ACCENT IN THE HIROSAMI DIALECT
OF JAPANESE

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by
Yasuhide Kobayashi, B.A.
The Ohio State University
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Approved by
[Signature]
Adviser
Department of Linguistics
Preface

The Hirosaki dialect is a dialect which is spoken in Hirosaki City and its suburbs. Hirosaki is the oldest city in Aomori Prefecture (the northmost prefecture in Honshu), and its population is approximately 150,000. Most of them are farmers or small businessmen. There are no big factories in the city. Several large sake 'rice wine' companies are scattered throughout the city. Hirosaki is known as the apple town. More than 50 percent of the apples in Japan are produced in the Tsugaru Province (Hirosaki is about the center of the province). The Tsugaru clan had governed the Tsugaru Province for 250 years until 1868. During that period, common people were not allowed to communicate with other provinces. Since the Tsugaru clan lived in Hirosaki, Hirosaki was the capital of the Tsugaru Province and the Hirosaki dialect was the official language in the province. They formed their own dialect which was quite different from neighboring provinces, Akita Province and Mabu Province.

After the Tsugaru period was over in 1868, Hirosaki was supported financially from farms. There has been no rapid mixture of races or industrialization in the city. But now there exist two languages in Hirosaki. The first is the Hirosaki dialect and the second is a
language which is similar to standard Japanese. The people in Hirosaki call the language similar to standard Japanese e kotoba 'a good language'. They use e kotoba when they talk to their superiors or to the people they do not know well and they use their own dialect when they talk to their families, relatives and close friends. e kotoba and standard Japanese are quite different. Even today e kotoba is not understood by the people outside of the Tsugaru Province. Let me compare the differences among three languages, the Hirosaki dialect, e kotoba and standard Japanese (the Tokyoo dialect). The accent of e kotoba is the same as that of the Hirosaki dialect.

Hirosaki dialect  [dosa ?iguba]  'Where do you go?'
e kotoba  [dogo?e ?igimasuka]
Standard Japanese  [doko?e ?ikimasuka]

Hirosaki dialect  [ko?kogugoto yonderadogosa kisita]
(He) came just as (I) was reading the ads

e kotoba  [ko?kogu?o yonderudogoro?e kimasita]

The purpose of this paper is to represent the underlying accent of a morpheme and to represent the accent of a compound by a rule. I use "compound" not only to mean a compound of nouns, but also a compound of other morphemes. For example, a phrase which consists of a noun plus a particle, a phrase which consists of a verb-stem plus
an auxiliary verb, etc. are compounds. Various boundaries are set from the syntactic point of view. I will omit all boundaries which are not necessary to describe the Hirosaki accent system.

The description of the Hirosaki dialect is mainly on the phonemic level except for the description of the accents. I only describe the phonetic detail if it is necessary to represent an accent or is related to one.

Examples of compound nouns are given in the appendix.

I wish to express gratitude to Professor Kunio Okuda for guiding my analysis. I am also grateful to Professor Charles Fillmore for suggesting helpful topics of the Hirosaki dialect and other dialects. Other influences will be found in the Bibliography.
Table of Contents

Preface.......................................................... ii
1. Introduction.................................................. 1
   1a. The atonic pattern...................................... 1
   1b. The tonic patterns...................................... 3
   1c. A mora-counting syllable language and a
       syllable-counting syllable language.............. 7
2. Nouns....................................................... 8
   2a. The types of accent..................................... 8
   2b. Compound nouns......................................... 9
   2c. Nouns plus particles................................... 24
   2d. Nouns plus auxiliary verbs........................... 31
3. Verbs....................................................... 36
   3a. Stems plus suffixes................................... 36
   3b. Verbal nouns............................................ 42
   3c. Verbs plus particles................................... 44
   3d. Verbs plus auxiliary verbs........................... 48
4. Adjectives.................................................. 51
   4a. Indicative forms....................................... 51
   4b. Adjectives plus particles............................. 54
   4c. Adjectives plus auxiliary verbs..................... 57

Footnotes...................................................... 61
Appendix....................................................... 66
Bibliography................................................... 78
1. Introduction

Accent in the Japanese language is called a pitch accent controlling the 'high-and-low' correlation recognized between moras (in the Hirosaki dialect, such correlation is recognized between syllables). For example, in [??ame]'rain', the first mora[??a] is pronounced with a high pitch in the Tockyoo dialect. There is a "fall of pitch" before [me]. In Japanese terms, there is a "taki"2 between[??a] and [me],[??ame]. In[??ame]'candy', [me] has a high pitch, and the phrase [??amega]'rain(nominative)' is pronounced with an even, high pitch. There is no "fall of pitch".

According to the place of the "fall of pitch", three accent patterns are recognized. They are named "the initial accented pattern", "the middle accented pattern" and "the final accented pattern".3 The pattern which has no "fall of pitch" like [??ame, ??amega], etc., is named "the atonic pattern".4

1a. The atonic pattern.

In the word [hana]'nose', [na] has a higher pitch than [ha], as [hana]. If we put the particle [ga] after the word, we get [hanaga]. This is a word of the atonic pattern. In the Tockyoo dialect, the first mora is automatically pronounced with a lower pitch, [hanaga], and in the Hirosaki dialect, the last syllable is automatically pronounced with a higher pitch, [hanaga]. As "atomic" is
defined as no "pitch-drop" in a phonological phrase, both the Tockyoo and Hirosaki dialects are the same in abstract sense.

I consider that an atomic noun in the Hirosaki dialect has a preaccent in the underlying form, /¹/ of /hana/'nose' does not have an accent in the underlying form, and /na/ becomes automatically high-pitched on the surface form. If I consider /na/ has an accent, */hana/ 'nose' + /ga/ should be *[hanaga].

When atomic words are followed by other words, the preaccents eliminate other accents, i.e. left dominance:
/³hana/+/kusūri/ → /³hanagusuri/'a tip'
/³hana/+/kami/#/māde/ → /³hanagamimade/'even a tissue'.
[+] is an internal word boundary and [#] is a word boundary. By a pitch assignment rule, the last syllable becomes high-pitched.

[ ] → [high pitch] /%<acc>....%  
[%] means a minor phrase boundary.
/³hanagusuri/ → [hanagusuri]
/³hanagamimade/ → [hanagamimade].
But there are exceptions when some particles, auxiliary verbs and nouns follow atomic words. I will discuss the problem later and here I will just give some examples:
/³mizu/#/yori/ → /mizūyori/'more than water'
/³tookyoo/+/zyuu/ → /tookyoozyuu/'throughout Tokyo'.
The preaccent does not deduct following accents over a minor phrase boundary [%]:
\[\text{\textasciitilde\textmu usi\textasciitilde\textmu /\textasciitilde\textmu ga\textasciitilde\textmu /\textasciitilde\textmu has\textasciitilde\textmu ru\textasciitilde\textmu /} \rightarrow \text{\textasciitilde\textmu usiga \textasciitilde\textmu has\textasciitilde\textmu ru\textasciitilde\textmu /}\rightarrow \text{\textasciitilde\textmu usiga has\textasciitilde\textmu ru\textasciitilde\textmu /} \text{a cow runs}.

1b. The tonic patterns.
A. The final accented pattern.

In the word /hana/ 'a flower', /na/ has a higher pitch than /ha/ as [hana], but it is a different pattern from [hāna] 'a nose'. If I put a particle /\textasciitilde\textmu ga/ after the word /hana/ 'a flower', I get [hā\textasciitilde ga] and there is a "fall of pitch" before /ga/. I indicate the underlying accent of /hana/ 'a flower' as /hana\textasciitilde/. This is a word of the final accented pattern.

In the Tookyoo dialect, by pronouncing words of the atonic and final accented patterns in isolation, people cannot distinguish them from each other; they do not know whether the following words (1) and (2) are atonic or final accented.

(1) \textasciitilde e 'a handle', hana 'a nose'
(2) \textasciitilde e\textasciitilde 'a picture', hana\textasciitilde 'a flower'.

By putting particles after the words, they distinguish (1) from (2). For example, [\textasciitilde e\textasciitilde ga]'a handle (nominative)" is atonic and [\textasciitilde e\textasciitilde ga]'a picture (nominative)" has final accent.

In the Hirosaki dialect, (1) and (2) have different pitches even if they are pronounced in isolation.
is pronounced with an even, high pitch, \( \overline{?e} \). It is an atonic word, and the words in (2) have a "high-to-low" pitch in the last syllable. That is, /?e/ is pronounced starting with a high pitch and the pitch falls to a low pitch, \( \overline{?e} \), and in the word /han\( \overline{a} \)/, [ha] has a low pitch and [na] is pronounced starting with a high pitch and the pitch falls to a low pitch like [?e], [han\( \overline{a} \)].\(^6\) /?e/ and /han\( \overline{a} \)/ are final accented words.

B. The middle accented pattern.

If a word has a high pitch on a medial syllable, I call it a middle accented word. /sem\( \overline{a} \)ka/ 'a shoulder' and /kudam\( \overline{a} \)no/ 'a fruit' are classified as middle accented words.

In the words with more than four syllables, if the accent is not on the penultimate syllable, the syllables of the words have high pitches from the accented syllables to the penultimate syllable in the Hirosaki dialect, \( \ldots \overline{0} \ldots 00 \rightarrow \ldots \overline{0} \ldots 00 \). Since there is no single morphemes with more than four syllables, let me explain it with a compound:

/wata/+/teb\( \overline{u} \)kuro/ → /watateb\( \overline{u} \)kuro/ → [watateb\( \overline{u} \)kuro] 'a cotton glove'.

C. The initial accented pattern.

If the initial syllable in a word has an accent, I call it an initial accented word:

/har\( \overline{u} \)/ 'spring', /k\( \overline{u} \)zira/ 'a whale'.

Like a middle accented word, a pitch extends to the
penultimate syllable in the word or in the phrase with more than three syllables:

/kūzira/ → [kuzira], /kūziraga/#/ˈga/ → [kuziraga].

In the Hirosaki dialect, a pitch extends to the penultimate syllable within a boundary which is less than a minor phrase boundary. But as we see later, there are exceptions. Within a word boundary, all pitches extend to the penultimate syllables if a single morpheme or a compound noun is not followed by another morpheme which comes after the word boundary. When some particles and auxiliary verbs follow words, pitches do not extend to the penultimate syllables:

/yama#/ˈsika/ → /yaməsika/ → */yamesika/.

This problem will be discussed below.

