Phonological Change in Japanese-Ainu Loanwords
Pasenopo Iyayraykere.

I owe a debt of gratitude to the three esteemed professors without whose help this paper could not have been written. I sincerely thank Hidetoshi Shiraishi, who suggested the topic; Koichi Hiroe, who helped immensely with research; and Stephen Anderson, who patiently guided the project.

Background.

Loanwords.

The goal of the modern linguist is to draw demonstrable conclusions about the internal systems of languages, the relationships between languages, and the human ability to use language. One of the internal systems of language is phonology, which involves the production and perception of speech sounds. A major question in phonology is how the interactions of these processes are organized, and how this organization works differently in different languages. For instance, some languages do not permit consecutive consonants. Some languages have more complex demands, such as "before the palatal vowel /j/, the alveolar voiceless fricative /s/ will become the palato-alveolar voiceless fricative /ʃ/.

Most of these organizational principles can be determined by carefully studying the normal speech of speakers of the language in question. There is a "back door" to understanding the phonology of a language: when speakers of a given language borrow words from a phonologically different language, they usually bend the sound of the new words to fit the rules of their own language. (Anderson & Lightfoot 2002, p93) Borrowed words, or "loanwords," often violate the phonological constraints of the borrowing language. These violations must be reconciled. The way in which violations are reconciled in turn reveals the relative importance of the phonological constraints. Because loanwords present unusual problems to the phonological system of a language, loanwords allow linguists to analyze problems that are otherwise inaccessible.

While loanwords have the advantage of an unusual perspective, they are deceptive in their own way. A body of loanwords is not all borrowed at once. They come into a new language through human contact, and may be introduced at any point during a lengthy period. If words are being borrowed from one language into another over a period of centuries, both languages will have changed significantly during the period. Neither language will be really one language, but a series of versions through time. The same applies for space: words can be borrowed from non-standard or regional dialects and adopted into regional dialects, so that dialect variations must be accounted for in the analysis of loanwords. These are the easiest confounding variables to correct. Each loanword has its own history, and some may have unique quirks that are nigh-on impossible to understand. In the study of loanwords, then, we should expect heterogenous data and phenomena, and we must bear in mind the historical context of the borrowing. Only by forgiving variation here and there can we use loanword data to develop a broader analysis of a phonological system.

Linguistic Context.

This paper is an overview of the phonology of loanwords in Ainu. Ainu is a language historically spoken around northern Japan: in northern Honshu, and on Hokkaido, the Kurile archipelago, Sakhalin, and the southern part of Kamchatka. (Shibatani 1990 p3-4) Linguists have made numerous attempts to find another language related to Ainu, comparing Ainu to Indo-European, Malayo-Polynesian, Hebrew, Assyrian, Basque, Japanese, and Amerindian languages. (Refsing 1986 p53, Phukan 2008 p4) None of these links is conclusive, let alone generally accepted. Most linguists assume that Ainu is an isolate. While Ainu has many features worthy of study, such as its number system and concept of time (Harrison 2007 p189, Refsing 1986 p38), the scope of this
paper is limited to phonology only. A description of Ainu phonology will follow, but first it is necessary to review who the Ainu people are and under what circumstances they historically borrowed words from some form of what we now call Japanese.

**Historical Context.**

Around the year 1500, the economy of the Ainu people revolved around agriculture, as well as fishing, hunting, and gathering. (Shibatani 1990 p4) Sea mammals and river fish like salmon were particularly important. Ainu people interacted with, among others, Nivkh people to the north and Japanese people to the south. The Japanese, who had more extensive military resources, occasionally fought with the Ainu, taking territory and by the 17th century establishing a permanent presence in Hokkaido. This presence was in the form of the Matsumae clan’s feudal headquarters, located near the very southern tip of Hokkaido. The militaristic feudal nature of the Japanese presence in Hokkaido is reflected in a number of loanwords, which include various samurai ranks, pieces of armor and weapons. During the feudal period, a number of other Japanese people settled in Hokkaido, most of them from north-east Honshu (called Tohoku). The Japanese settlers exploited natural resources to a degree that threatened the livelihood of the Ainu, and they enforced exploitative trade practices with military force. There were several Ainu rebellions, but none had lasting success. (Refsing 1986 p58)

In the second half of the 19th century, unprecedented numbers of Japanese people began moving to Hokkaido as a part of the modernization program undertaken by the Japanese government. Ainu language was de facto banned, and the only way out of poverty and oppression for most Ainu people was to assimilate, taking on the language, as well as beliefs and lifestyle, of Japanese people. The Ainu language was so stigmatized that by the early 20th century parents had stopped passing it on to their children. Most Ainu parents hid their Ainu ancestry from their own children. By 1986, when Kirsten Refsing wrote her description of the Shizunai dialect of Ainu, the language was

"... no longer a living speech community, but only survives in a few, more or less isolated persons of advanced age. In recent years there have been attempts at reviving the language, but so far they have not resulted in any tangible change... all speakers of Ainu are bilingual and actually use Japanese in the majority of their daily contacts."

From Refsing 1986, p276

Today, it is claimed, there are fewer than ten native speakers of Ainu left. As Refsing indicates, it has been a long time since a speaker of Ainu was not also fluent in Japanese. Since the 1990s, the Ainu language has seen some gains (see Addendum). The readily studied remains of the fluent Ainu speech community consist of recordings, texts, and analyses done by linguists, mostly within the past fifty years. This paper relies chiefly on the data collected by Kindaichi Kyosuke, Tamura Suzuki, and Kirsten Refsing, especially the Saru dialect dictionary compiled by Tamura.

**Goals.**

The purpose of this paper is to describe the main phonological trends in loanwords from Japanese into Ainu. The most obvious areas of interest are those parts of phonology where Ainu and Japanese are widely known to differ, especially areas where Japanese phonology has features that Ainu does not. These features include several consonants, notably /ɾ/, plus consonant-voicing and vowel-length distinctions, which Japanese has, and Ainu does not.

**Methods.**

The method of the present study has been as follows: First, develop a full understanding of Ainu and Tohoku Japanese phonology. Second, search Ainu word lists (especially Tamura 1996) for terms either positively identified as loanwords (e.g. terms whose etymology states “from Japanese”) or for terms that are so close to loanwords that they are impossible to disregard. Third, identify the
Japanese and Ainu phonology.


Loanwords in Ainu are almost entirely from some dialect or another of Japanese, and this paper will deal only with these loanwords. It is appropriate to set down a description of the sounds of Japanese, and more specifically of northern Tohoku Japanese. The sounds of Japanese are given below:

Vowels:

- i
- u (actually w)
- e
- o
- a

Consonants:

<table>
<thead>
<tr>
<th>Bilabial</th>
<th>Alveolar</th>
<th>Palatal</th>
<th>Velar</th>
<th>Glottal</th>
</tr>
</thead>
<tbody>
<tr>
<td>m</td>
<td>n</td>
<td>j</td>
<td>k</td>
<td>g</td>
</tr>
<tr>
<td>p, b</td>
<td>t, d</td>
<td>c</td>
<td></td>
<td></td>
</tr>
<tr>
<td>s, z</td>
<td>f</td>
<td>j</td>
<td>w</td>
<td></td>
</tr>
<tr>
<td>(Affricate)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Approximant)</td>
<td>(w)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flap</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Japanese phonology also has palatalized consonants, e.g., /b', p'/, /t'/, /d'/, /g'/, /b'/, /t'/, etc.


This is the basic set of sounds in modern standard Japanese. There are a number of restrictions on the arrangement of these sounds. Japanese syllable structure allows for V, CV, and CVV syllables. Two consonants are licensed to end a syllable: a moraic nasal, and a moraic non-nasal stop. The moraic non-nasal stop (often represented as "Q") may only appear before a non-nasal stop, and effectively acts to lengthen that stop, although it is counted as its own mora, e.g.
The mordial nasal assimilates to the place of any following stop. Unlike the mordial non-mordial stop, the mordial nasal may appear word-finally, e.g. /kaN/ = /kan/, "No good," Kansai dialect.

