustrate other developments of PE **ð* in postbases. As shown in example 43, some postbases originally beginning with PE **ð* now have two allomorphs beginning with either /h/ or /s/.

43. PE postbases in which initial **ð* became Utkuhiksaliq /h/, /s/

Utku	-hi- (after k, q, vowels), -si- (after p, t) ‘half transitive’
Utku	nuhuk- hi -řuq ‘he is pulling something’
Utku	ĩřiq- hi -řuq ‘he is hiding something’
Utku	haap- si -řuq ‘he puts something out in a visible place’
PE	*- <i>ði</i> - ‘half-transitivize (detransitivizer)’ (F94: 396)
WCI	(semi-productive) - <i>ji</i> -; (semi-productive) - <i>i</i> - (after consonants); (non-productive, non-truncating) - <i>hi</i> - ‘half-transitivizer’ (F94: 396)

Moreover, as shown in example 44, postbase-initial **ð* became /g/ [ɣ] alternating with /r/ [ɾ] and /t/ in some cases.

44. PE postbases in which initial **ð* became Utkuhiksaliq /g, r, t/

Utku	-gaq- (after vowels and deleting k), -raq- (after deleting q), -taq- (after non-deleting k, q) ‘repeatedly’
Utku	qima- ga -i-řunga ‘I have left several (objects) behind’; (from qimak ‘leave behind’)
Utku	qĩřgiq- taq -tuq ‘he jumps repeatedly’
Utku	titi- raq -tuq ‘he writes’ (literally: ‘he makes repeated marks’; from titiq- ‘mark’)
PE	*- <i>ðar</i> -, *- <i>ðaqə</i> - ‘habitually or repeatedly’ (This postbase probably had the alternants /- <i>tar</i> -, - <i>taqə</i> -/ after consonants in PE.) (F94: 396)
WCI	(productive, non-truncating) - <i>taq</i> - ‘repeatedly’ (F94: 396)

In postbases, then, PE **ð* sometimes developed in a manner consistent with the historical development of **ð* in bases: **ð* became /ř/ or /s/. However, additional reflexes such as /h/, /g/, and /r/ are also attested. These reflexes could be due to morphological restructuring on analogy with other postbases (e.g., Example 46), an idea which we leave for future research.

***c in postbases**

The historical development of *c in postbases is exemplified in example 45.

45. Proto-postbases in which initial *c became Utkuhiksalik /h/ or /s/

- a. Utku **-haq-, -haari-, -saq-** ‘try to cause to’
- Utku ili-**haq**-tuq ‘he is studying, trying to learn’
Utku kappia-**haari**-řuq ‘he is trying to frighten someone’
Utku uřriq-**haari**-řuq ‘he is trying to cause someone to worry’
- Utku anniq-**saq**-tuq ‘he tries to keep safe, keep something’
Utku huruhiq-**saq**-tuq ‘he causes suffering, torment’
Utku uřriq-**tuq-saq**-tuq ‘he tries to make supplies last a long time (because he’s worried about having none)’
- PE *-car- ‘try to cause to’ (F94: 394)
WCI (productive, non-truncating) -ha(a)q- ‘try to get to’ (F94: 394)
WCI—Sig (productive, non-truncating) -saq- ‘I hope that’ (F94: 394)
WCI—Sig (productive, non-truncating) -saari- ‘on purpose’ (F94: 394)
WCI—Sig (productive, non-truncating) -saruma- ‘intend’ (F94: 394)
- b. Utku **-haq-** ‘fetch, go to get’
- Utku qimatu-**ha**-ruma-nnaq ‘I want to fetch the backfat or hide that has been cached’ (with qimatu ‘backfat’ or ‘hide that has been cached’)
Utku piruřaq-**haq**-tunga ‘I’m fetching the cached meat’
- PE *-car- ‘go to get’ (F94: 394)
WCI—Sig (productive, non-truncating) -saq- ‘fetch’ (F94: 394)
- c. Utku **-hiq-** ‘be on the verge of’
- Utku aittaaq-**hiq**-tuq ‘it’s on the verge of opening (because it’s cracked, etc.)’
Utku ani-**hiq**-tuq ‘he’s on the point of leaving’
- PE *-ciqtuq- ‘pretend to’ (F94: 394)
WCI (productive) -hiq-tuq- ‘pretend to’ (F94: 394)
- d. Utku **-hiriaq-, -siriaq-** ‘be easy to’
- Utku ahivaq-**hiriaq**-tuq ‘it is easy to remove’
Utku kaat-**siriaq**-tuq ‘it can be detached easily’
- PE *-c(c)irjar- ‘be easy to’ (F94: 395)
WCI (productive) -ttiriaq-; (productive, non-truncating) -hiriaq- (after consonants) ‘be easy to’ (F94: 395)