Many initial accented words with two syllables in the Tokyo dialect are classified as final accented words in the Hirosaki dialect. The words /same/ 'rain', /sasa/ 'morning' and /neko/ 'a cat' are accented on the first syllables in the Tokyo dialect, but in the Hirosaki dialect, the accents are on the second syllables. The final vowels of these words are /ə/, /a/ and /o/. These vowels are produced by opening the jaws wider than for /i/ and /u/, high vowels. The final vowels of the words /hasi/ 'chopsticks', /saki/ 'autumn', /haru/ 'spring' and /yoru/ 'night' are /i/ and /u/, and the accents of these words are on the first syllables in both Hirosaki and Tokyo
dialects. When people produce /i/ and /u/, they bring the upper and lower jaws closer together. Thus, according to the size of the opening between jaws in the final vowels, two syllable words which are classified as initial accented words in the Tockyoo dialect, are classified as both initial and final accented words in the Hirosaki dialect:

<table>
<thead>
<tr>
<th>Tockyoo dialect</th>
<th>Hirosaki dialect</th>
<th>'word'</th>
</tr>
</thead>
<tbody>
<tr>
<td>/ʔame/</td>
<td>/ʔameʔ/</td>
<td>'rain'</td>
</tr>
<tr>
<td>/ʔaʔa/</td>
<td>/ʔaʔaʔ/</td>
<td>'morning'</td>
</tr>
<tr>
<td>/neko/</td>
<td>/necoʔ/</td>
<td>'cat'</td>
</tr>
<tr>
<td>/ʔaʔi/</td>
<td>/ʔakiʔ/</td>
<td>'autumn'</td>
</tr>
<tr>
<td>/ʔaʔru/</td>
<td>/ʔaruʔ/</td>
<td>'spring'</td>
</tr>
</tbody>
</table>

The non-initial accented words with two syllables in the Tockyoo dialect are never pronounced with the initial accent in the Hirosaki dialect. The words which have the accents initially in the Tockyoo dialect and finally in the Hirosaki dialect are as follows:

/ʔaka/'red', /ʔaʔa/'morning', /ʔaʔa/'sweet', /ʔame/'rain',
/ʔeto/'traces', /ʔita/'board', /ʔito/'thread', /ʔoke/
'pail', /kage/'shadow', /kasa/'umbrella', /kata/'shoulder',
/kame/'tortoise', /kumo/'cloud', /muko/'bridegroom', /hune/
'boat', /naka/'middle', /neco/'cat', /yane/'roof', /tane/
'seed', etc.

There is an exception. /tuyu/'dew' is pronounced with an accent on /tu/ in the Tockyoo dialect, /tuʔu/. Although the last vowel of the word is [+high], /yu/ becomes high-pitched in the Hirosaki dialect, /tuyu/.
1c. A mora-counting syllable language (Tookyoo) and a syllable-counting syllable language (Hirosaki).

In the Tookyoo dialect, the first moras\(^7\) of [\textit{ban}]'a guard' and [\textit{saibu}]'details' have higher pitches, and [\textit{ban}]'night' and [\textit{ten}]'a point' have higher pitches on the second moras. The first two words are tonic and the last two words are atonic. In the Hirosaki dialect, the accent patterns are the same as those of the Tookyoo dialect but a syllable has a high pitch instead of a mora as in the Tookyoo dialect: [\textit{ban}]'a guard (nominative)', [\textit{saibu}]'details', [\textit{ban}]'night', [\textit{ten}]'a point'.

[\textit{ban}] and [\textit{saibu}] in the Tookyoo dialect have high pitches on the first moras on the surface forms, but there is no word which has a high pitch on the second mora contrasting with them: *[\textit{ban}] and *[\textit{saibu}]. Therefore, we may say that both dialects have an accent on a syllable in the underlying form, and we make a rule as follows:

Tookyoo dialect (a mora-counting syllable language)

\[
\begin{align*}
G \ V \ N & \rightarrow G \ V \ N \\
C \ V \ V^* & \rightarrow C \ V^* V.
\end{align*}
\]

Thus, in the Tookyoo dialect, the first mora has a high pitch on the surface form although the syllable has an accent in the underlying form. On the other hand, in the Hirosaki dialect, a high pitch on the surface form is on the syllable. The Tookyoo dialect is called a "mora-counting syllable language" and the Hirosaki dialect may
be called a "syllable-counting syllable language".

McCawley (1968: 134) defines a "mora-counting syllable language" as follows:

"(1) there is no contrast between "accented first mora" and "accented second mora" in a long syllable; in a long syllable, only the first mora may be the "accented mora" of the phrase; (2) rules such as the one putting accent three moras from the end of foreign words will put the accent on the fourth mora from the end if the third mora from the end happens to be the second mora of a long syllable; the correct form of the rule thus "place accent on the syllable containing the third from last mora", (3) there are a number of environments in which a final-accented noun is made unaccented; for these rules to operate interpreted as meaning "accented on the last syllable" rather than "accented on the last mora", .... Japanese is thus a mora-counting syllable language."

It is clearly true that the Hirosaki is a "syllable-counting syllable language" when we consider foreign words. Most foreign words have accents on the penultimate syllables in the Hirosaki dialect:


2. Nouns.

2a. The types of accent.

The types of Japanese accent are classified into two major groups, namely the Tookyoo type and the Kyooto-Oosaka type. Besides these, there is the so-called "Single-Series" accent. The Hirosaki accent belongs to the Tookyoo type: both the Tookyoo dialect and the Hirosaki dialect have
n+1 accentuations for nouns. n indicates a syllable or syllables. For example, one syllable nouns have two different accentuations, '0 and 0; two syllable nouns have three accentuations, '00, 00 and 00'; three syllable nouns have four different accentuations, '000, 000, 000 and 000', etc. For one to three syllable nouns, the accentuations mean the same as accent patterns, and for more than four syllable nouns, we have more than two "middle accented patterns". The number of "middle accented patterns" increases with n=2 formula (this formula does not apply to one syllable nouns). Therefore two syllable nouns have no "middle accented pattern"; three syllable nouns have one "middle accented pattern", etc. Thus, four syllable nouns, for example, have five different accentuations and two different "middle accented patterns", 1 '0000, 2 0000, 3 0000, 4 0000 and 5 0000.

2b. Compound nouns.

First of all, I will discuss the accent of compound nouns in the Hirosaki dialect.

Before I represent the rules for compound nouns, I will summarize junctures and explain the symbols which are used to represent rules. I use six different junctural elements and, as McCawley (1968; 55) mentions, they form a hierarchy in the sense that there is an order relationship among them under which any occurrence of a juncture also counts as an occurrence of all "weaker"
junctures.

[3] pause
[Φ] major phrase boundary
 [%] minor phrase boundary
 [#] word boundary
 [+] internal word boundary
 [&] morpheme boundary

The hierarchy means that, for example, any occurrence of
[+] also counts as an occurrence of [&]; any occurrence
of [#] also counts as an occurrence of [+] and [&], and
so on.

McCawley (1968:56) continues as follows:

"since junctures are assumed to occur only at morpheme
boundaries, morpheme boundary (within &) will be the
lowest member of the junctural hierarchy; the highest
member will be pause."

Following McCawley, I use the syllable boundary [σ],
because it is convenient to show with a "taki" that an
atomic word has a preaccent in the underlying form.

S means a "syllable", <1acc> indicates an "accent on the
place", <1acc> means "to put another accent on the syl-
labale boundary where the primary accent is already present" and <__> means "to put an accent on the place". S<1acc>
is read, "There is a primary accent on the boundary follow-
ing the syllable" and <1acc># is read, "There is a primary
accent on the boundary following the last syllable of a
compound of a word", and #<1acc> is read, "There is a
primary accent on the boundary preceding the first syllable of a compound or a word.

A. Native Japanese.

There are four rules which apply to compound nouns of native Japanese. I write with the abbreviation CN for the rules. All rules are in the phonemic level.

CN A \( \sigma \rightarrow <1\text{acc}>/\#<1\text{acc}>\ldots+(\ldots)_{\text{n}}\text{at.}n \)

CN B \( \sigma \rightarrow <1\text{acc}>/\#\ldots+(\ldots S<1\text{acc}>S\ldots)_{\text{n}}\text{at.}n \)

CN C \( \sigma \rightarrow <1\text{acc}>/\#\ldots<1\text{acc}>+(\ldots [+\text{low}]/<1\text{acc}>)_{\text{n}}\text{at.}n \)

CN D \( \sigma \rightarrow <1\text{acc}>/\#\ldots+(\ldots<\ldots>)_{\text{n}}\text{at.}n \)

The rules CN A to CN D are in order and a compound noun applies to only one rule. That is, if CN A applies to a compound noun, other rules do not apply to the same compound noun. Therefore, if the first noun is atonic (preaccented), CN A applies to the compound noun, and if the first noun is tonic, CN B, CN C or CN D applies to the compound noun. CN B and CN C are not necessarily in order. If neither CN A, CN B nor CN C applies to a compound noun, then CN D applies.

CN A is interpreted so that a compound becomes atonic if the first noun is atonic:

\[ /^{\text{hige}}+/^{\text{oyazi}}/ \rightarrow /^{\text{hige}}^{\text{oyazi}}/^{\text{a bearded man}} \]

\[ /^{\text{sakura}}+/^{\text{simå}}/ \rightarrow /^{\text{sakurazima}}/^{\text{Sakurazima (place name)}} \]

CN B means that when a middle accented noun follows a tonic noun, the accent of a middle accented noun remains:
/budo/+/hatake/ → /budoobatake/'a vineyard'

/wata/+/kusuri/ → /megusuri/'eye lotion'

/watebukuro/ → /watebukuro/'cotton gloves'

/heike/+/monogatari/ → /heikemonogatari/'the story of Heike'

/kuro/+/kigutu/ → /kurokigutu/'black wooden shoes'.

CN C is interpreted so that when the final accented noun is followed by the final accented noun with C[+low] in its final syllable, an accent is inserted on the boundary following the final syllable of compound:

/yu/+/hanaya/ → /yubanaya/'a bath with flowers'

/hana/+/kasa/ → /hanagasai/'a painted paper parasol'

/sumi/+/koya/ → /sumigoya/'a charcoal burning shed'

/otoko/+/namida/ → /otokonamida/'men's tear'.

If the vowel of the last syllable of the compound is [-low], this rule does not apply and CN D applies:

/kawas/+/kutu/ → /kawagutu/'leather shoes'

/yama/+/arasi/ → /yamaraasi/'mountain storm'

/sora/+/mame/ → /soramame/'a broad bean'.

CN D inserts an accent on the boundary after the penultimate syllable of a compound when a tonic noun is followed by a noun:

/nihon/+/tokage/ → /nihontokage/'Japanese lizard'

/tanuki/+/hayas/ → /tanukibayas/'a band of badgers'.

It is wrong to have pitch adjustment rule after CN D to shift the penultimate accent to the last syllable if the vowel of last syllable is [+low] instead of having CN C:
/haru/+?ika/  \rightarrow /haru?ika/'a spring cuttlefish'  
\rightarrow */heru?ika/
/matu/+/kasâ/  \rightarrow /matukasâ/'a pine cone'.
\rightarrow */matukasa/

we also can hear a free variation if the final vowel of the second noun with two syllables is \([-\text{high}]\), /e/ . The rule for the free variation is as follows:
\[ s \rightarrow \langle \text{acc}\rangle /\ldots S S \langle \text{acc}\rangle + S \left[ \begin{array}{c}
\text{[\text{high}]} \\
\text{[\text{front}]}
\end{array} \right] \langle \text{acc}\rangle \#\]

/namida/+/?ame/  \rightarrow /namida?ame/ 'a sprinkling rain'
\rightarrow /namida?ame/(by CN D)
/?otoko/+/?ude/  \rightarrow /?otoko?ude/ 'man's arm'.
\rightarrow /?otoko?ude/(by CN D)
If the second noun does not have two syllables, the free variation does not occur:
/?iro/+/meganâ/  \rightarrow */?iromeganâ/ 'tinted glasses'.
\rightarrow */?iromeganâ/

When the last vowel is \([-\text{high}]\), /o/, the free variation does not occur:
/wâz/+/?ito/  \rightarrow /wata?ito/ 'cotton thread'
\rightarrow */wata?ito/
/hanâ/+/mukô/  \rightarrow /hanamûko/ 'a bridegroom'.
\rightarrow */hanamuko/

The rules for compounds are written in the phonemic level. We need the pitch assignment rules (PA) 1 to 6 in the phonetic level. In the following rules, Rule 0 is only for compound nouns and PA 1 to 4 are general rules which apply not only to all compounds but also to single morphemes.