Several restrictions have to do with the allophones of particular phonemes. The phoneme /h/ surfaces as / şi/ before /i/, and as /a/ before /u/; that is: /ɕi/, /be/, /ba/, /bo/, /bu/. The sounds /s/ and /s/ surface as /ʃ/ and /x/, respectively, before /i/. The sounds /t/ and /d/ surface as /t̚/ and /d̚/ before /u/; this is the only context in which /ts/ and /dx/ appear. Again, /t̚/ and /d̚/ surface as /ʃ/ and /x/ before /i/; in this case, /ʃ/ and /x/ are not limited to that context only. For a more complete description of modern standard Japanese phonology, see Shibatani 1990, p.158-184.

The Japanese of Tohoku has a number of phonological features which are particularly relevant to a discussion of Ainu loanwords. [The Hokkaido dialect is essentially a part of the Tohoku dialect.]

The high front vowel /i/ is lower at word-initial position and does not contrast with /e/ in that position. In mid-word and word-final position, /i/ is more centered, and does not contrast with /u/ in those positions. As for /u/, it becomes a center vowel word-initially. The high vowels /i/ and /u/ often do not contrast after a consonant, especially not after /s/, /ʃ/, /x/, /s/, /t/, and /d/.

According to Watanabe 1983, /o/ is not strongly rounded in Hokkaido Japanese. Standard Japanese diphthongs /ai/, /o/, and /au/ appear instead as /ai/, /e/, and /i/, respectively. Some standard Japanese long vowels are short in the Tohoku dialect. On the other hand, some monosyllabic words with short vowels in standard Japanese have a long vowel in Tohoku Japanese, e.g. standard /te/ = Tohoku /te/; "hand." In some CVV syllables, the second vowel segment becomes the mordial nasal, e.g. standard /içi/ = Tohoku /içi/; "skilled."

Obstruent consonants in Tohoku Japanese are voiced intervocally. Intervocalic voiced obstruents are almost always pre-nasalized, which is apparently a preserved archaic feature. In modern Tohoku Japanese, intervocalic /g/ is usually not prenasalized, but rather turned into the nasal consonant /g/. In some cases, prenasalized obstruents are devoiced:

<table>
<thead>
<tr>
<th>Modern standard Japanese</th>
<th>Tohoku dialect</th>
</tr>
</thead>
<tbody>
<tr>
<td>miękai</td>
<td>m'jikc</td>
</tr>
<tr>
<td>zabuton</td>
<td>za'puton</td>
</tr>
</tbody>
</table>

In some variants of the Tohoku dialect, intervocalic voicing and prenasalization are blocked after long vowels. A few remaining differences between standard Japanese and the Tohoku dialect are best represented in a list:

<table>
<thead>
<tr>
<th>Modern standard</th>
<th>Tohoku dialect</th>
</tr>
</thead>
<tbody>
<tr>
<td>/t̚/</td>
<td>/t/</td>
</tr>
<tr>
<td>/s̚/</td>
<td>/s/</td>
</tr>
<tr>
<td>/ʃ/</td>
<td>/ʃ/</td>
</tr>
<tr>
<td>/d̚/</td>
<td>/d/</td>
</tr>
<tr>
<td>/t/</td>
<td>/t̚/</td>
</tr>
<tr>
<td>/d/</td>
<td>/d̚/</td>
</tr>
</tbody>
</table>

In addition, the consonant /t/ is sometimes dropped. These differences do not appear in all Tohoku speech, but appear only from time to time. (A more thorough explanation may be found in Shibatani 1990 or Kindaichi 1992). It is also important to remember that there have been some major historical changes throughout the Japanese dialects. First, at some point in the past there were up to eight vowels, instead of the current five-vowel system. (Shibatani 1990 p.131) Second, the [t] phoneme was at one point pronounced /s/, and at another point may have been pronounced /p/, in all contexts.

2. Ainu.

The sounds typically used by speakers of Ainu (in Hokkaido) are given here: 
Vowels

- i
- u
- e
- o
- a

Consonants

<table>
<thead>
<tr>
<th>Bilabial</th>
<th>Alveolar (Palato-alveolar)</th>
<th>Palatal</th>
<th>Velar</th>
<th>Glottal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nasal</td>
<td>m</td>
<td>n</td>
<td>(p)</td>
<td>(g)</td>
</tr>
<tr>
<td>Plosive</td>
<td>p, (b)</td>
<td>t, (d)</td>
<td>k, (g)</td>
<td>h</td>
</tr>
<tr>
<td>Fricative</td>
<td>{s} = j</td>
<td>{t} = f, (d)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Affricate)</td>
<td>{h}</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Approx.</td>
<td>(w)</td>
<td>j</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flap</td>
<td>r</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(Adapted from Kindaichi 1992 p33)

The syllable structure of Hokkaido Ainu, in basic terms, is CV, CVC. Syllable-initial vowels are preceded by the glottal stop /ʔ/, which does not occur anywhere else. Unlike the Tohoku dialect of Japanese, Ainu makes a clear distinction between /i/ and /e/. High back vowel /u/ is much more rounded than in Japanese. Ainu phonology avoids vowel sequences. This is done by glide insertion (/ai/ → /awi/ and /iu/ → /iju/), desyllabification (/ai/ → /aj/), and vowel elision (/ai/ → /a/).

In native Ainu phonology, if two vowels collide, the first vowel in the sequence is more likely to be elided. This process is in reality more complex; for a more complete discussion, see Shiraishi 1998.

Consonants do not have voicing contrast, so /k/ and /g/ are equally valid, although /g/ is not likely to surface word-initially. Ainu also lacks /ŋ/ syllable-initially, so in loanwords, /k/, /g/, and /ŋ/ are all likely to be rendered as /k/. Obstruent stops are not aspirated. The affricate written in Ainu orthography as "c" has four interchangeable allophones: /š/, /ʃ/, /č/, and /ž/. The fricative written as "s" may surface as /s/ or /ʃ/; before /s/ and word-finally, only the /ʃ/ allophone appears. Unlike Japanese, Ainu phonology has a contrast between /n/ and /m/ syllable-initially.

Analysis: Phonological Patterns.

Minimally Changed Forms.

As was previously mentioned, many of the loanwords in their TJ or MSJ forms violate constraints of Ainu phonology; this is the engine for the phonological changes analyzed in this paper. There are also many loanwords that do not grossly violate Ainu phonological constraints, and to the extent that a word does not violate any constraints, it is not arbitrarily changed. (Anderson 2009) Loanwords that have undergone no major phonological changes from TJ or MSJ to Ainu are listed here in their Ainu orthographic form (Roman alphabet):

- iro, kama, kawari, kaya, kime, kimoya, ko, kuruma, maketa, makiri, marimo, mawari, menoko, nokko, moto, na, naroka, nariwa, oji, noki, oju, okkan, oya, oyakata, pan, rakko, tanma, to, tokkuri, toma, tomari, tomi, tono, u, unma, yaku, kura, mame, ro

There are other loanwords, not listed above, that have not undergone any major changes (e.g. /sake/). These words are not listed because they have acceptable non-contrastive alternative
pronunciations in Ainu which differ from the original Japanese (e.g. /sake/), and which in Japanese may be contrastive. In Japanese, /sake/ is an alcoholic beverage, and /fake/ is salmon; in Ainu, both pronunciations would refer to the alcoholic beverage. See Appendix for the full list of loanwords used in this paper (which is certainly not exhaustive).