- e. Utku -**tsiaq**- ‘fine, well’ (postbase for verbs)
 Utku -**tsiavak** ‘fine, good’ (postbase for nouns)
- PI ***-tciaq**- ‘fairly big or good?’ (F94: 426)
 WCI—Net (productive) -**tsiaq**- ‘small, nice’ (F94: 426)
- f. Utku -**psaaq**- ‘more’
- Utku tii-tu-**psaa**-rit ‘have some more tea’
- PE ***-mcag**- ‘finally?’ (F94: 411)
 CSY—Chap -**msaq**- ‘finally’ (F94: 411)
 NAI -**fsaaq**- ‘again, more’ (F94: 411)
 NAI—Nu -**psaaq**- ‘again’ (F94: 411)
 WCI—Cop (productive) -**ffaaq**- ‘again, more’ (F94: 411)
 WCI—Net -**phaaq**- ‘again, more’ (Janet McGrath, pers. comm.)⁴¹
- g. Utku -**psu**- ‘a little’⁴²
- Utku a?lau-**psu**-laa-nnuaq-tuq ‘it’s a little bit different’
- PY ***-mcug**- ‘a little’ (F94: 411)
 NAI -**pifsukaq**- ‘barely escape danger, barely miss a hitting’ (F94: 411)⁴³

As shown in example 45, PE *c became either /h/ or /s/ in postbases. These historical developments are consistent with the development of *c in bases (which was summarized in example 5). As in bases, *c became /h/ between vowels (Examples 45.a, c); *c became /h/ (Examples 45.a-c) or /s/ (Example 45.a) after /q/; and *c became /s/ after /t/ (Examples 45.d, e) or *m (Example 45.f). The reflexes of PE *c in postbases thus result from regular historical sound changes.

⁴¹ A Natsilik speaker, Janet McGrath, reports that the < h > in this Natsilik postbase is a sound intermediate between [h] and [s], i.e. a palatal-like sound.

⁴² This postbase is usually combined with other diminutive postbases such as /psu-nnua-luk/ or /psu-laannuaq-tuq/; the combined postbases have the meaning of ‘a very little.’

⁴³ The NAI form is listed under the ‘Inu’ reflexes of ***-mcug**- in Fortescue *et al.* (1994: 411). The introduction in Fortescue *et al.* (1994), particularly the key to abbreviations (*ibid.*: xii-xiii) does not list ‘Inu,’ but we speculate that it refers to the Inuit branch (as opposed to the Yupik branch) of Eskimo-Aleut.

**j in postbases*

The historical development of *j in postbases is demonstrated in examples 46–48. Example 46 illustrates that in some postbases, initial PE *j developed into morphemes with allomorphs beginning with /j, s, g, r / [j, s, ʏ, ʁ].

46. PE postbases in which initial *j became Utkuhiksalik /j, s, g, r / [j, s, ʏ, ʁ]

- a. Utku -juŋnaq-, -guŋnaq- (after k), -ruŋnaq- (after q), -suŋnaq- (after t) ‘be able to, might’
- Utku niri-juŋnaq-tuq ‘he can eat’
Utku tikit-suŋnaq-tuq ‘he might arrive’
- PE *-juknar- ‘probably’ (F94: 437)
SPI -juŋnaq-, -guŋnaq- (after k, q), -suŋnaq- (after t) may, must have -ed’ (F94: 437)
- WCI (productive, non-truncating) -juŋnaq-; (productive, truncating) -guŋnaq- (after k, q); (productive, non-truncating) -tuŋnaq- (after t) ‘no doubt, probably, can’ (F94: 437)
- b. Utku -juma-, -guma- (after k), -ruma- (after q), -suma- (after t) ‘want to’
- Utku niri-juma-ŋuq ‘he wants to eat’
Utku tikit-suma-ŋuq ‘he wants to arrive’
- PE *-juguma- ‘want to’ (F94: 436)
WCI (productive, non-truncating) -juma-; (productive, truncating) -guma- (after k/q); (productive, non-truncating) -tuma- (after t) ‘want to’ (F94: 436)

Example 47 illustrates that in some postbases, PE *j became /h/ or /s/.

47. PE postbase in which initial *j became Utkuhiksalik /h/, /s/

- Utku -huq-, -suq- ‘be skillful, do well, tend to do’
- Utku pi-tsiaq-huq-tutit ‘you are skillful’ (literally: ‘you tend to do it well’)
Utku niri-huq-tuq ‘he eats all the time’ (literally: he has a tendency to eat’)
- Utku qaaq-suq-tuq ‘it’s blistered’ (*i.e.* ‘it’s trying to burst’)
Utku qalat-suq-tuq ‘it’s (only) eaten cooked (not raw)’ (*i.e.* ‘it tends to be eaten cooked, not raw’)
- PE *-jug- ‘want or tend to’ (F94: 436)
WCI—Sig (productive, non-truncating) -suq- ‘want to’ (F94: 436)
WCI—Net (productive, non-truncating) -huq-; (productive, truncating) -guq- (after k, q) ‘want to’ (F94: 436)

Since both /-huq-/ and /-suq-/ can occur after bases ending with /q/, it is possible that one of the postbases is a more archaic or less productive form.