In the Hirosaki dialect as well as in the Tookyoo dialect, we see free variations. The most noticeable free variation in compounds is seen, when the syllable accented by CN D has a high vowel, then the syllable
preceding the accented syllable also has an accent. In
other words, by CN D an accent is inserted on the boun-
dary after the penultimate syllable and if the syllable
contains a high vowel, another accent is inserted on the
boundary before the penultimate syllable. Therefore, on
the surface form, both the penultimate syllable and its
preceding syllable becomes high-pitched.

Rule 0. \(+S \cup \left[\leftarrow^\text{high} \right]_{V}^{+\text{acc}}\)_\text{nat.} \text{\#} \rightarrow \ldots S^{+\text{acc}}_{S} S \text{ S \#}

/kata/+/kuruma/ \rightarrow /kataguruma/ \mapsto /kataguruma/
'piggy-back'

/te/+/hukuro/ \rightarrow /tebukuro/ \mapsto /tebukuro/ 'a glove'

/yama/+/sakura/ \rightarrow /yamazakura/ \mapsto /yamazakura/
'a wild cherry'.

If the vowel of the penultimate syllable is \([-\text{high}]\), or
CN B applies to the compound, the free variation does not
occur:

/te/+/sigo/ \rightarrow /tesigo/ \mapsto */tesigo/ 'manual work'

/matu/+/hayasi/ \rightarrow /matubayasi/ \mapsto */matubayasi/
'pine woods'

/kuro/+/kigutu/ \rightarrow */kurokigutu/
'black wooden shoes'.

I do not consider a verbal noun as the same noun
which cannot be made into a verb by adding the suffix
/ru/. The nouns /kuruma/ 'a car' and /hukuro/ 'a bag'
cannot be made into verbs by adding /ru/(present ending):
*/kuruma/\&/ru/; */hukuro/\&/ru/.

These nouns are pure nouns and they do not form verbal
nouns by adding the suffix /i/.
*/kuruma/*i/, */hukuro/*i/.

On the other hand, some nouns are derived from verb stems plus the verbal noun ending /i/;

/yasumi/*i/ → /yasumī/ 'vacation'
/korosi/*i/ → /korosī/ 'killing'
/kakī/*i/ → /kakī/ 'writing'.

These nouns are verbal nouns and CN D cannot be applied to the compounds with verbal nouns. We have to make another compound rule with verbal nouns (see 2b. Verbal nouns). CN D occasionally can apply to the compound noun with a verbal noun which has three syllables, but Rule 0 does not apply:

/haruyōsumi/ → /haruyōsumi/ RQ */haruyōsumi/ 'spring vacation'.

PA 1. [ ] → [high pitch]/ ...<acc>... S

A syllable, which has an accent, has a high pitch except for a final syllable. The syllable does become the same kind of pitch as the pitch on the last syllable (see PA 4).

/kawagūtu/ → [kawagūtu] 'leather shoes'.

PA 2. (Rank 0) [ ] → [high pitch]/ <acc>... Θ

/sakuramotī/ → [sakuramotī] 'sakuramoti (a kind of rice cake)'.

PA 3. (Rank 0) [ ] → [high pitch]/ Θ ...<high pitch (____) oS Θ

/sūsume/ → [sūsume] → [sūsume] 'a swallow'.

/uyōkuha/ → [uyōkuha] → [uyōkuha] 'right wing'.
/koomu?inhoo/ → [koomu?inhoo] → [koomu?inhoo]
' the National Public Service Law'.

PA 4. [Rank 3] 〈1acc〉 → [high-falling] / 3 ....... 3
/??asayu/ → [??asayu]'morning bath'.

If the final accented syllable is followed by another
morphe, PA 4 does not apply and PA 1 applies to it:
/??asayu/ /?ga/ PA1 [??asayuga]'morning bath (nominative)'

/??asayuga/ * [??asayuga]
/tise%?suzume/ PA1,3 [tise % suzume]'a small sparrow'.

B. Sino-Japanese.

Next I will discuss the compounds with Sino-Japanese
nouns as the second elements. Their main difference from
native compounds is that, when the Sino-Japanese noun
comes as the second noun, the first noun does not affect
the accent of the compound.

We need two rules for compound nouns of Sino-
Japanese.

CN 1 σ →〈1acc〉/ # ........〈11acc〉... \_j

CN 2 σ →〈1acc〉/ # ........〈S〈_〈... \_j

CN 1 makes the accent of the second noun of a
compound predominate:
/??ikkageto/+/?inai/ → /??ikkageto?inai/ 'within one month'
/gunzi/+?sikin/ → /gunzisikin/ 'war funds'
/??hatu/+?hoomon?kyaku/ → /?hatuhoomon?kyaku/ 'the first
visitor'
'atomic submarine'.
CN 2 inserts an accent on the first syllable after [+]:
\[/'syakai/+/'seekatu/ \rightarrow /syakaiseekatu/ 'social life'\]
\[/'gaikoku/+/'bocoeki/ \rightarrow /gaikokuboeki/ 'foreign trade'\]
\[/'betu/+/'sekai/ \rightarrow /betusekai/ 'different world'\]

If an accented syllable after a boundary (any boundary) is short, \(C(y)V\), the accent shifts to the following syllable. This is an accent readjustment rule for Sino-Japanese nouns and compounds.

\[A\text{R} A \{\text{Rank }\%\} \quad %\{C(y)V<\text{acc}>S...\}_{S} \rightarrow % S \{\text{acc}>...\}\]

if the accented syllable is not followed by only one short syllable.

\[/bokusi/ \rightarrow /bokusi/ 'a priest'\]
\[/siryoiku/ \rightarrow /siryoiku/ 'eyesight'\]
\[/?ikkagetu + ?inaiz/ \rightarrow /?ikkagetuinaiz/ 'within one month'\]
\[/betu + sekai/ \rightarrow /betusekai/ 'different world'\]
\[/sewakazoku/ \rightarrow /sewakazoku/ 'a kind family'.\]

If the accented syllable is a long syllable, AR A does not apply:

\[/senryoiku/ \rightarrow */senryoiku/ 'fighting power'\]
\[/gaikoku + bocoeiki/ \rightarrow */gaikokuboeki/ 'foreign trade'.\]

If the accented syllable is followed by only one short syllable, AR A does not apply:

\[/bazyoo + kisi/ \rightarrow */bazyookisi/ 'a knight on a horse'\]
\[/ryuukoo + kasyu/ \rightarrow */ryuukookasyu/ 'a popular singer'.\]
C. Other rules for compounds.

I have not discussed compounds with monosyllabic nouns. When monosyllabic nouns come as the second nouns of compounds, the accentuations of the compounds are quite irregular. It is impossible to make ordering rules which apply to all compound nouns with monosyllabic nouns.

McCawley (1968) and Hirayama (1969) give us (a) a list of elements which yield unaccented compounds when used as final element and (b) a list of elements for which compounds ending in them have an accent on the final syllable of the first member.

For example:

(a) /kan}sai+/beŋ/ → /kansaiben/'Western (Japanese) dialect'

(b) /kineŋ/+/bi/ → /kineŋbi/'anniversary'.

But it is not so simple in the Hirosaki dialect. The accentuation of a compound is also determined depending on the first noun. Also when some special two-syllable nouns (McCawley and Hirayama give us a list) follow nouns; the accentuation does not follow the compound rules which I have discussed.

When monosyllabic and special two-syllable nouns come as the second elements, we can divide compound nouns which are governed by different rules into five main groups.
Group A.

When a noun follows an atonic noun, the preaccent of the first noun remains; when it follows a tonic noun, the accent of the last syllable of the compound remains. For atonic nouns 0N A applies and for tonic nouns 0N 1 applies. Although we already have the same rules, let me make the special rules for compounds (SC):

SC 1  \( \sigma \rightarrow \langle 1\text{acc}\rangle / \sigma \langle 1\text{acc}\rangle \ldots \% \ldots \emptyset \)

SC 2  \( \sigma \rightarrow \langle 1\text{acc}\rangle / \emptyset \ldots \% \langle 1\text{acc}\rangle \emptyset \)

ben' 'dialect'
\( \text{'tookyoo'/+}/\text{ben}/ \xrightarrow{SC\,1} \text{'tookyooben'/ 'the Tookyoo dialect'} \)
\( \text{'hirosaki'/+}/\text{ben}/ \xrightarrow{SC\,2} \text{'hirosakiben'/ 'the Hirosaki dialect'} \)
\( \text{'kansai'/+}/\text{ben}/ \xrightarrow{SC\,2} \text{'kansaiben'/ 'Western dialect'} \)

'kata' 'form'
\( \text{'xihuku'/+}/\text{'kata}/ \xrightarrow{SC\,1} \text{'kihukugata'/ 'tonic pattern'} \)
\( \text{'nakadaka'/+}/\text{'kata}/ \xrightarrow{SC\,2} \text{'nakadakagata'/ 'middle accented pattern'} \)
\( \text{'sankaku'/+}/\text{'kata}/ \xrightarrow{SC\,2} \text{'sankakugata'/ 'triangle'} \).

When /kata/ is pronounced in isolation, it is \( [\text{kata}] \).

/kata/ has a preaccent, and when it follows tonic nouns, the accent is on the final, /...kata/. Therefore, I assume that /kata/ has two accents in the underlying form, the preaccent and the accent on the final syllable.

All special rules for compounds are in the rank \( [\emptyset] \).
The rules apply not only to compound nouns but also to other compounds (nouns plus particles, adjectives plus
particles, verbs plus auxiliary verbs, etc.). For a compound noun, the rank of the rules is \([\#]\), for the compound with a particle, the rank of the rules is \([\%]\), and for the compound with an auxiliary verb, the rank of the rules is \([\odot]\) or less than \([\odot]\).

For example:

\[\%/\text{hana}/\#/\text{made}/\% \xrightarrow{\text{SC 1}} /\text{hanamade}/'\text{even a nose}'\]

\[\odot/\text{hana}/\%/\text{da}/\odot \xrightarrow{\text{SC 1}} /\text{hanada}/'(\text{it}) \text{ is a nose}'\]

Group B.

When a monosyllabic noun follows a noun, an accent on the second noun remains, SC 2:

\[\text{zyuu}\uparrow '\text{throughout'}\]

\[/\text{kyuuzyuu}/+/\text{zyuu}/ \rightarrow /\text{kyuuzyuuzyuu}/'\text{throughout kyuuzyuu}'\]

\[/\text{hirosakizyu}/+/\text{zyuu}/ \rightarrow /\text{hirosakizyu}/'\text{throughout Hirosaki}'\]

\[/\text{nihonzyuu}/+/\text{zyuu}/ \rightarrow /\text{nihonzyuu}/'\text{throughout Japan}'\]

\[/\text{tookyoozyuu}/+/\text{zyuu}/ \rightarrow /\text{tookyoozyuu}/'\text{throughout Tookyoo}'\].