**Vowel-Centered Phenomena.**

1. **Vowel length loss.**

   As we have seen, Ainu vowels are not lengthened for contrast, and uninterrupted sequences of vowels are marked; hence the common alternate spelling of the name of the language and ethnicity: Aynu. Tohoku Japanese (TJ) has contrastive vowel length and sequences of vowels, both of which are eliminated when borrowed into Ainu. TJ long vowels are universally shortened in Ainu. In three cases, the syllable bearing the long vowel in TJ becomes a marked accent-bearing syllable in Ainu:

<table>
<thead>
<tr>
<th>English</th>
<th>Ainu</th>
<th>English</th>
<th>Ainu</th>
</tr>
</thead>
<tbody>
<tr>
<td>tep.po:</td>
<td>te:pu</td>
<td>to:hu:ma:me</td>
<td></td>
</tr>
<tr>
<td>tep.'po</td>
<td>'te:pu</td>
<td>'to:hu:ma:me</td>
<td></td>
</tr>
<tr>
<td>rifle</td>
<td>tape</td>
<td>soybean</td>
<td></td>
</tr>
</tbody>
</table>

   This long-vowel – marked-accent connection is not a causal connection. Several other loaned words have a marked accent in Ainu, without a long vowel on the original TJ syllable:

<table>
<thead>
<tr>
<th>English</th>
<th>Ainu</th>
</tr>
</thead>
<tbody>
<tr>
<td>ka.ne</td>
<td>ket.to</td>
</tr>
<tr>
<td>'ka.ne</td>
<td>ket.'to</td>
</tr>
<tr>
<td>gold</td>
<td>[a certain type of] blanket</td>
</tr>
<tr>
<td></td>
<td>o.ni</td>
</tr>
<tr>
<td></td>
<td>'o.ni</td>
</tr>
<tr>
<td></td>
<td>demon</td>
</tr>
</tbody>
</table>

   It is not clear why these words bear a marked pitch accent pattern in Ainu. Perhaps the pitch accent pattern in these words helps distinguish them from pre-existing Ainu words. An analysis of the tone contour in the original TJ is warranted, but does not fall within the scope of this paper.

   In addition, if TJ long vowels dependably led to Ainu accented syllables, we would expect Ainu to place accent on what used to be a TJ long vowel, whether or not it would be marked in

2. **Front-vowel changes.**

   In six instances, a TJ /e/ is rendered in Ainu as /i/. Five of these six are word-final. TJ /e/ is very close to /i/, and depending on the particular dialect and phonological context, the two vowels can be non-contrastive. The e – i change in the five word-final contexts are explained by the fact that voicing and other distinctions tend to drop off word-finally, so that there may not be enough data to determine if a vowel is /i/ or /e/, but only that it is a front non-low vowel. In such a case, if front-ness is the only characteristic successfully perceived by the listener, then front-ness might be exaggerated in production, such that the speaker reproducing the word produces a maximally front non-low vowel, which for Ainu is /i/ rather than /e/.

   This does not mean that TJ long-vowels were never represented as accented syllables when loaned into Ainu, but it is clear that if such a representation occurred, it was limited to a few loanwords. Given the “modern” flavor of the three words for which a TJ long vowel does coincide with a marked Ainu accent (rifle, tape - from English; and soybean, an agricultural product), perhaps something about Ainu phonology changed to allow for TJ long vowels to be heard as accented syllables. Such a change might have happened in the late 19th century. Still supposing that long-vowel – accent is a real and relatively recent connection, perhaps the connection was formed after most Ainu speakers were already native or proficient speakers of TJ. Such speakers may have attempted to realize the lengthened vowels of TJ in loans in Ainu, resorting to a marked stress pattern.

5. **Tone collapse.**

   In four instances, a TJ syllable has a marked accent, but the Ainu word is unmarked despite the presence of a TJ long vowel in the original word. Given that the Ainu syllable is unmarked, and that Ainu has contrastive vowel length and sequences of vowels, this long-vowel- marked-accent connection is not a causal connection. In these cases, the Ainu accent ends up on a non-accented syllable:

<table>
<thead>
<tr>
<th>English</th>
<th>Ainu</th>
</tr>
</thead>
<tbody>
<tr>
<td>tep.po:</td>
<td>tep.'po</td>
</tr>
<tr>
<td>tep.'po</td>
<td>tep.'po</td>
</tr>
<tr>
<td>rifle</td>
<td>rifle</td>
</tr>
<tr>
<td>tape</td>
<td>tape</td>
</tr>
<tr>
<td>soybean</td>
<td>soybean</td>
</tr>
</tbody>
</table>

   This is not the case, as there are several counterexamples, in which the accent ends up on the unmarked Ainu syllable despite a TJ long vowel suggesting otherwise:

   men.yo:     do:san.ko     bo.ku.so:
   do:san.ko    to:.san.ko    po:.ku.so

   sheep      a Hokkaido native     pasture, grass

   This is not the case, as there are several counterexamples, in which the accent ends up on the unmarked Ainu syllable despite a TJ long vowel suggesting otherwise:

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   do:san.ko    to:.san.ko    po:.ku.so

   sheep      a Hokkaido native     pasture, grass

   This does not mean that TJ long-vowels were never represented as accented syllables when loaned into Ainu, but it is clear that if such a representation occurred, it was limited to a few loanwords. Given the “modern” flavor of the three words for which a TJ long vowel does coincide with a marked Ainu accent (rifle, tape - from English; and soybean, an agricultural product), perhaps something about Ainu phonology changed to allow for TJ long vowels to be heard as accented syllables. Such a change might have happened in the late 19th century. Still supposing that long-vowel – accent is a real and relatively recent connection, perhaps the connection was formed after most Ainu speakers were already native or proficient speakers of TJ. Such speakers may have attempted to realize the lengthened vowels of TJ in loans in Ainu, resorting to a marked stress pattern.
In three instances, a TJ /i/ is rendered as /e/ in Ainu:

- usuberi /hurojiki/
- usupere /huruske/
- straw mat /wrapping cloth/ yam

Each instance represents a different phenomenon. In /usupere/, the Ainu rule of vowel spreading across /i/ is in play. /e/ spreads across /r/. In /emo/, the explanation lies on the TJ side. As we have seen, /e/ and /i/ are indistinguishable in some TJ contexts. Chief among these is word-initial position. The most logical explanation is that some Ainu speakers heard /imo/ as /emo/ due to the relatively low pronunciation of the initial /i/. This is not a universal process, as at least three other words (Ainu: if/i, iro, isa) have faithfully maintained TJ initial /i/ in the borrowed Ainu word.

We are thus presented with another example of the heterogenous nature of loanwords due to their heterogenous origins.

3. High-vowel changes.

A number of loanwords in Ainu have the vowel /i/ where the MSJ form has /u/. In most of these words, the consonant preceding the vowel in question is a dental/alveo-palatal fricative:

- MSJ: tukoeji
- Ainu: tifikenki
- English: matches

Ainu speakers did not historically borrow words from modern standard Japanese. They heard some version of Tohoku Japanese. In the Shimokita Peninsula of Aomori Prefecture, where the Matsumae clan was originally based, and eventually in Hokkaido Japanese, vowels that elsewhere are pronounced /u/ become /i/ after dental or alveo-palatal consonants. The TJ probably heard by Ainu speakers gives a much simpler picture:

- tifikegi
- tifikenki
- tfirui
- tfiruj

This explanation is still incomplete, because there are some loanwords that did not follow this pattern, and exhibit /a/ after dental/alveo-palatal fricatives:

- MSJ: azuki
- Ainu: antuki
- English: sweet bean

The most probable explanation is that Ainu speakers heard these words from some non-Tohoku Japanese speaker. The loanwords that do not exhibit post-alveo-palatal /a/ → /i/ are not particularly modern concepts, nor are they obsolete; they might have been borrowed in any era of Japanese-Ainu contact. (Kindaichi 1992 p160, Ono 1993 p41)

4. Round-vowel changes.

As Kindaichi describes on page 133, TJ /i/ is labialized, but without lip while /o/ is pronounced with some degree of rounding. In Ainu, /u/ and /o/ are both pronounced with rounding, but /o/ to a lesser degree.