Finally, example 48 illustrates a postbase in which PE *j became [j] or [i]⁴⁴.

48. PE postbase in which medial *j became [j] or [i]

Utku -vjak-, -viak- 'a little'

PE *-mjag- 'somewhat?' (F94: 413)

WCI (productive, non-truncating) -vjak- 'rather, more or less' (F94: 413)

Example 48 differs from the earlier examples in that PE *j occurred after a consonant within the same morpheme in example 48, whereas *j was postbase-initial in examples 46 and 47.

In summary, as in bases (see example 17) all of the changes affecting *j-initial postbases resulted in the elimination of proto-sequences of a true consonant followed by /j/. (We assume that /v/ is a sonorant glide comparable to /w/; see example 2.)

Example 49 summarizes the historical development of PE *ð, *c, and *j in postbases.

49. PE *ð, *c, and *j in postbases

*ð	/ř/, /h/, /s/, /g ~ ř ~ t/, /ř ~ t/
*c	/h/, /s/
*j	/j ~ s ~ g ~ r/, /h/, /s/, /j/

Example 49 illustrates that the main difference between the historical development of PE *ð, *c, and *j in bases versus postbases is that the number of historical reflexes tended to multiply when PE *ð, *c, and *j occurred postbase-initially. An interesting matter for future research, partly addressed by Fortescue (1992), is why the boundary between the base and the postbase is historically different from other boundaries within the Inuit word. Following Fortescue (1992), we have speculated that both archaisms and more modern forms coexist, and that the modern forms have arisen both by regular sound changes and through morphological restructuring or analogy.

⁴⁴ Briggs suspects that [vj] could be in free variation with [vi] in this postbase—a possibility which remains to be confirmed or refuted. If [vj] and [vi] are in free variation, then example 48 would be similar to example 11.e, where [hj] varies with [hi].

Conclusion

So far, we have described how PE *ð, *c, and *j developed in Utkuhiksalik bases and postbases. In this final section, we outline the characteristics that Utkuhiksalik currently displays as a result of these historical developments. The present-day Utkuhiksalik system of contrasts resulting from the developments of PE *ð, *c, and *j is summarized in example 50.

50. Reflexes of PE *ð, *c, and *j

Proto-environment	*ð	*c	*j
/*V__*V	/r/	/h/, [hʲ], /ts/, /tj/	/j/, /ts/
/__*C	/r/	—— ⁴⁵	——
/*labial __	/ps/ (rhoticized), /vj/, /př/	/ps/	/ʀj/, ⁴⁶ /mi/, /vi/
/*coronal __	/r̥r/, /r̥r/	/ts/	/ts/, /tj/, /h/, /j/, /jj/
/*dorsal __	originally voiceless *kð, *qð —> /ks/, /qs/ originally voiced *gð, *rð —> /kř/, /qř/	ks [xs], kh [xx] qs [χs], qh [χχ] (and intermediate sounds)	/ks/ [xs]; /qs/ [χs]; /ts/ /qh/ [χχ] /gg/ [γγ] /ki/, /ri/ ∅ (deletion) /g/ (after /k/, in postbases) /r/ (after /q/, in postbases)

Example 50 illustrates several striking characteristics of the Utkuhiksalik sound system: first, /r/ (from PE *ð), /h/ (from PE *c), and /j/ (from PE *j) all occur between vowels in Utkuhiksalik; Utkuhiksalik is like Natsilik (Dorais 1990: 39) and Uummarmiut (Lowe 1985: 276) in maintaining a contrast between /r/ and /j/. Second, the phonemes /r/ (from PE *ð), and /s/ (from PE *ð, *c, and *j) both occur after the plosives /p, t, k, q/ in Utkuhiksalik, while /h/ (from PE *c) also occurs after /k, q/. Natsilik might share with Utkuhiksalik the retention of /s/ after some consonants; however, Dorais (1990: 41) reports that Natsilik tends to have /h/ in positions where most ECI words have /s/. Finally, Utkuhiksalik does not have /j/ after true consonants; /j/ occurs after vowels, and after the non-consonantal sounds /ʀ/ and /v/. It is not clear how Utkuhiksalik compares with other WCI dialects in this respect. In conclusion, a matter for future research is the extent to which Utkuhiksalik differs from, or is similar to, other dialects in the Natsilik grouping in terms of the characteristics described in this paper.

⁴⁵ *c and *j did not occur as the first consonant in a sequence.

⁴⁶ The proto-sound corresponding to /ʀ/ in this instance was a labial (see example 26).

Acknowledgments

Research for this paper was supported by SSHRC grant #410-2000-0415, awarded to Jean L. Briggs. The authors would like to acknowledge the invaluable assistance of the Utkuhiksalingmiut who presently live in Gjoa Haven, especially Briggs's adoptive mother and aunts.

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