As I have mentioned before, the rules, in order, cannot apply to the compounds with monosyllabic and special two-syllable nouns. Different rules are applied to the compounds in each group. SC 1 seems to be applied to \[/\text{tookyoo}/+/\text{zyuu}/\] but it is not, because \[/\text{zyuu}/\] belongs to a different group (Group B). Each group is determined by the rules which apply to the compound of each group. Thus, although the rule (SC 2) applies to Group B and also applies to Group A, these groups are divided into different groups because another
rule (SC 1) applies to Group A.

Group C.

When some nouns follow preaccented or initial accented nouns, the final syllable of the first noun has an accent. In other words, the preaccent of the second noun remains. When the first noun is a middle accented or final accented noun, an accent on the first noun remains:

SC 3 \[ \sigma \rightarrow \text{<1acc>/ } \emptyset \ (S) \text{<1acc>...%<1acc>... } \emptyset \]
SC 4 \[ \sigma \rightarrow \text{<1acc>/ } \emptyset \text{...<1acc>...%... } \emptyset \]

'bo 'register'
/tooroku/+//'bo/ \[ SC^2 \] /toorokub o/'list of registration'
/zinmei/+//'bo/ \[ SC^2 \] /zinmeibo/'roll (list of names)'
/?uri age/+//'bo/ \[ SC^2 \] /?uri?agebo/'a sales book'
/kaikete/+//'bo/ \[ SC^4 \] /kaiketibo/'an account book'

'kyoku 'bureau'
/kani/+//'kyoku/ \[ SC^3 \] /kanikyoku/'administration office'
/yuubin/+//'kyoku/ \[ SC^3 \] /yuubinkyoku/'post office'
/hirosaki/+//'kyoku/ \[ SC^4 \] /hirosakikyoku/'Hirosaki office'.

When /kyoku/ is pronounced in isolation, it is \( \overline{\text{kyoku}} \). Therefore, there are two underlying accents in the word /kyoku/, and when it follows a preaccented or initial accented noun, the preaccent remains.

Group D.

In Group C, I have mentioned that when the initial accented noun is followed by a preaccented noun, the
preaccent of the second noun remains. But in Group D, only when an atonic noun is followed by a preaccented noun, the preaccent of the second noun remains. When a tonic noun is followed by a noun, SC 4 applies. SC 5 precedes SC 4.

SC 5 \( \sigma \rightarrow \text{<acc>}/\omega \text{<acc>...}\%\text{<acc>...} \%

'sen' ship'

/ˈseikan+/ˈsen/ SC5 /seikanˌsen/ 'the ship which runs between Aomori and Hakodate'

/ˈrenraku+/ˈsen/ SC5 /renrakusen/ 'a ferry boat'

/kaˈnisi+/ˈsen/ SC4 /kaˈnisen/ 'a watch ship'

/gyoˈgyoʊ/ˈsen/ SC4 /gyogyoʊsen/ 'a fishing boat'.

When /sen/ is pronounced in isolation, it is [se]. Therefore, there are two underlying accents in /sen/.

The nouns in Group D are Sino-Japanese monosyllabic nouns which have preaccents in the underlying forms; by SC 5, only the penultimate syllable has an accent. If the accented penultimate syllable (by SC 5) is /C(y)V/, the accent shifts to the final syllable of a compound. The accent readjustment rule for a monosyllable is as follows:

AR B [Rank %] ...C(y)V<acc>\text{g}_{2}\% \rightarrow ...S S<acc> \%

This readjustment rule is only applied to Group D and is a similar rule to AR A which shifts the accent of the initial syllable to the next. Both rules shift accents (if the accented syllables are /C(y)V/) to the following syllables:
/renrakūsen/ → /renrakusên/'a ferry boat'.

group E.

In the last group the accent on the first noun remains (SC 4).

'/kin'/ 'money';

/hozôjō/+/kin/ → /hozôjōkinên/'a grand-in-aid'  
/gunbî/+/kin/ → /gunbîkinên/'money for military preparations'  
/haken/+/kin/ → /hakenkinên/'money to send'.

When /kin/ is pronounced in isolation, it is accented, [kein]. It has an accent on the syllable. When /kin/ follows an atonic noun, we also hear a free variation:

'/haken/+/kin/ → /hakenkinên/.'

But /kin/ does not belong to Group D because AR B does not apply to the compound:

/hozôjōkinên/  ARB  */hozôjōkinên/.

yamâ 'mountain'

/ninaê/+/yamaê/ → /niinâyamaê/ 'Mt. Niina'

/iwakî/+/yamaê/ → /iwâkiyamaê/ 'Mt. Iwaki'

/teppoô/+/yamaê/ → /teppoôyamaê/ 'Mt. Teppoo'

/yakagî/+/yamaê/ → /yakagiyamaê/ 'Mt. Yakagi'.

When CN D applies to the compound with /yama/ as the second element, the meaning of the compound is "a mountain (or mountains) in a certain area", and when SC 4 applies, its meaning is "the name of a mountain".

/ninaê/+/yamaê/ CN D  /niinayamaê/ 'mountains in Niina'.

2c. Nouns plus particles.

We can divide particles into two groups for noun-particle compounds.

Group A.

Each noun has at least one accent in it, but there is no stipulation for putting a preaccent on a monosyllabic particle. When /ga/ (nominative) follows a noun, an accent in the noun remains. This is the same rule as SC 4, although there is an internal word boundary between nouns in compounds, and there is a word boundary between a noun and a particle. We will have the same surface form even if we put a preaccent on /ga/, e.g. /ʔga/, if we apply SC 4, but there is no way to prove that /ga/ has a preaccent, because it never comes at the beginning of a sentence, nor preaccents its preceding syllable: /ʔame/ # /ʔga/ → */ʔameʔga/, /kūzira/ # /ʔga/ → */kūzirʔga/.

Although there is no proof that a monosyllabic particle has a preaccent, I assume that it has a preaccent and it is classified into the same group as the particle which has an accent on the first syllable, /dàge/, /kàramo/, etc.

When a particle in Group A follows an atomic noun, the preaccent of a noun remains (SC 1):

/ʔha/# /ʔga/ SC1 /ʔhaga/ PA2 [hagà] 'a leaf (nominative)'

/mizu/# /kàramo/ SC1 /ʔmizukàramo/ PA2 [mizukàramo] 'also from water'.

I have mentioned that SC 4 applies to the compound
in which */ga/* follows, but it does not apply to the compound in which */karamo/* follows a final accented noun. When a particle follows a final accented noun, the accent on a particle remains. The particle rule (P) is as follows:

\[ P \ 1 \ \{ \text{Rank \%} \} \ \sigma \rightarrow \langle \text{acc} \rangle / \% \ldots \langle \text{acc} \rangle ^{\#} \langle \text{acc} \rangle \ldots \rangle ^{\text{pt.}}_{\text{av.}} \]

As this rule shows, although it is not necessary to put a preaccent into the monosyllabic particle, such as */ga/*, it should have a preaccent to include */ga/* in the same group with */karamo/* and to let P 1 apply to the compound with a monosyllabic particle:

*/yama/*/*/ga/* \ P 1 \ */yamaga/* \ PA 1 \ [*/yamaga/*] 'a mountain (nom.)'
*/yama/*/*/karamo/* \ P 1 \ */yamakaramo/* \ PA 1 \ [*/yamakaramo/*] PA 2
[*/yamakaramo/*] 'also from a mountain'.

The compound above clearly shows that */ka/* of */karamo/* has an accent in the underlying form because */ma/* of */yama/* becomes high-pitched when */ga/* follows and it does not become high-pitched when */karamo/* follows.

When a particle follows initial and middle accented nouns, the accent on the nouns remains (SC 4):

*/inotii/*/*/ga/* \ SC 4 \ */inotiga/* \ PA 1 \ [*/inotiga/*] PA 2
[*/inotiga/*] 'a life (nominative)'
*/hotaru/*/*/karamo/* \ SC 4 \ */hotarukaramo/* \ PA 1 \ [*/hotarukaramo/*] PA 3
[*/hotarukaramo/*] 'also from a firefly'.

Among monosyllabic particles, */ba/* (objective) and */sa/* 'to' have final accents as alternations, */'ba/* and */'sa/*. When they follow final accented nouns, each
accent on particles remains (P 1):
/hɑ̄#/\b̪ă/ → /hɑ̄ba/ /\b̪ă/ 'a tooth (objective)'
/yamə̆#/\b̪ă/ → /yamə̆ba/ /\b̪ă/ 'a mountain (obj.)'.

CN C also applies to the compounds of the final accented. It will be better to use only one rule, P1, here. The ordering of rules which are used for Group A should be CN A, P 1, SC 4 and PA's.

I have mentioned earlier that /ɔO/ becomes /Oɔ/ if the last vowel is [-high], but it is not so when particles follow nouns:
/kī#/\nɔ/ → /kīnɔ/ → */kincɔ/ 'of a tree'.

Therefore, the rule to shift the accent of the first syllable to the second is applied to crossing over [+] (an internal word boundary), or [\&] (a morpheme boundary, like /mī/\&/ta/ → /mīta/ → /mītɔ/ 'saw (past tense)') or is applied within a word boundary in native Japanese; that is, the rule applies in the rank [#]. This shifting rule does not apply to Sino-Japanese words, foreign words and interjections:
Sino-Japanese: /kako/ 'past', /tōga/ 'cross a river',
/tāma/ 'Tama (a place name)', etc.
Foreign: /papa/ 'father', /dēmo/ 'demonstration', /dēma/ 'demagogy', /mēma/ 'mother', etc.
Interjection: /ti̊ra/, /håte/, /sōre/, /sōra/, etc.

Group B.

When a particle in Group B follows an atomic noun,
the preaccent of a particle remains (SC 5):

/ˈhɑː/ˈsika/ [hasika] PA³ [hasika] ‘only a leaf’


When a particle follows a tonic noun, the accented syllable and its following syllables, if any, have accents. We cannot apply SC 4 (by which an accent remains on the first element) because PA 3 cannot apply:

1. /hɑː/ˈhodo/ [hahodo] PA³ *[hahodo] ‘as a tooth’

2. /tānuki/ˈhodo/ [tānukihodo] PA³ *[tānukihodo] ‘as a badger’


The surface forms of 1, 2 and 3 are [hahodo], [tānukihodo] and [kuzirahodo] respectively. Then we have to have another particle rule:

P 2 \( \sigma \rightarrow (\text{acc})/ \%..\%\langle\text{acc}\rangle(S_{--}^{\text{n}})^{\circ/\cdots\cdots} \text{pt}.%\)

P 2 puts an accent over the accented syllable of a noun and puts accents over the syllables of the noun following the accented syllable, and PA 3 does not apply after P 2:

/yema/ˈhodo/ P₂ /yamahodo/ [yamahodo] ‘as a mountain’

/ˈinotii/ˈsika/ [ˈinotisika] ‘only a life’

/hōtaru/ˈyorimo/ P₂ /hotoruyorimo/ [hotoruyorimo] ‘rather than a firefly’.

When the phrase of a noun plus a particle follows
another morpheme, the syllables which follow the high-pitched syllable become high-pitched.

PA 5 \( \text{[Rank } \ominus \text{]} \)

\[
[ ] \rightarrow [\text{high pitch}] / \ominus \cdots [\text{high pitch}] (\ominus)^n \ominus \cdots
\]

\([\text{yagisa@mizukoto@kerozya}] \rightarrow [\text{yagisa@mizukoto@kerozya}]
\]

'Give the goat water.'