Kindaichi’s assertion is that Ainu-origin loanwords in Japanese contain instances (p134) of /o/ that were originally Ainu /u/, heard as /o/ because of lip rounding. This is given as the reason, for instance, that early writing about Ainu called the language “Aino.” Kindaichi suggests that loanwords in Ainu are subject to a comparable phenomenon, which seems likely given the data. Five TJ – Ainu loanwords have /u/ in the Ainu form where the TJ form has /o/:

- MSJ: surojiki
- Ainu: koso
- English: wrapping cloth
- funnei
- English: just (emphatic) bag

This pattern suggests that TJ rounded /o/ was interpreted as Ainu rounded /u/. This is not a universal effect, since some loanwords have the presumably TJ /o/ preserved in the Ainu form.

The preserved /o/’s show no particular pattern of distribution.
The sister phenomenon to /o/ \rightarrow /u/ is the TJ /u/ \rightarrow Ainu /o/ change that has happened in at least three, and possibly four, words:

<table>
<thead>
<tr>
<th>Ainu</th>
<th>Japanese</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>aji'garu</td>
<td>toderu</td>
<td>nail</td>
</tr>
<tr>
<td>aji'inkaru</td>
<td>tontaro</td>
<td>large cask</td>
</tr>
<tr>
<td>a feudal military rank</td>
<td>fly(in)</td>
<td>monkey</td>
</tr>
</tbody>
</table>

Note: Tamura heard /aji'inkaru/ and /saru/ from some Saru dialect speakers; from others she heard /aji'inkaru/ and /kumi/.

I assume that in this situation, Ainu speakers listening to TJ heard a back vowel (possibly /o/ or /u/) and produced a back vowel in the loanword result. In some cases of TJ /u/, where there was very little lip rounding, the vowel may have been perceived as an underspecified back vowel and assigned to /u/ or /o/ allophones randomly, or based on subtle features of the phonological context.

5. The Trouble With /u/.

Three particularly troublesome terms show a change from TJ word-final /i/ to Ainu word-final /uj/:

<table>
<thead>
<tr>
<th>Ainu</th>
<th>Japanese</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>haji</td>
<td>kami</td>
<td>god(s)</td>
</tr>
<tr>
<td>pasuj</td>
<td>kamuj</td>
<td>sieve</td>
</tr>
</tbody>
</table>

There is no clear reason why the phonology of Ainu would want to insert /a/ before /i/, especially because this creates a most inconvenient VV sequence which must then be resolved by desyllabifying the /i/ into a /j/. Previous writers have suggested that these three loanwords were borrowed particularly early, and that the Japanese dialect from which they were borrowed sounded quite different from what is heard today. This conjecture is supported by the words' semantic content, especially chopsticks, which you learn about soon after meeting Japanese people; and gods, a fundamental concept. There is another piece of the puzzle, namely a reverse process in TJ: /Cai/

\rightarrow /Ci/, where C is any consonant. This question deserves further analysis.

6. Other Vowel Changes.

There are a handful of other vowel changes which do not seem to follow any pattern. They are listed here:

<table>
<thead>
<tr>
<th>Ainu</th>
<th>Japanese</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>haji'o</td>
<td>kiseru</td>
<td>smoking pipe</td>
</tr>
<tr>
<td>to'deru</td>
<td>otōna</td>
<td>head of village</td>
</tr>
<tr>
<td>haji'o</td>
<td>kisera</td>
<td>Nail</td>
</tr>
<tr>
<td>tontaro</td>
<td>otōna</td>
<td>fungus</td>
</tr>
<tr>
<td>kumi</td>
<td>konru</td>
<td>mold</td>
</tr>
</tbody>
</table>

All hope is not lost for /konru/ and /haji'o/. First, /konru/. We have seen high vowel switches (Vowel Phenomena, part 3), so /i/ \rightarrow /u/ is nothing new. As for a long vowel turning into a vowel and a moraic nasal (VV \rightarrow VN), this is a known phenomenon from TJ (see page 8). The word /haji'o/ eliminates VV, but in the wrong way; in this case, we would expect either /haji'o/ or, marginally, /hoji'o/. Perhaps, like in /konru/, the first VV in /hoji'o/ became VN. Then, once the word was loaned into Ainu (with the intermediate step looking like *haji'o), the Ainu /n/-modification rules took effect: “Before /s/ and /j/, nasal /n/ \rightarrow /j/ or /i/.” The palatal nature of the affricate in *haji'o must have triggered the /n/ to become /j/. The other four words listed above entirely escape explanation.

7. De-syllabification: VV \rightarrow VC.

Another way that Ainu avoids uninterrupted sequences of vowels is by turning one into a glide. This happens in similarly “native” Ainu words and in loanwords. In a VV sequence, the faithful preservation of the first vowel is prioritized over that of the second vowel. The second vowel may gain a consonantal character and become a glide. For high vowels, /i/ becomes /j/, and /u/ becomes /w/. See Shirai 1998 for more on this process. Some examples below:
For VV sequences which cannot be readily solved by creating a glide, one or another of the two vowels is deleted. There are four instances of this:

- voice contrast
- long vowel
- palatalized C
- possible Ainu surface forms

Bu'qjo: *pu'kjo: *pu'kjo *pu~kio *punkijo *punki

There are two candidates for vowel spreading:

- Consonants assimilate in place, while other more distinct consonants are unaffected. There are only consonants to run into one another and interact. Abutting alveolar and alveo-palatal (dental) in Ikusu/, this might only be a case of vowel change, as already discussed. In /usupere/, this is likely vowel assimilation/spreading, especially given that in several native Ainu words vowel quality spreads past /i/ to the right. (Kindaichi 157)

8. Other Avoidance of VV.

For VV sequences which cannot be readily solved by creating a glide, one or another of the two vowels is deleted. There are four instances of this:

- ka.ken.ta
- man.ta.ri
- pun.ki
- i.ji.en

In the first three instances above, the second vowel of the sequence is deleted. This is similar to the pattern with high vowels becoming glides: the first vowel is preserved while the second vowel is susceptible to change. The word /pun.ki/ looks strange, but as we will see, Ainu phonology avoids palatalized consonants, with a result something like this:

(TJ) *voice contrast *long vowel *palatalized C possible Ainu surface forms

Bu'qjo: *pu'kjo: *pu'kjo *pu~kio *punkijo *punki

As for /i/en/, /i/ and /e/ are already so close in quality in TJ that they may have already merged into a single V unit before the word was borrowed by Ainu speakers. In TJ, vowels near voiceless consonants are sometimes devoiced; if that is the case with the second /i/ of /i/en/, the voiceless vowel may have been deleted.

The constraint that bans uninterrupted vowel sequences is ranked high, but at least two loanwords make it past this barrier: /i/en/ and /nakain/ are the Ainu forms. These are both of traditional Japanese (non-Ainu) clothing. There are three possible explanations. First, the speakers from whom these data were collected are very likely to be fluent, if not bilingual or

9. Vowel Spreading/Assimilation.

There are two candidates for vowel spreading:

- Koso
- Usuberi

10. Voiceless Vowel Loss.

In TJ as well as in other Japanese dialects, vowels (especially high vowels /u/ and /i/) surrounded by voiceless segments are devoiced. At some point along the way into Ainu, many of these voiceless vowels were dropped. In mid-word contexts, this deletion causes two voiceless consonants to run into one another and interact. Abutting alveolar and alveo-palatal (dental) consonants assimilate in place, while other more distinct consonants are unaffected. There are only four instances of this phenomenon:

- Ha.ja
- Hu.ro.
- Go.ji.so.
- Ma.ra.hi.to

- Kaj.pel.ti
- Hu.rus.ke
- Kot.fu
- Mara.ti.to

- Avro.
- Wrapping cloth
- Good food
- Banquet
The loss of voiceless vowels is not a universal phenomenon in Ainu loanwords. In other instances, TJ devoiced vowels do appear in the Ainu form.

**Consonant-Centered Phenomena.**

1. **Voicing Distinction Loss.**

Ainu phonology does not have consonant voicing contrasts. In loanwords, voicing contrasts are stripped, and the voicing of any given consonant reflects only its phonological context. In Ainu orthography, non-nasal consonants are represented as voiceless (p, t, k, s, c, etc.), regardless of the actual pronunciation. In Tamura’s dictionary, some loanword entries appear to have voiced stops in Ainu: orthography shows “b” and “g.” The instances of “g” are actually Tamura’s representation of the velar nasal /g/. The single instance of “b” appears in a place name (Nabesawa) and may be a typographical error.