\([\text{nikuyorimo@kamiba@taberu}] \rightarrow [\text{nikuyorimo@kamiba@taberu}]
\]

'(it) eats papers rather than meat'.

PA 5 is a general rule. It applies not only to compounds but also to a single word:

\(/\text{kuzira/@kero/PA1, 2, 3, 4}[\text{kuzira@kero}] \text{PA5}[\text{kuzira@kero}]
\]

'give (me) a whale'.

The particles in Group A and Group B are as follows:

Group A.

\(/{\text{ga/}}(\text{nominative}), /{\text{ba/}}(\text{objective}), /{\text{ni/}}(\text{objective}),
\)

\(/{\text{to/}}'\text{and}', /{\text{saa/}}'\text{to}', /{\text{wa/}}(\text{nominative}), /{\text{mo/}}'\text{also}',
\)

\(/{\text{ga/}}(\text{question}), /{\text{na/}}(\text{question}), /{\text{ge/}}(\text{question, doubt}),
\)

\(/{\text{co/}}(\text{objective}), /{\text{da@ge/}}'\text{only}', /{\text{gara/}}'\text{from}', /{\text{basii/}}'\text{only}',
\)

\(/{\text{danno/}}'\text{etc.}', /{\text{demoo/}}'\text{even}', /{\text{dabega/}}'\text{question, doubt},
\)

\(/{\text{dakeni/}}'\text{only to}', /{\text{karamo/}}'\text{also from}', /{\text{made/}}'\text{till}'.
\)

Group B.

\(/{\text{sika/}}'\text{only}', /{\text{hodo/}}'\text{as}', /{\text{yori/}}'\text{than}', /{\text{gure/}}'\text{about}',
\)

\(/{\text{nari/}}(\text{objective, uncertain}), /{\text{koto/}}(\text{objective, from the noun /koto/}}'\text{thing'}), /{\text{yorimo/}}'\text{more than}', /{\text{nowa/}}'\text{the one of (nominative)}'.
\)
The accents when particles follow nouns are as follows (*The following accents of compounds are written phonetically*):

<table>
<thead>
<tr>
<th>Atomic</th>
<th>1 syl.</th>
<th>2 syl.</th>
<th>3 syl.</th>
<th>4 syl.</th>
<th>A</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 syl.</td>
<td>會 'leaf'</td>
<td>水 'water'</td>
<td>桜 'cherry tree'</td>
<td>作者 'author'</td>
<td>告</td>
</tr>
<tr>
<td>2 syl.</td>
<td>1 'tree'</td>
<td>門 'door'</td>
<td>头 'head'</td>
<td>朝 'morning glory'</td>
<td>告</td>
</tr>
<tr>
<td>3 syl.</td>
<td>的 'life'</td>
<td>花 'flower'</td>
<td>植 'plant'</td>
<td>木 'tree'</td>
<td>告</td>
</tr>
<tr>
<td>4 syl.</td>
<td>清 'clear'</td>
<td>明 'bright'</td>
<td>望 'hope for'</td>
<td>希 'hope'</td>
<td>告</td>
</tr>
<tr>
<td>A</td>
<td>B</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-------------------</td>
<td>-------------------</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
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<td>hahodo</td>
<td>hayorimo</td>
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<td></td>
<td></td>
</tr>
<tr>
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<td>misuyorimo</td>
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<td></td>
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</tr>
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<td>sakurahodo</td>
<td>sakuyorimo</td>
<td></td>
<td></td>
<td></td>
</tr>
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<td>nokogiridabega</td>
<td>nokogirihodo</td>
<td>nokogiriyorimo</td>
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<td></td>
</tr>
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<td>kiyorimo</td>
<td></td>
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<td>yamahodo</td>
<td>yamayorimo</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>?atamadabega</td>
<td>?atamahodo</td>
<td>?atamayorimo</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>?asaga odabega</td>
<td>?asagahodo</td>
<td>?asagayorimo</td>
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<td></td>
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<td>?inotihodo</td>
<td>?inotiyorimo</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>kudamonodabega</td>
<td>kudamonohodo</td>
<td>kudamonyorimo</td>
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<td>haruyorimo</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>hotarudabega</td>
<td>hotaruhodo</td>
<td>hotaruyorimo</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
2d. Nouns plus auxiliary verbs.

There are two groups.

Group A.

When the auxiliary verb\textsuperscript{13} /da/ 'be (present tense)'
follows a noun, the accent in the noun remains (SC 4):

*/sakura/* da/ SC\textsuperscript{4} */sakurada* PA\textsuperscript{2} [sakurada] *(it) is a cherry tree*

*/\text{fata\text{m\text{a}}}/* da/ SC\textsuperscript{4} */\text{fata\text{m\text{a}}}\text{\text{\text{\text{\text{a}}}}}* PA\textsuperscript{1} [\text{fata\text{m\text{a}}}] *(it) is a head*

*/\text{tan\text{uk\text{i}}}/* da/ SC\textsuperscript{4} */\text{tan\text{uk\text{i}}}\text{\text{\text{\text{\text{a}}}}}* PA\textsuperscript{1} [\text{tan\text{uk\text{i}}}] PA\textsuperscript{3} [\text{tan\text{uk\text{i}}}] *(it) is a badger*

*/\text{ho\text{r\text{u}}}/* da/ SC\textsuperscript{4} */\text{ho\text{r\text{u}}}\text{\text{\text{\text{\text{a}}}}}* PA\textsuperscript{1} [\text{ho\text{r\text{u}}}] PA\textsuperscript{3} [\text{ho\text{r\text{u}}}] *(it) is a spring*.

It seems that there is no way to prove whether /da/
has an accent or not. We have an alternative accentuation
when /da/ follows a final accented noun. As its alterna-
tive accent, /da/ has an accent over the syllable; /d\textsuperscript{a}/
and CN C applies:

*/\text{kia}/* da/ UNC */kia* PA\textsuperscript{4} [kia] *(it) is a tree*

*/\text{yama}/* da/ UNC */yama* PA\textsuperscript{4} [yama] *(it) is a mountain*

*/\text{fata\text{m\text{a}}}/* da/ UNC */\text{fata\text{m\text{a}}}* PA\textsuperscript{4} [\text{fata\text{m\text{a}}}] *(it) is a head*.

It is clear that /da/ is the final accented morpheme,
but the evidence of its preaccent is not clear and there
is no way to prove it. It is an arbitrary explanation to
say that /da/ has no accent, and /kia/ becomes /kia/
because the vowel of the last syllable is [-high], and
also /yama/ \rightarrow /yama/ and /\text{fata\text{m\text{a}}}/ \rightarrow /\text{fata\text{m\text{a}}}/.

As I have mentioned already, the rule to shift the accent
to the next syllable, [-high], only applies to two syl-
labes:
/mɪ/ /ta/ → /mɪta/ → /mɪta/ 'saw (past tense).

But
/tabɛ/ /ta/ → /tabɛta/ → */tabɛta/ 'ate (past tense),

Group B.

When an auxiliary verb in Group B follows an atomic noun and a final accented noun, the accent of the auxiliary verb remains (AV 1):

AV 1 [ Rank 0 ] σ → <acc>/ ©...%(.<acc>..)σ

'/ha/ /si/ AV1 /hasi/ PA1 [ hasi] 'it is a leaf (polite)'

'/ame/ /dańde/ AV1 /amedańde/ PA1 [amedańde] 
'(it) is a candy (I believe)'

'(it) looks like a leaf'

'/ha/ /si/ AV1 /hasi/ PA1 [hasi] 'it is a tooth (polite)'

'/ame/ /dańde/ AV1 /amedańde/ PA1 [amedańde] 
'(it) is a rain (I believe)'

'(it) looks like a tooth'.

As we see above, the compounds with atomic and final accented nouns are identical, but they are not so on the surface forms. When an auxiliary verb follows an atomic noun, the accent of the auxiliary remains and its following syllable also becomes high-pitched on the surface form. Therefore, we need an additional pitch assignment rule to apply to the compound whose noun is atomic:
PA 6 \[\text{Rank } \emptyset\]

\[
\begin{array}{c}
[\text{high pitch}] / \emptyset \ldots [\text{high pitch}] \ldots \\
\overset{\lambda}{\text{hasi}} \rightarrow [\text{hasi}]'(\text{it is a leaf (polite)})' \\
[\text{?amedande}] \rightarrow [\text{?amedande}]'(\text{it is a candy (I believe)})' \\
[\text{hada?enta}] \rightarrow [\text{hada?enta}]'(\text{it looks like a leaf}).
\end{array}
\]

Suppose that the syllable following the accented syllable becomes accented by the following rule instead of applying three different rules (AV 1, PA 1 and PA 5) to the compound with an atomic noun as the first element.

\[
\sigma \rightarrow \langle 1\text{acc} \rangle / \overset{\lambda}{\text{in}} (\ldots \langle 1\text{acc} \rangle \ldots )_h \% (\ldots \langle 1\text{acc} \rangle \ldots )_v \emptyset
\]

Then

\[
/\text{haid}/ \overset{\lambda}{\text{si}} \rightarrow /\text{hasi}/ \overset{PA 4}{\leftrightarrow} *[\text{hasi}]
\]

\[
/\text{?ame}/ \overset{\lambda}{/\text{dande}}/ \rightarrow /\text{?amedande}/ \overset{PA 4}{\leftrightarrow} *[\text{?amedande}].
\]

Therefore, the syllable following the accented syllable which becomes high-pitched by PA 6 is not considered as having an accent in the underlying form.

When a noun is followed by an auxiliary verb in Group A, PA 3 cannot be applied:

\[
/\text{haid}/ \overset{\lambda}{\text{d?enta}}/ \overset{AV 1}{\leftrightarrow} /\text{hada?enta}/ \overset{PA 1}{\leftrightarrow} [\text{hada?enta}] \overset{PA 3}{\leftrightarrow} *[\text{hada?enta}]'(\text{it looks like a tooth}).
\]

When middle accented and initial accented nouns are followed by an auxiliary verb, the accents of the nouns and of the auxiliary verb remain and the syllables between accented syllables also becomes high-pitched by PA 5.

AV 2 \[\text{Rank } \emptyset\]

\[
\sigma \rightarrow \langle 1\text{acc} \rangle / \emptyset (\ldots S \langle 1\text{acc} \rangle S \ldots )_h \% (\ldots \langle 1\text{acc} \rangle \ldots )_v \emptyset
\]
AV 2 must precede AV 1 because AV 1 should not apply to the compound with the middle or initial accented noun. If AV 1 applies before AV 2, the result is as follows:

/ʔhotaru/ /ʔdəʔenta/ \(\xrightarrow{AV_2} \) /ʔhotaruʔdəʔenta/ \(\xrightarrow{PA_1} \) [ʔhotaruʔdəʔenta] \(\xrightarrow{PA_5} \) [ʔhotaruʔdəʔenta]'(it) looks like a firefly'.

The auxiliary verb in Group A is /dəʔ/ 'be'. The auxiliary verbs in Group B are as follows:

/ˈsi/ 'be', /ˈmite/ 'like', /ˈse/ 'will be, be', /dənde/ 'be (confirmative)', /dədə/ 'be said', /dəsu/ 'be', /dəbe/ 'will be, be', /dəkenta/ or /dəʔenta/ 'look like, probably', /dəgosi/ 'be (very polite)'.
The accents when auxiliary verbs follow nouns are as follows:

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>atomic</td>
<td>ha</td>
<td>hada</td>
</tr>
<tr>
<td></td>
<td>mizu</td>
<td>mizuda</td>
</tr>
<tr>
<td></td>
<td>sakura</td>
<td>sakurada</td>
</tr>
<tr>
<td></td>
<td>nokogiri</td>
<td>nokogirada</td>
</tr>
<tr>
<td>final</td>
<td>ki</td>
<td>kidà</td>
</tr>
<tr>
<td></td>
<td>yama</td>
<td>yameda</td>
</tr>
<tr>
<td></td>
<td>kudamono</td>
<td>kudamonoda</td>
</tr>
<tr>
<td>initial</td>
<td>haru</td>
<td>haruda</td>
</tr>
<tr>
<td></td>
<td>hotaru</td>
<td>hotaruda</td>
</tr>
</tbody>
</table>
3. Verbs.

There are two types of accent patterns in verb stems:

a) Atonic pattern

/ˈtɒk/ 'put', /ˈmɔr/ 'fill', /ˈtəkəs/ 'prove', etc.

b) Final accented pattern.

/ˈhær/ 'enter', /ˈtoʊər/ 'pass', /ˈkæŋɡæˈ/ 'think', etc.

3a. Stems plus suffixes.

I will discuss the accents of verb stems plus suffixes by using phonological and morphophonemic rules. Most of the rules follow Professor Fillmore's rules which we were discussed in the class of Japanese Syntax, Spring Quarter, 1969.

1) Indicative form.

a) Present form.

The suffix of indicative form is /ru/. When /ru/ is put after consonant-stem verbs, /r/ is deleted:

/kɑ̃k/ /ru/ → /kɑ̃kʊ/ 'write'

/ˈtəsəb/ /ru/ → /ˈtəsəbu/ 'play'.

When accented stems are followed by unaccented suffixes, the accents on the stems remain:

Rule 1 [Rank #] \( \sigma \rightarrow 1\text{acc} \# \ldots S^{1\text{acc}} \ldots \langle -\text{acc} \rangle \ldots \# \)

When atonic stems are followed by suffixes, the words are preaccented:

Rule 2 [Rank #] \( \sigma \rightarrow 1\text{acc} \# \langle 1\text{acc} \rangle \ldots \& \ldots \# \)

except the suffix is /iə/.
b) Negative form.

The suffix of negative indicative form is /ane/. When /ane/ is put after vowel-stem verbs, /a/ is deleted:

/tuke/ & /ane/ → /tukene/ 'not to put'

/^ake/ & /ane/ → /^ake/ 'not to open'.

When /ane/ is put after consonant-stem verbs, /a/ is not deleted:

/kak/ & /ane/ → /kakan/ 'not to write'

/yom/ & /ane/ → /yomane/ 'not to read'.

Rule 3. [Rank 5] (i) C → Ø / C
          (ii) V → Ø / V

When an accented stem verb is combined with an accented suffix, the right-most accent remains.

Rule 4 [Rank #] σ →<1acc>/ #...S<1acc>...S<1acc>...#

In final accented consonant-stem verbs, I consider CVC as a syllable. When /..CVĆ/ is followed by an unaccented suffix which begins with a vowel, /..CVĆ& V/ becomes /..CVĆV/ (i). When a syllable is followed by a suffix /(V)Ć/, the accent shifts one phoneme to the left (ii):

/..S&(V)Ć& V/ → /..S(V)ĆV/

Rule 5 (i) CVĆ& V → CVĆV
          (ii) S&(V)Ć& V → S(V)ĆV

c) Polite form.

The suffix of a polite form is /1ĕ/.
2) Gerund form.

The suffix of a gerund form is /ite/. Gerund morphophonemic rules are from Rule 6 to Rule 10. These rules just follow Fillmore's. Rule 3 applies before Rule 6 and Rule 4 applies after Rule 6.


i → Ø / C _ t except C=s

Rule 7. Assimilative voicing.

t → d / [voiced occlusive] _ exclude r, w  

Rule 8. Velar changing to "I".

[velar] → i / _ [dental]


C → [+dental]/ _ T


[+voiced

[+dental] → [+nasal]/ _ d

The demonstration of gerund morphophonemic rules is as follows:

/tuke/ &/ite/ 3 → /tukeite/'sticking'

/kak/ &/ite/ 6 → /kakite/ 8 → /kakite/'writing'

/kaw/ &/ite/ 2, 6 → /kawite/ 9 → /kawite/'buying'

/henas/ &/ite/ 5 → /henasite/'speaking'

/tob/ &/ite/ 2, 6 → /tobute/ 7 → /tobide/ 9 → /tobide/ 10

/tonde/'flying'.
3) Past form.

The suffix of a past form is /ita/ and its morphophonemic rules are the same as gerund morphophonemic rules (I call the suffixes /ite/ and /ita/ as T-suffixes):

/nomä/ → /nomäta/ → /nomäda/ → /nomäda/ ‘drank’.

When the syllable of an accented consonant-stem verb is followed by a T-suffix after applying Rule 10, the accent shifts to the next syllable:

Rule 11. Right shift to T-suffix.

CV<1acc>s → S<acc>s<1acc>
/nondä/ → /nondä/, /hasätta/ → /hasätta/.

Rule 11 does not apply to a vowel-stem verb:
/tabäta/ → */tabätta/ ‘ate’
/nigätta/ → */nigätta/ ‘escaped’.

Rule 11 shifts an accent only to T-suffixes:
/?iikä/ → */?ikä/ ‘a family’
/kaança/ → */kansa/ ‘inspection’.

As I have already discussed in connection with compound nouns, when the first syllable has an accent and the vowel of the second syllable is [-high], the accent on the first syllable moves to the second syllable:

Rule 12. Right shift to second syllable.

[[+native] [Rank #]] # S<1acc>C[-high] V # → S<acc>s<1acc> #
/mi/ & /ite/ → /mita/ → /mitar/ 'saw'.

As I have mentioned already, Rule 12 only applies to native words:

/dem/ → */demon/ 'demonstration' (foreign)

/tsho/ → */toho/ 'walking' (Sino-Japanese)

/hiqe/ → */hige/ 'humility' (Sino-Japanese).

According to Rule 12, /mi/ & /na/ should be /mina/, but we have /mina/ 'do not see'. The suffix /ru/ is deleted after Rule 12.

Rule 13. "(R)u" loss.

ru → Ø / _ na

/mi/ & /ru/ & /na/ → /mina/.

/w/ occurs only before /a/ in the Toockyoo dialect, but in the Hirosaki dialect, /w/ is deleted even before /a/ when it is followed by a suffix.


w → Ø / _ & V

/kaw/ & /is/ & /ru/ 3 1/4 /kawsu/ 5 /kawsu/ 14 /kaWSu/ /tomow/ & /anes/ 4 /tomowan/ 14 /tomown/.

Rule 15. Vowel devoicing.

\[
\begin{matrix}
\begin{array}{c}
+ \text{high} \\
- \text{acc}
\end{array}
\rightarrow
\begin{array}{c}
- \text{voice} \\
- \text{voice}
\end{array}
\end{matrix}
\]

/tuk/ & /is/ & /ru/ 3 1/2 /tukasu/ 15 /tukasu/ 'put'

/tate/ & /is/ & /ita/ 3 1/5 /tatesita/ 15 /tatesita/ 'built'

/poti/ & /ite/ 3 1/4 /potite/ 15 /potite/ 'want to fall'.

\[ -\text{voice} \rightarrow [+\text{voice}] / [+\text{voice}] \rightarrow [+\text{voice}] \]

/tatəte/ \(\rightarrow\) /tadəde/ 'building'

/'taketsa/ \(\rightarrow\) /'tageda/ 'opened'.

But /tatesita/ \(\rightarrow\) /tadasita/.

As one exception, there is the suffix /ite/ 'want to'.

/t/ of /ite' never becomes voiced:

/mi/ & /ite/ \(\rightarrow\) /mitə/ 'want to see'

/kakə/ & /ite/ & /kute/ \(\rightarrow\) /kakitekute/ \(\rightarrow\) /kakitekute/ 'want to write'.

As Rule 16 is a general rule, we cannot add the environment of [-acc] to the second vowel of Rule 16.

The demonstrations of negative past sentences are as follows:

\begin{align*}
/tukenêkute/ & \oplus /?arta/ \quad \downarrow \quad \text{Rule 3} \quad \downarrow \quad \text{Rule 6} \\
/tukenêkute/ & \oplus /?atta/ \quad \downarrow \quad \text{Rule 9, 11} \\
\end{align*}

PA 1, 5
\begin{align*}
\{\text{tukenêkute?atta}\} \text{ 'did not put on'}
\end{align*}

\begin{align*}
/'taso/' & /ane/ /ku/ /ite/ & \oplus /?ara/ /ita/ \quad \downarrow \quad \text{Rule 2, 3} \quad \downarrow \quad \text{Rule 6, 9, 11} \\
/'taso' & /sanekute/ & \oplus /?atta/ \quad \downarrow \quad \text{PA 4} \\
\{/'taso' & /sanekute?atta\} \text{ 'did not play'}
\end{align*}
3b. Verbal nouns.

To make a verbal noun, we put the suffix /i/ to a
consonant-stem verb. When /i/ follows an atonic noun,
the preaccent of the atonic noun remains (SC 1):

/ʔ?ok/ &/i/ → /ʔ?oki/'putting'
/ʔ?azimar/ &/i/ → /ʔ?azimari/'beginning'.

When /i/ follows a tonic noun, the accent of the
suffix /i/ remains (SC 2):
/kak/ &/i/ → /kaki/'writing'
/modor/ &/i/ → /modori/'returning'.

1. Nouns plus verbal nouns.

A) When verbal nouns are preceded by atonic nouns, the
preaccents of the atonic nouns remain (SC 1):

/ʔ?ame/+ʔ?uri/ → /ʔ?ame?uri/'selling a candy'
/ʔ?akenoko/+ʔ?ori/ → /ʔ?akenokotori/'taking a bamboo'.

B) When verbal nouns are preceded by tonic nouns, the
second syllables of verbal nouns have accents:

/ʔ?e/+kak/ → /ʔ?ekak/ 'painting'
/ʔ?e/+ʔ?uri/ → /ʔ?e?uri/'selling a picture'
/ʔ?ame/+huri/ → /ʔ?amehuri/'raining'
/sima/+nagasi/ → /simanagasi/'exiling to an island'
/tane/+ʔ?akasi/ → /taneʔakasi/'revealing a trick'
/yor/ +/ʔaruki/ → /yorʔaruki/'walking at night'
/hoʔaru/+ʔkari/ → /hoʔarukari/'catching a firefly'
/yor/ +/ʔazimari/ → /yoruʔazimari/'beginning at night'.