2. **Gemination.**

A few loanwords feature stop consonants that are geminated in Ainu and not in MSJ. Some of these stops may be geminate in the variety of TJ from which they were borrowed; this probably explains the following two examples:

<table>
<thead>
<tr>
<th>MSJ</th>
<th>hi/aku</th>
<th>mufi</th>
</tr>
</thead>
<tbody>
<tr>
<td>TJ</td>
<td>hi/akku</td>
<td>mutfi</td>
</tr>
<tr>
<td>Ainu</td>
<td>pi/akku</td>
<td>mutfi</td>
</tr>
<tr>
<td>English</td>
<td>scoop</td>
<td>whip</td>
</tr>
</tbody>
</table>

Other geminate consonants are created when a voiceless vowel is deleted. One consonant’s gemination defies explanation:

- /jip/ho
- /jippo
- salt

Note: It is safe to assume that the original TJ consonant in question was /s/. But it is voiceless stops that usually geminate in TJ and MSJ, not fricatives like /s/. It is hard to imagine /ee/ existing in TJ or MSJ and being taken up by Ainu speakers as /pp/, because it is hard to imagine /ee/ existing in a Japanese language. On the other hand, it is clear that some consonants are geminated in TJ, while there is no evidence (other than perhaps this word) that Ainu phonology ever calls for geminated consonants. If a geminating rule applied at some time to the bilabial consonant in /jippo/, the change happened in TJ. It would make some sense for a geminated fricative to be “hardened” into a stop.

3. **De-gemination.**

In two instances, the Ainu version of a word has deleted a nasal consonant, avoiding a geminate nasal:

- kan.na.nga.ra  
- dan.dan.ni
- ka.nan.kar  
- tan.ta.ni
- wood shavings slowly

This phenomenon is similar to the *VV constraint, in that sequences of sonorant units are avoided. This does not mean that Ainu never has sequences of sonorant units, or even sequences of nasals. Sequences of nasal consonants are often brought about by assimilation.

4. **Nasalization Phenomena.**

In Tohoku Japanese, as viewed from the perspective of Modern Standard Japanese, voiced intervocalic obstruent consonants are prenasalized, if they are not already nasal consonants. In some varieties, voiced intervocalic obstruent consonants turned altogether into nasal consonants (especially /g/ → /g/). In loanwords, Ainu speakers rendered this prenasalization as either a nasal stop, a nasal consonant preceding the obstruent, or rendered the consonant as a nasal obstruent. As we see in the following examples, the loss of voiceless vowels is not a universal phenomenon in Ainu loanwords. In other instances, TJ devoiced vowels do appear in the Ainu form.
would expect, place of articulation is not affected. Here are a few representative examples:

<table>
<thead>
<tr>
<th>MSJ</th>
<th>Ainu</th>
<th>English</th>
</tr>
</thead>
<tbody>
<tr>
<td>aburage</td>
<td>ampurak</td>
<td>deep-fried tofu</td>
</tr>
<tr>
<td>azuki</td>
<td>antuki</td>
<td>sweet beans</td>
</tr>
<tr>
<td>hada'ji</td>
<td>hanta'ji</td>
<td>barefoot</td>
</tr>
<tr>
<td>tama'go</td>
<td>tama'ko</td>
<td>egg</td>
</tr>
</tbody>
</table>

In three instances, this pre-nasalization did not occur. The words are:

<table>
<thead>
<tr>
<th>TJ</th>
<th>Ainu</th>
<th>English</th>
</tr>
</thead>
<tbody>
<tr>
<td>ka.ne.'zuki</td>
<td>kane.nuji</td>
<td>hammer</td>
</tr>
<tr>
<td>gu.su.'nbei</td>
<td>ku.ru.ma.gai</td>
<td>type of oar</td>
</tr>
<tr>
<td>ku.ru.ma.kaj</td>
<td>ku.ru.ma.kaj</td>
<td>gooseberry</td>
</tr>
</tbody>
</table>

It is very likely that these three words were borrowed from a non-TJ dialect, one which does not feature prenasalization as described above. An alternative explanation may be possible for 
/kurumakai/, because there may have been at some point a word boundary between /kuruma/ and /kai/, which would account for the lack of nasalization on the second velar obstruent. The word boundary is not preserved in the loanword, so it was either lost as the word was borrowed, or earlier.

If the word boundary was lost before Ainu speakers borrowed /kurumakai/, it was either lost in a non-TJ dialect, or the TJ prenasalization rule had ceased to apply. To clarify, the latter scenario is as follows, along with /tama'ko/ ("egg") for comparison:

<table>
<thead>
<tr>
<th>pre-TJ nasalization (?)</th>
<th>TJ nasalization rule</th>
<th>loss of word boundary</th>
<th>Ainu borrowing</th>
</tr>
</thead>
<tbody>
<tr>
<td>kuruma kai</td>
<td>(no effect)</td>
<td>kurumakai</td>
<td>kurumakaj</td>
</tr>
<tr>
<td>tamago</td>
<td>(no effect)</td>
<td>tama'go</td>
<td>tama'ko</td>
</tr>
</tbody>
</table>


Ainu phonology strictly forbids palatalized and labialized obstruents (e.g. /ki/, /kw/). MSJ has almost no labialized obstruents, but both TJ and MSJ are packed with palatalized obstruents. Ainu phonology treats these secondary articulations in a straightforward manner, by vowel epenthesis:

iširi'i:  k'lo:  ken'aji

The epenthesized vowel is the one closest in quality to the glide or secondary articulation in question.


To review, Ainu and TJ use different palettes of alveo-palatal/dental fricatives and affricates.

Ainu has the following:
1. The phoneme represented in orthography as “c,” which has allophones /h/, /ʃ/, /h/, and /h/.
2. The phoneme represented in orthography as “s,” which has allophones /s/ and /ʃ/.

TJ has the following:
1. /s/ (*/si/; /s/ becomes /ʃ/ before /i/)
2. /ʃ/ (contrasts with /s/ before all vowels except /i/)
3. /tʃ/,
4. /z/ (sometimes affricated, closer to /h/, especially before /u/)
5. /h/.

In MSJ, there is also...
6. /tʃ/ which only appears before /u/.

In loanwords, alveolar and palatal fricatives and affricates from TJ and MSJ are sorted into one or another category of Ainu consonant. The regularities are as follows.

TJ /s/ and /ʃ/ are almost exclusively borrowed as the Ainu phoneme /s/. There are two exceptions:

<table>
<thead>
<tr>
<th>TJ</th>
<th>Ainu</th>
<th>English</th>
</tr>
</thead>
<tbody>
<tr>
<td>of'iki</td>
<td>tama'fi</td>
<td>soul (Note: this word not positively identified as a loanword)</td>
</tr>
<tr>
<td>ot'ifi</td>
<td>rama'fi</td>
<td>cover, mat</td>
</tr>
</tbody>
</table>

The word /ot'ifi/ is an anomaly, but it seems to be influenced by some of the consonant gemination rules. As for /rama'fi/, neither Tamura nor any other source listed this as a known loanword, but it seems phonologically close enough to /tama'fi/ that we should leave a note here. If /rama'fi/ is originally a loanword, some kind of gemination or “hardening” of the fricative has
happened.

TJ /ʃ/ is found in the source word for 23 loanwords. Of those, in 22 cases, the Ainu version features the "c" phoneme, whose allophones include /ʃ/. In one case, as in prior examples, some kind of gemination must have occurred.