The rules of verbal nouns are as follows:

Rule A. \( \sigma \rightarrow \langle 1 \text{acc} \rangle / \#(\langle \text{acc} \rangle \ldots )+(\ldots ) \# \)

\[ n \quad \text{vn} \]

Rule B. \( \sigma \rightarrow \langle 1 \text{acc} \rangle / \#(\ldots \text{S}\langle 1 \text{acc} \rangle \ldots )+(\text{S} \text{S}\langle \ldots \rangle \ldots ) \# \)

\[ n \quad \text{vn} \]

2. Verbal noun plus present forms of verbs.

When a verbal noun is compounded with a present form of verb, the second syllable from the end has an accent:

\[ /\text{tati}/+/'\text{yoru}/' \rightarrow /\text{tatiy}ö\text{ru}/'\text{drop in}' \]

\[ /'\text{oki}/+/'\text{kaeru}/' \rightarrow /'\text{oki}kä\text{eru}/'\text{replace}' \]

\[ /'\text{uri}/+/'\text{kiru}/' \rightarrow /'\text{urikir}ö\text{ru}/'\text{be sold out}' \]

\[ /'\text{osi}/+/'\text{korosu}/' \rightarrow /'\text{osikor}ö\text{su}/'\text{kill by pushing}' \]

\[ /\text{tati}/+/'\text{agaru}/' \rightarrow /\text{tati}ö\text{garu}/'\text{stand up}' \]

\[ /\text{tori}/+/'\text{kakaru}/' \rightarrow /\text{tori}kä\text{aru}/'\text{begin}' \]

\[ /'\text{uke}/+/'\text{tugu}/' \rightarrow /'\text{uket}ö\text{gu}/'\text{succeed to}' \]

The rule of verbal nouns plus present forms of verbs is as follows:

\[ \sigma \rightarrow \langle 1 \text{acc} \rangle / \#(\ldots )\text{vn}+(\ldots )\text{vn}(r)u \# \]

3. Verbal nouns plus verbal nouns.

When two verbal nouns are compounded, an accent is inserted on the syllable boundary before the first syllable of compound:

\[ \sigma \rightarrow \langle 1 \text{acc} \rangle / \#(\langle \ldots \rangle \ldots )\text{vn}+(\ldots )\text{vn} \#

\[ /\text{kami}/+/'\text{konasi}/' \rightarrow /'\text{kamikonasi}/'\text{chewing}' \]

\[ /\text{katugi}/+/'\text{dasi}/' \rightarrow /'\text{katugidasi}/'\text{carrying out}' \]
/sinobi/+/yori/ → /'sinobiyori/ 'tiptoeing'
/tori/+/kaesi/ → /'torikaesi/ 'recovering'
/tukuri/+/na?osi/ → /'tukurina?osi/ 'remaking'
/musebi/+/naki/ → /'musebinaki/ 'sobbing'
/?uri/+/nokori/ → /?urinokori/ 'lifting merchandise'
/?oki/+/na?osi/ → /?okinasi?osi/ 'replacing'
/hiki/+/modosi/ → /'hikimodosi/ 'bringing back'.

3c. verbs plus particles.

When particles follow verbs, the rules are not always the same as those for nouns plus particles.

We see four different accentuations when particles follow verbs.

Group A.

When a particle follows an atonic verb stem, the preaccent of the verb stem remains (SC 1):

/ʔik/+/i#/wa/ \text{SU}1 → /ʔikiwa/ \text{PA2} [ʔikiwā] 'going (nominative)'

/ʔasob/+/ana/#/ga/ \text{SU}1 → /ʔasobanaga/ \text{PA2} [ʔasobanaga] 'play (order)'.

When a particle follows a tonic verb stem, the accent of the particle remains (P 1):

/kak/+/i#/wa/ \text{PI} → /kakīwa/ \text{PA2} [kakīwa] 'writing (nom)'

/hare/+/i#/nagara/ \text{PI} → /harenagara/ \text{PA3} [harenagara] 'becoming clear'.

Group B.

When a particle follows the atonic present form of a verb, the preaccent of the verb remains (SC 1):
When a particle follows the tonic present form of a verb, the accent of the verb remains (SC 4):

/änderu/#/*ga/ $SC_4$ /änderuga/$PA_1^3$ [änderuga] 'eat (question)'

/yomu/#/*bega/ $SC_4$ /yömubeuga/$PA_1^3$ [yömubeuga] 'read (question)'.

Group C.

When a particle follows the atonic present form of a verb, an accent is inserted on the syllable boundary between the verb and the particle:

P 3 [Rank %] $\sigma$ $\rightarrow$<1acc>/<1acc>...$\hat{\eta}$<...> $P_5$

/änderu/#/*mäde/ $P_3$ /ändermade/$PA_1^3$ [ändermade] 'until die'

/niru/#/*yorimo/ $P_3$ /niruyorimo/$PA_1^3$ [niruyorimo] 'rather than boiling'.

When a particle follows the tonic present form of a verb, the accent of the verb remains, and the syllable following the accented syllable also has an accent (P 2):

/änderu/#/*mäde/ $P_3$ /ändermade/$PA_1$ [ändermade] 'until kick'

/tänderu/#/*yorimo/ $P_3$ /tänderuyorimo/$PA_1$ [tänderuyorimo] 'rather than eating'.

The rules PA 3 and PA 5 do not apply to the compound to which P 2 also applies:

[tänderuyorimo] $PA_3^*$ [tänderuyorimo] 'rather than eating'

[tänderuyorimo $\&$ nomite] $PA_5^*$ [tänderuyorimonomite]

'want to drink rather than eat'.
Group D.

When a particle follows a verb stem, the accent of the particle remains (SG 2):

/ʔik/ &/ehe/  SC 2  /ʔikehe/  PA 4 [ʔikehe] 'go (order)'
/tabe/ &/re/  SC 2  /tabere/  PA 4 [tabere] 'eat (order)'.

The particles in Group A, B, C and D are as follows:

Group A.

/ʔa/ (emphasis), /ʔmo/'also', /nagara/ (progressive),
/reba/'if', /anaga/(order), /raseru/(causative), /an/ (negative).

Group B.

/ʔga/(question), /ʔna/(question), /ʔni/(objective),
/ʔdo/(conclusion), /ʔa/'let us', /ʔon/(polite, women's speech), /ʔne/(guess), /ʔga/ 'either or', /ʔse/(sureness),
/ʔna/(negative, question), /ʔyo/(will, guess), /zya/ (determination), /ʔbega/(question). Some particles in Group B have more than one meanings. The meaning is determined by the context. Here I gave just one or two of the meanings.

Group C.

/dake/ 'only', /sika/'only', /basi/'only', /me哒/ 'until',
/ʔyor/ 'than', /ʔyorimo/'rather than', /ʔhodo/ 'as',
/ʔkedo/'but', /ʔkedomo/'but', /ʔgure/'about', /ʔdogoro/ 'doing', /ʔbatte/'but', /ʔmonde/ 'because'.

Group D.

/ehe/ (order), /re/ (order), /ro/ (order), /reza/ (order),
The accents when particles follow verbs are as follows:

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>with /naɡara/</td>
<td>with /naɡara/</td>
<td>with /naɡara/</td>
</tr>
<tr>
<td>1 syl. ©ik 'go'</td>
<td>©ik 'go'</td>
<td>©ik 'go'</td>
</tr>
<tr>
<td>2 syl. ©asob 'play'</td>
<td>©asob 'play'</td>
<td>©asob 'play'</td>
</tr>
<tr>
<td>1 syl. kaki 'write'</td>
<td>kaki 'write'</td>
<td>kaki 'write'</td>
</tr>
<tr>
<td>2 syl. haren 'become clear'</td>
<td>haren 'become clear'</td>
<td>haren 'become clear'</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>with /ane/</td>
<td>with /aɡa/</td>
<td>with /bega/</td>
<td>with /maɡe/</td>
</tr>
<tr>
<td>©ikan '</td>
<td>©ikuga '</td>
<td>©ikubega '</td>
<td>©ikumade '</td>
</tr>
<tr>
<td>©asoban '</td>
<td>©asobuga '</td>
<td>©asobubega '</td>
<td>©asobumade '</td>
</tr>
<tr>
<td>kakan '</td>
<td>kaku '</td>
<td>kaku '</td>
<td>kaku '</td>
</tr>
<tr>
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<table>
<thead>
<tr>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>with /kedo/</td>
<td>with /ehie/</td>
</tr>
<tr>
<td>©ikukedo '</td>
<td>©ike '</td>
</tr>
<tr>
<td>©asobukedo '</td>
<td>©asobe '</td>
</tr>
<tr>
<td>kaku '</td>
<td>kak '</td>
</tr>
<tr>
<td>haren '</td>
<td>haren '</td>
</tr>
</tbody>
</table>
3d. Verbs plus auxiliary verbs.

We can divide auxiliary verbs into four groups according to the accentuations of compounds.

Group A.

When an auxiliary verb follows a verb, the accent of the verb remains (SC 4):

/"?ik/\i/\ite/ SC4 /"?itte/ PA2 [?itte]'going'

/hanas/\/\i/itemo/ SC4 /hanasitemo/ PA1 [hanasitemo] PA3 [hanasitemo] 'even if talking'.

Group B.

When an auxiliary verb follows an atonic verb, the accent of the auxiliary verb remains (SC 3):

/"?asob/\/\i/\enta/ SC3 /"?asob\enta/ PA1,3 [?asob\enta] '(it) seems (one) plays'

/"niru/\/\i/\ndabe/ SC3 /nirundabe/ PA1,3 [nirundabe] 'boil (question)'

When an auxiliary verb follows a tonic verb, the accent of the verb remains, and the syllable following the accented syllable also has an accent (P 2). The rules which apply to the compounds of 3c, Group C, apply to the compounds in this group. P 2 also applies to the compounds of verbs plus auxiliary verbs:

/keru/\/\i/\enta/ P2 /ker\enta/PA1 [ker\enta] '(it) seems (one) kicks'

/taberu/\/\i/\ndabe/ P2 /taberundabe/ PA1 [taberundabe]15 'you eat, don't you?'.

Group C.

When an auxiliary verb follows an atonic verb, the
preaccent of the verb remains (SC 1):
/ nak/ &/asēru/ SC₁ / nakasēru/ PA₂ [nakasēru] 'let one cry'
/ ?asob/ &/ane/ SC₁ / ?asobane/ PA₂ [?asobane] 'do not play'.

When an auxiliary verb follows a tonic verb, the accent of the auxiliary verb remains (P₁). P₁ also applies to the compounds of verbs plus auxiliary verbs:
/ kak/ &/rasēru/ P₁ / kakasēru/ PA₁ [kakasēru] 'let one write'
/ tabē/ &/ane/ P₁ / tabene/ PA₄ [tabene] 'do not eat'.

Group D.

When an auxiliary verb follows a verb, the accent of the auxiliary verb remains (AV₁):
/ hare/ &/īsu/ AV₁ / hareīsu/ PA₁ [hareīsu] 'become clear'
/ kak/ &/īsu/ &/ita/ AV₁ / kakīsuta/ PA₁,₃ [kakīsuta] 'wrote'.

The auxiliary verbs in Group A, B, C and D are as follows:

Group A.
/ rube/ 'probably', / ita/ (past), / ite/ (gerund), / itari/ 'or (past)', / itemo/ (gerund with / mo/ 'also, even'.

Group B.

Group C.
/ rasēru/ (causative), / rase/ (passive), / ane/ (negative),
/ anebe/ (negative question), / isode/ 'seem', / ite/ 'want',
/ anesooda/ (negative).
Group D.

/îsu/(polite).