*saʃfi*
paʃfi
*rice tub, bowl*

If we expect Ainu phonology to treat voiceless TJ consonants the same as voiced TJ consonants, Ainu’s treatment of /s/ will be a surprise. Five loanwords had something like /s/ or /ʃ/ in TJ/MSJ, and in no instance is TJ /s/ or /ʃ/ ever represented in Ainu as /s/. Here are the five instances:

kake"zao zembako benzai a’zuki kanekufi
kakaneta fempako pensaj antuki kanetufi
*laundry pole box-table type of boat sweet beans hammer*

The first three examples make sense if we imagine that in the actual speech heard by Ainu speakers who borrowed the words, TJ speakers were affricating their /s/’s closer to /ʃ/. Then, a simple process of losing voice contrast would give the Ainu pronunciation. The other two instances may be from a different dialect, or a different time period. The forms of /antuki/ and /kanetufi/ suggest that the borrowed words were actually closer to /anduki/ and /kanedufi/, respectively.

The TJ voiced affricate /dʒ/ is manifested in Ainu exclusively as the “c” consonant, one of whose allophones, in turn, is /ʃ/. As a voiced obstruent, this /ʃ/ consonant in TJ apparently attracted prenasalization in at least one instance, one which in Ainu may be written “sincirti” and may surface as /simʃki/.

There are only two instances of a TJ/MSJ consonant /ʃ/ being borrowed into Ainu:

*bu’bo tuka*
tumbo tuka
*small bottle knife handle*

In these instances, while there are TJ dialect features (prenasalization of intervocalic /b/), the “/b/ → /ʃ/ after alveo-palatal or dental affricates” rule has not applied. These two words were borrowed from different dialects than, say, /ʃikenki/ and /ʃinʃu/ (“matches” and “inkstone,” respectively). Each of the two was probably also borrowed from a distinct dialect. The word /tuka/ is distinctive because its initial consonant lacks the expected fricative release. It is also possible that some other, probably older, dialect of Japanese allowed /tʃ/ and /chu/, and that /tuka/ was borrowed from that dialect.

7. TJ Voiceless Bilabials.

TJ and MSJ have a complicated history of bilabial fricatives. The consonants have broadly changed, and their pronunciation has also depended on phonological context. A big part of that phonological context is the vowel immediately following the consonant in question. Here is a two-tiered summary of the process:

Era 1:  
oi oe ea eo ou

Era 2:  
hi or ci he ha ho ou

This historical change in TJ is reflected in loanwords in Ainu. Generally, Ainu speakers represented TJ and MSJ /ʃ/ as Ainu /p/. There are eight instances of TJ /ʃu/ → Ainu /hu/; these are presumably from Era 2, when the /ʃ/ heard by Ainu speakers may have lost its heavily bilabial character. There are a few near-minimal pairs whose existence supports a claim for distinct eras of loanwords. Here are the best sets of near-minimal pairs.
The goal of this essay was to describe the phonological changes in Ainu loanwords. These phonological changes were successfully described. There have been some inevitable shortcomings.

Although there are only about 210 to 220 confirmed loanwords in Ainu, the scope of this paper does not permit an exhaustive catalogue of their individual phonological issues. In addition, some issues concerning suprasegmentals will also escape this paper. The question of pitch accent in Ainu loanwords in particular remains unanswered. A resolution of this issue will have to take into account the various pitch contours of the Japanese words in question and the dialectal variation in these pitch contours. [Further study of this issue should make use of the recordings collected by Tamura Suzuko. These are available online through Waseda University at http://dspace.wul.waseda.ac.jp/dspace/ – use search term “Ainu.”]

A more exhaustive analysis of Ainu loanwords could facilitate some broader conclusions about Ainu-Japanese contact history, as well as conclusions about changes in Ainu and Japanese phonology over time.

Conclusions.
The loss of the Ainu language damages more than just those last few speakers who feel increasingly isolated and invisible. It hurts the Ainu community, and it gives credence to the idea that Japan is "monoethnic." We must recognize the fact that Japan has actually never been monoethnic; the Ainu community is living proof of that. For the sake of other minorities, and to address the unfortunate circumstances of the Ainu people, the Ainu language should be sincerely promoted and Ainu people should be given a greater voice.

"Language death typically begins with political or social discrimination against a language or its speakers.... Young speakers... may abandon their ancestral language. When they grow up, they may fail (or refuse) to transmit it to their children. Many factors can interrupt successful language transmission, but it is rarely the result of free will. The decision tends to be made by the very youngest speakers, 6- and 7-year-olds, under duress or social pressure, and these children then influence the speech behavior of adults in the community.... Once a language is moribund, it continues to decline as its use becomes more restricted.... At the same time, [elderly speakers] begin to forget."

From Harrison 2007, p8

One lacuna of this paper that will be impossible to overcome is the fact that the Ainu language is now almost entirely lost. It is appropriate to briefly address the question of language loss, especially in the case of the Ainu language.

Appendices.

Appendix A:
Loanwords listed alphabetically, from Tamura 1996.

Key:
ainu term [Roman alphabet spelling] / JAPANESE STANDARD ROMANIZATION / English (if found)

A
anpay AMBAI
anpuraru ABURA(A?)GE
antuki ADUKI
[ape]pasuy [fire] HASI fire hashi
asingaru - asINaru - asinkaro ASIGARU a certain samurai rank

C
cikan JIKAN hour(s)
cikenki TUKEG match
cinpaori ZINBAORI
cirupe TURUBE
ciruy ZURUI
citarpe-kamasu (goza) - KAMASU
conku JOUGO funnel
copra TYOUBA rank
curpo TUBO small bottle

E
ejpaci(koan BATI - BATU punishment
ewkoyakarnasi YAKAMASI

H
haçigaci HATIGATU
hanasi HANASI
hanca HANTEN
hankane HAGANE
hantas(ne) HADASI
hasami HASAMI
haycstasy HAYASI-[sai]?
[Hitaka]
hukas(i)kar FUKASI
huku (YOU)FUKU
<table>
<thead>
<tr>
<th>Word</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nakaiki</td>
<td>ragged wadded clothing</td>
</tr>
<tr>
<td>Nanoka</td>
<td></td>
</tr>
<tr>
<td>Nariwa</td>
<td></td>
</tr>
<tr>
<td>Nihihan</td>
<td>2.5 hours</td>
</tr>
<tr>
<td>Niihara</td>
<td></td>
</tr>
<tr>
<td>Oki</td>
<td>(?)</td>
</tr>
<tr>
<td>Nokino</td>
<td>icicle</td>
</tr>
<tr>
<td>Nabesawa</td>
<td></td>
</tr>
<tr>
<td>Nakairi</td>
<td></td>
</tr>
<tr>
<td>Kanto</td>
<td>KONDO</td>
</tr>
<tr>
<td>Kosante</td>
<td>KOSODE short sleeve</td>
</tr>
<tr>
<td>Koto</td>
<td>GOTISOU</td>
</tr>
<tr>
<td>Kotosi</td>
<td>KONATOOSI</td>
</tr>
<tr>
<td>Kuchiwa</td>
<td>KUTUWA horse bit</td>
</tr>
<tr>
<td>Kugaci</td>
<td>KUGACI September</td>
</tr>
<tr>
<td>Kuruma</td>
<td>KURUMA</td>
</tr>
<tr>
<td>Kurumakai</td>
<td>KURUMAGAI a certain type of oar</td>
</tr>
<tr>
<td>Kusu</td>
<td>STOKEOSO</td>
</tr>
<tr>
<td>Kusuperi</td>
<td>GUSUBERI gooseberry</td>
</tr>
<tr>
<td>Kusuri</td>
<td>KUSURI medicine</td>
</tr>
<tr>
<td>Kuwas</td>
<td>KWASI candy, sweets</td>
</tr>
<tr>
<td>Makiya</td>
<td>MACI (YA?) city, town</td>
</tr>
<tr>
<td>Maketa</td>
<td>MAKETA lose, be beaten by</td>
</tr>
<tr>
<td>Makiri</td>
<td>MAKIRI short sword, knife</td>
</tr>
<tr>
<td>Makiri-saya</td>
<td>MAKIRI NO SAYA sheath for makiri</td>
</tr>
<tr>
<td>Manayta</td>
<td>MANAYTA cutting board</td>
</tr>
<tr>
<td>Mantari</td>
<td>MAEDARE (MAEKAKE) apron</td>
</tr>
<tr>
<td>Maratto</td>
<td>MARAHITO bear's head - feast, banquet</td>
</tr>
<tr>
<td>Marino</td>
<td>MARIMI</td>
</tr>
<tr>
<td>Mawari</td>
<td>MAWARIRI around...</td>
</tr>
<tr>
<td>Mehun</td>
<td>MEFUN</td>
</tr>
<tr>
<td>Menkane</td>
<td>MANAITA cutting board</td>
</tr>
<tr>
<td>Menumo</td>
<td>MENOKO woman</td>
</tr>
<tr>
<td>Menyo</td>
<td>MENOYU?</td>
</tr>
<tr>
<td>Mesu</td>
<td>MESI rice, meal</td>
</tr>
<tr>
<td>Mise</td>
<td>MISE store</td>
</tr>
<tr>
<td>Miso</td>
<td>MISO</td>
</tr>
<tr>
<td>Mokko</td>
<td>MOKKO straw basket</td>
</tr>
<tr>
<td>Mokotoyama</td>
<td></td>
</tr>
<tr>
<td>Moto</td>
<td>MOTO origin</td>
</tr>
<tr>
<td>Mutti</td>
<td>MUTTI whip</td>
</tr>
<tr>
<td>Muy</td>
<td>MI sieve</td>
</tr>
<tr>
<td>Kanteza</td>
<td>pole for hanging clothes</td>
</tr>
<tr>
<td>Kame</td>
<td>iron kettle, pot</td>
</tr>
<tr>
<td>Kamasu</td>
<td>straw bag</td>
</tr>
<tr>
<td>Kamuy</td>
<td></td>
</tr>
<tr>
<td>Kanankar</td>
<td>KANNAGARA wood shavings</td>
</tr>
<tr>
<td>Kane</td>
<td>KANE gold</td>
</tr>
<tr>
<td>Kaneisakku</td>
<td>KANE HISYAKU gold thing</td>
</tr>
<tr>
<td>Kanetuci</td>
<td>KANADUTI hammer</td>
</tr>
<tr>
<td>Kankami</td>
<td>KAGAMI mirror</td>
</tr>
<tr>
<td>Kanpi</td>
<td>KAME paper</td>
</tr>
<tr>
<td>Katanpura</td>
<td>KATABIRA (a hemp garment)</td>
</tr>
<tr>
<td>Kawarite</td>
<td>KAWARI [n] instead of</td>
</tr>
<tr>
<td>Kaya</td>
<td>KAYA a sail</td>
</tr>
<tr>
<td>Kayko</td>
<td>OKAYU rice gruel</td>
</tr>
<tr>
<td>Kaypeci</td>
<td>KYABETU cabbage</td>
</tr>
<tr>
<td>Kaysono</td>
<td>KAISYOTONO a certain Matsumae official</td>
</tr>
<tr>
<td>Ketto</td>
<td>KETTO blanket</td>
</tr>
<tr>
<td>Kibi</td>
<td>KIBI (TOUKIBI = TOUMOROKOSI) corn</td>
</tr>
<tr>
<td>Kimou</td>
<td>KIMO</td>
</tr>
<tr>
<td>Kimoya</td>
<td>KIMOYA</td>
</tr>
<tr>
<td>Kisa</td>
<td>KISYA locomotive</td>
</tr>
<tr>
<td>Kiseru</td>
<td>KISERU smoking pipe</td>
</tr>
<tr>
<td>Ki-tontaro</td>
<td>KITOBORI fly to fly</td>
</tr>
<tr>
<td>Kyoto</td>
<td>KYOUTO Kyoto</td>
</tr>
<tr>
<td>Ko</td>
<td>KO powder</td>
</tr>
<tr>
<td>Komu</td>
<td>KOMBU kombo</td>
</tr>
<tr>
<td>Konkane</td>
<td>KOGANE gold</td>
</tr>
<tr>
<td>Konru</td>
<td>KOORI ice, hail</td>
</tr>
</tbody>
</table>

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Appendix B:

Loanwords listed by type of sound change.

1. Vowel-centered phenomena

A. Vowel length loss

conku, conpa, yakamasi, hoyco, iciryo, Kiyo, komu, kotco, kotosi, menyo, ontaro, pintoro, pokusto, ro, sato, siwto, sonkadi, teppio, terju, Tokiyo, tosankoi, so, (ramaci)

B. In-type vowel changes

I. front: i, e

anpurani, huruske, iri, mantari, ninkari, piwckiani, usupero, potoki

II. high - see Kindaiichi p.160. i, u

cikenki, cirunpe, cinpy, hacigaci, Hukumiki, sinciri, kaypeci, konnu, kucikia, (Ilugaci, kuNaci), siciaci

III. round - see Kindaiichi p.33, p.160. u, o

[asinkaro, asiNaru, asingari], conko, hunuske, tontaro, kusu, ontaro, pukuru, (saro, satu), sorekusu, tanpaku

C. yai

pasoy, kaimyu, may

D. Other vowel changes (metathesis observed by Kindaiichi, p.160) (Default final vowel /i/ ibid p.166)

hoyco, kanaluci, kisara, tontaro, ottena, kumi

F. "Desyllabification" = VV -> VC, etc

I. /u/ -> /y/

anpay, ciray, hayastay, kayko, kaypeci, kaysotane, kurumakay, mayto, okkanay, perankay, pencaiy, takaysara, tayko, teppey sama, tomonkay, umai, waiay, yey

II. /u/ -> /i/

piwci, piwcikani, rontew, siwto

III. Other VV loss

icen, kakenca, hoyco, mantari, punki

IV. Faithfully maintained VV

cinpaori, nakairi

F. Spreading, Assimilation - see Kindaiichi p.153 - spreading left-to-right past /rl. However, the vowel after /r/ in many words will disappear in a compound with /r/ assimilating: akoro + nispa - akon nispa. Also see ibid p.157.

kusu, usupere;

H. Voiceless vowel loss

hayastay, hunuske, koko, marato, etc

2. Consonant-centered phenomena

A. Voicing distinction loss

I. voicing "lost"

anpay, cikenki, cimpnwori, cirunpe, conku, conpa, hankante, hantasi, hunto, hunte, sinciri, icikian, kanankar, kaneurii, kantani, katanpira, kaypeci, tontaro, k UNIT, kantani, kantani, kanpi, kaneu, kante, konru, kosonte, kotco, kusupere, mantari, meri, maro, kinkari, ninkari, nonki, noriniku, onkami, ontaro, paka, patta, paka, perankay, pintoro, pokuru, punki, pada, cempko, rorentew, pencay, sarangi, sorkaci, sonka, tamaiko, tanpaku, tantari, tape, tayko, teppey sama, te, tomokoy, tosankoi, usupai, yanto, kunki, yanki

II. voicing mysteriously retained

hacigaci, (Ilugaci, kuNaci), Nabesawa, siciaci,

B. Elision

I. elision in unstressed syllables

II. steps de-elision

kanankar, tontari, te,

C. Nasalization phenomena

I. Pre-nasalization, and/or voiced C -> nasal C

anpurani, antuki, [asinkaro, asiNaru, asingari], cikenki, cirunpe, conku, conpa, hankante, hantasi, hunto, hunte, sinciri, kaneurii, kantani, katanpira, kaypeci, tontaro, k UNIT, kantani, komu, kusonwe, (Ilugaci, kuNaci), mantari, meri, maro, kinkari, nonki, noriniku, onkami, ontaro, perankay, pintoro, pokuru, rorentew, sarangi, sonka, tamaiko, tanpaku, tomokoy, yanto, kunki, yanki

II. Unexpected nasalization phenomena

apputa, tosakaha, tosanko, to'si, TOSAKA

Japanese loanwords:

- anpurani: horse
- huruske: old, aged
- tontaro: to be young
- sonkaci: horse bred in Hokkaido
- To: tape
- TOKU: tape
- to: to
- to'humame: soy bean
- Tokapci: tape
- Tokiyo: Tokyo
- tokkuri: bottle
- TOMA: straw matting
- TOMARI: port, bay, inlet
- TOMARI: straw matting
- TOMONKAI: sword sheath?
- TOMOKAI: sword sheath?
- Tonka: a certain type of oar
- TONGONU: bottle
- tono: lord, other respect words
- TONI: bird
- TOSAKA: horse bred in Hokkaido

English loanwords:

- TEEPU: tape
kanetuci, kurumakay, kusuperi,

D. Decoupling of secondary articulations

L. Oepalatalization

iciriyo, Kiyo, Tokiyo,

II. Oelabialization

kuwas,

E. Collapsing of affricates, fricatives

L. to “c”
cikan, cikenki, cinpaori, cirunpe, ciruy, conku, cunpo, paci, hacigaci, hoyco, Hukumici, sinciri, icicikan, iciri, iciriyo, icen,

kakanca, kanetuci, kaypeci, hanca, koto, kuciwa, [kugaci, kuNaciJ, maciya, mutci, nici-han, otjke, piwci, pivwci, ciknaka, pencako, percay, scigaci, soNakci, ramaci)

II. to “t”

pasuy, yakamasi, hasami, hayastay, hukani, sinciri, huruske, isa, kamasu, kasatozo, kita, kamasu,

konsote, kotosi, kussu, kurumakay, kusam, makiri-saya, mese, mese, Nabetawa, pusa, sake, sama, Sappoyama,

sarama, [sara, sanu], sato, scigaci, sippo, sirokane, siwto, sonka, sorekusu, sori, sumi, sumiyaki, takaysara,

takusa, tosaka, tosanki, to’si, [ussi, uji], usupa, usupere, mese, so

III. to “t”

antuki, kanetuci, maratto, tuka

IV. to “tc”

kotco, otjke, patci

F. Voiceless bilabials to...

Lp

pasuy, pisakku, patci, pera, perankay, piwci, pivwci, pone, pokuru, puri, pusa, puta, sippo, potoki, patci

II. h

hacigaci, hanami, hanc, hankane, hantasi, hasami, hayestay, Hitaka, hata, hoyco, hukani, hukani, hunta, hunte,

huruske, mehun, to’humame

G. Palatalized nasals:

Iysl

taypey sama,

H. Nasal place non-distinction in some contexts (m, n, N)

anpay, anpurani, cinpaori, compa, cinpo, [komp, korns], cenpako

I. Other consonant changes

Siyakata, [ussi, uji]

3. Pitch-accent phenomena

A. Ainu form’s [marked] pitch accent corresponding to Japanese long-vowel
toppo’, te’pu, to’humame, to’si

B. Other marked pitch-accent

ke’ne, ‘ka’nepisakku, ‘ka’nepisakku, ke’tu, on’i, ko’ti

4. Other phenomena

A. Syllable loss

kanankar, kotosi, ninki, yara, [ussi, uji]

B. problem phenomena

kayko, tontaro, [ussi, usi]

5. “No Issue” Loanwords (Minimal Sound Change)

iro, kama, kawari, kaya, kimono, kimoya, kano, kuruma, maketa, makiri, marin, masumi, menoko, mokko, moto, na,

nakano, nawa, oki, noli, noko, okkasei, oya, oyakata, pan, rakko, tama, tane, to, tokkuri, toma, tomi, tono, uni, unma, yaku, kura, name, ro

Bibliography.


Shiraishi Hidetoshi (1998). Ainu Kobocin no Harboinokoto to Watariin Soyori: Saiteki Riron ni yoru Bunmei (High Vowel Gliding and Glide Epenthesis in Ainu: An Analysis in Optimality
The Ainu people, having had some political success since the 1990s, are increasing in (known) numbers. Their language community is growing stronger and stronger, even as the last "fully" fluent native speakers pass away into history.

Although the materials for Ainu language education are produced in several different dialects and are not very well coordinated, more people are studying Ainu than ever before. Non-Ainu people have started studying the language as well. Ainu is not offered in primary or secondary schools, but language schools and universities are now teaching it, even outside of Hokkaido. Some Ainu language education is ineffective, being based on rote memorization rather than fluent competence, but this is a common problem in language education in Japan.

While a fluent, majority Ainu-speaking community may never exist again, Ainu language revitalization effort is immensely valuable to the Ainu community. Endangered languages are powerful ethnic symbols for groups of people who have long been marginalized and oppressed. Even if the language has no native speakers left, many communities wish to revitalize their languages. Governments and academics to the degree they are able, have a responsibility to help with this revitalization effort.

What languages like Ainu need now are competent, active institutions involved in their promotion, along with urgent documentation for future generations. “Language documentation are not purely or even primarily linguistic projects, but interdisciplinary projects, which ideally reach beyond academia and actively involve, and become involved in, the speech community.” (Nikolaus Himmelmann 2008, Reproduction and Preservation of Linguistic Knowledge, p347)

Addendum: the State of the Ainu Language.

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(taken from Spring 2009 seminar papers with Joseph Errington and Robert Greenberg)
アイヌ語の/u/は日本語と異なって円唇化した母音である。この違いのため、ある場合 にはアイヌ語/u/、/o/と日本語/u/、/o/は借用語でスイッチしている。例えば、eukuro → pukuru （袋）、ondaru → ontaro（大僧）。

三つの単語で、アイヌ語で/uj/の所に日本語の標準語で/i/がある。この単語はkamuj（神）、pasuj（箸）、mj（箕）である。この問題は説明し難い。ある言語学者によると古い時代の日 本語からアイヌ語に取り入れられた。実際そっくり関係はないと知れないが、東京方言では目 立つほど同じような母音変化がある。ある東京の方言で、/Cui/ → /Ci/（C＝子音のこと）。

日本語の無声化された母音がよくアイヌ語で無くなる。例えば、hayasi → hayas （林）、hurosiki → huruske（風呂敷）。

3. 子音の変化
アイヌ語で有声・無声子音の区別は無い。普通は、話頭、語尾子音は無声で、語中子 音は有声である。この規則は借用語にどんな影響があるかは明らかである。

たまに日本語の子音はアイヌ語で「強化」する、というのは子音の促音化がある。この 現象の原因はある日本語の方が言える。例えば、アイヌ語のmuttsi（mutci）は日本語の標準語 のmuttsi（鞭）のことだが、標準語ではやはり/i/は促音ではなく単子音である。どこかの方言で鞭 はmuttsiと発音するかどうか確かに言えない。逆に、日本語の鼻音のnn,mmなどがアイヌ語に 採用したとき、単子音化する。

東京方言の母音間有声子音はよく前鼻音化する。たとえば日本語の標準語の「卵」 tamagoは東京方言でtamangoになる。このためアイヌ語でtamankolになった。多数の借用語はこ のような前鼻音化があり、ただ三つの単語だけがこの規則に従っていない。

アイヌ語で日本語の二次調音（唇音化：くわ、口蓋化：きゃ）は有り得ない。この二次調 音を避けるため、アイヌ語の音韻体系は母音語中音添加する。例えば、kjo → kijo（京都）。 古くはアイヌ語で日本語のF子音（φ）は無かった。日本語のファ行音がアイヌ語に採用 した時、可能是二つある。まず、*a≠*haha。それから、*a≠*apa。両方の変化の方法がデー タに出る。近似最小対立項があるので、多分この規則は時代的に分けている。近似最小対は eukuro>pukuru（袋）、euku>huku（洋服）、euta>puta（ふた）、eunda>hunta（札）。φ>pという規則 の方が古いらしい。

結論
未来のアイヌ語を学ぶ人のためにアイヌ語を徹底的に記録しなければならない。古い時代の アイスの人の物だけではなく、アイヌ語は生きている言語である。これからアイヌ歴史とアイヌ 語をもっと理解できるため借用語を研究する必要がある。

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