The accents when auxiliary verbs follow verbs are as follows:

<table>
<thead>
<tr>
<th></th>
<th>A</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>with /îte/</td>
</tr>
<tr>
<td>atonic</td>
<td></td>
</tr>
<tr>
<td>1 syl.</td>
<td>̄?ik</td>
</tr>
<tr>
<td>2 syl.</td>
<td>̄?asob</td>
</tr>
<tr>
<td>tonic</td>
<td></td>
</tr>
<tr>
<td>1 syl.</td>
<td>kak̄</td>
</tr>
<tr>
<td>2 syl.</td>
<td>harē</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>with /?enta/</td>
<td>with /ndabe/</td>
</tr>
<tr>
<td>̄?iku?enta</td>
<td>̄ikundabe</td>
<td>̄ikaseru</td>
</tr>
<tr>
<td>̄asobu?enta</td>
<td>̄asobundabe</td>
<td>̄asobaseru</td>
</tr>
<tr>
<td>̄kaku?enta</td>
<td>̄kakundabe</td>
<td>̄kaseru</td>
</tr>
<tr>
<td>̄hareru?enta</td>
<td>̄harerundabe</td>
<td>̄hareraseru</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>with /anē/</td>
<td>with /îsu/</td>
</tr>
<tr>
<td>̄?ikanē</td>
<td>̄ikisu</td>
<td></td>
</tr>
<tr>
<td>̄asobanē</td>
<td>̄asobisu</td>
<td></td>
</tr>
<tr>
<td>̄kakanē</td>
<td>̄kakisu</td>
<td></td>
</tr>
<tr>
<td>̄hareñē</td>
<td>̄haresu</td>
<td></td>
</tr>
</tbody>
</table>
4. Adjectives.

4a. Indicative forms.

Adjective stems have two types of accent, atonic and final accented (tonic) patterns.

Atonic: /ʔama/'sweet', /ʔasa/'shallow', etc.

Final accented: /huto/'fat, thick', /sirō/'white', etc.

The indicative form of an adjective is made by adding the suffix /i/ to a stem. When /i/ is added, /i/ changes to /e/ in the following environment.

Rule 1 [Rank #] i → e / \{ # \} \{ # \} \{ e \} \{ a \} \{ [-velar] o \} \#

/ʔaka/ &/i/ → /ʔakae/'red'
/yowae/a/i/ → /yowae/'weak'
/ʔoso/ &/i/ → /ʔoso/'late'
/ʔi/'&/i/ → /ʔei/'good'.

/i/ is an unaccented morpheme. Therefore, when it follows another morpheme, the accent of the first morpheme remains.

The stem /ʔaka/ has two accents, a preaccent and a final accent: /ʔaka/. When it is followed by particles or it occurs in isolation, the accent on /ka/ remains. When it is followed by other morphemes within a word boundary, its preaccent remains:

/ʔa/or/k/ → /ʔakaku/'red-like'.

But
/ʔaka/#/ʔa dai ga/ → /ʔak da ge/'only red (noun)'
/ʔaka/#/ʔa ga/ → /ʔak a ga/'red (noun, nominative)'.

When /ʔaka/ is used as a noun, the accent on /ka/ remains. Otherwise, the preaccent remains; that is, when /ʔaka/ is followed by a internal word boundary or higher, the accent on /ka/ remains, and when it is followed by [&], the preaccent remains. Thus, /ʔaka/ has two accents in the grammatical point of view.

When /i/ follows a stem of which the final syllable is /Cu/, the /u/ becomes /i/ if the /C/ is not [+velar].

Rule 2 [Rank #] u → i /[-velar] _ & i #
/sau &/i/ → /sam i/ 'cold'
/kay &/i/ → /kai i/ 'itchy'
/ʔusu &/i/ → /ʔusi i/ 'thin'.

If the initial or final vowel /e/ follows or precedes other vowels, the vowels are assimilated to /e/.

Rule 3 [Rank #] V → e / \{ e # \}^#'
yo we e/ → /yowe e/ 'weak', /ʔo se e/ → /ʔose e/'late'
ʔe i/ → /ʔe e/ 'good', /hi ro e/ → /hri e e/ 'wide'
si re e/ → /sir e e/ 'white'.

The final vowel of a word is deleted if the vowel is preceded by the same vowel. That is, the second vowel of long vowel is deleted before a word boundary.

Rule 4 [Rank #] V₁ → Ø / V₁ _ #
/sam i i/ → /sam i/ 'cold', /kay i i/ → /kai i/ 'itchy'
\[\text{Rule 4 is a general rule which deletes a vowel before a word boundary:}\]
\[\text{\textbackslash{sense\textbar}} \to \text{\textbackslash{sense\textbar} a teacher\textbar}, \text{\textbackslash{kyoo\textbar}} \to \text{\textbackslash{kyo\textbar} today\textbar}.\]

This shortening rule is different from that of a non-final syllable. When a syllable is not at the end of a word, the second vowel of long double vowel is not completely deleted. Suppose each mora has the same length, \[\text{\textbackslash{oo\textbar}i\textbar}, \text{\textbackslash{taazan\textbar}}, \text{\textbackslash{toohoo\textbar}}, \text{\textbackslash{gyunu\textbar}yu\textbar}, \text{etc.}\]

By rule 4, the final vowel of a long double vowel is deleted. But the second /o/ of /\textbackslash{oo\textbar}i\textbar/ is not deleted and a half length of the vowel remains:
\[\text{\textbackslash{oo\textbar}i\textbar} \to \text{\textbackslash{o\textbar}i\textbar}, \text{\textbackslash{taazan\textbar}} \to \text{\textbackslash{ta\textbar}z\textbar an\textbar}, \text{\textbackslash{toohoo\textbar}} \to \text{\textbackslash{to\textbar}ho\textbar}, \text{\textbackslash{gyunu\textbar}yu\textbar} \to \text{\textbackslash{gyu\textbar}nu\textbar}.\]

Although the final /u/ in /\textbackslash{gyunu\textbar}yu\textbar/ is deleted, if we add /ya/ or other morphemes after it, it is not deleted:
\[\text{\textbackslash{gyunu\textbar}yu\textbar}+/ya/ \to \text{\textbackslash{gyu\textbar}nu\textbar ya\textbar}.\]

The indicative forms of adjectives always delete the last vowels of double vowels:
\[\text{\textbackslash{ook\textbar}li\textbar} \to \text{\textbackslash{o\textbar}ki\textbar}, \text{\textbackslash{ook\textbar}li\textbar}/\textbackslash{hako\textbar} \to \text{\textbackslash{o\textbar}k\textbar hako\textbar},\]
\[\text{\textbackslash{ook\textbar}li\textbar}/\textbackslash{be\textbar} \to \text{\textbackslash{o\textbar}k\textbar be\textbar}.\]

/\textbackslash{CV\textbar}/ is a syllable and its length is the same as the syllable /\textbackslash{CVG\textbar}/, but the length is longer than the syllable /\textbackslash{CV\textbar}/.
If the final syllable of a stem is /ko/, /go/, /po/, /ku/ or /o/ followed by a vowel, /ʔ/ is automatically inserted between the final vowel of the stem and the suffix /i/.

Rule 5 [Rank #]  Ø → ? / \{[+grave] \} V → \{[+high] \} #

/kōʔ/i/ → /kōʔi/ 'thick'
/kasikoʔ/i/ → /kasikoʔi/ 'cleaver'
/megoʔ/i/ → /megōʔi/ 'cute'
/ʔoʔ/i/ → /ʔoʔi/ 'many'
/ʔakippoʔ/i/ → /ʔakippōʔi/ 'changeable'
/hokorippoʔ/i/ → /ʔhokorippoʔi/ 'dusty'
/nikuʔ/i/ → /nikūʔi/ 'hateful'
/hikuʔ/i/ → /nikūʔi/ 'low'.

There is an exception:
/sugōʔ/i/  \[\rightarrow \] /sugōe/  \[\rightarrow \] /sugē/  \[\rightarrow \] /sugō/ 'great'.

4b. Adjectives plus particles.

We can classify the compounds of adjectives plus particles into two groups.

Group A.

When a particle follows the atomic stem or the atomic indicative form of an adjective, the preaccent of the adjective remains (SC 1):

/ʔasaʔ/i/  \[\xrightarrow{SC1} \]/ʔase/  \[\xrightarrow{PA2} \]/ʔase/ 'shallow'
/ʔomotaʔ/kute/  \[\xrightarrow{SC1} \]/ʔomotakute/  \[\xrightarrow{PA2} \]/ʔomotakute/ 'heavy'
/ʔomoteʔ/be/  \[\xrightarrow{SC1} \]/ʔomotebe/  \[\xrightarrow{PA2} \]/ʔomotebe/ 'heavy (question)'.
When a particle follows the tonic stem or the tonic indicative form of an adjective, the accent of the adjective remains (SC 4):

\[ \text{SC4} \rightarrow \text{PA}^1 \] 'blue'

\[ \text{SC4} \rightarrow \text{PA}^1 \] 'happy'

\[ \text{SC4} \rightarrow \text{PA}^1 \] 'cruel (question)'.

There is no way to tell where the particles in Group A have accents in the underlying forms, because only the accents of adjectives remain. The rule of adjectives plus the particles in Group A can be written in one rule as follows:

\[ \sigma \rightarrow \langle \text{acc} \rangle / \% (\ldots \langle \text{acc} \rangle \ldots) \# \langle \ldots \ldots \rangle \% \]

Group B.

When a particle follows the atomic indicative form of an adjective, the preaccent of the particle remains (SC 3):

\[ \text{SC3} \rightarrow \text{PA}^1 \] 'although (it is) heavy'

\[ \text{SC3} \rightarrow \text{PA}^1 \] 'more than cheap'.

When a particle follows the tonic indicative form of an adjective, the accented syllable and the syllable of the adjective following the accented syllable have accents (P 2):
"a?o?i/#"'kedo/ P^2 \rightarrow "a?o?i'kedo/ PA^1 ["a?o?i'kedo]

'though (it is) blue'

"medete"/"yorimo/ P^2 \rightarrow "medete'yorimo/ PA^1 ["medete'yorimo]

'rather than happy'.

The particles in Group A and B are as follows:

**Group A.**

/"i/, /"ku/, /"kute/, /"kumo/, /"kane/(negative), /"ba/'if',

/"be/(question), /"si/'be', /"ka/(question), /"to/'be said',

/"ga/(question).

**Group B.**

/"noni/'although', /"kedo/'although', /"kedomo/'although',

/"yorि/'than', /"yorimo/'rather than', /"hodo/'more',

/"gure/'about', /"nari/'or', /"hade/'because', /"gara/

'because'.

The accents when particles follow adjectives are as follows:

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<thead>
<tr>
<th></th>
<th>A</th>
<th></th>
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</thead>
<tbody>
<tr>
<td></td>
<td>with /&quot;i/</td>
<td>with /&quot;kute/</td>
</tr>
<tr>
<td>atonic</td>
<td></td>
<td></td>
</tr>
<tr>
<td>'a?asa</td>
<td>'asa</td>
<td>'asa kute</td>
</tr>
<tr>
<td>'shallow'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>'a?omota</td>
<td>'omote</td>
<td>'omotakute</td>
</tr>
<tr>
<td>'heavy'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>'yasuppo</td>
<td>'yasuppo'i</td>
<td>'yasuppokute</td>
</tr>
<tr>
<td>'cheap'</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>tonic</td>
<td></td>
<td></td>
</tr>
<tr>
<td>'i 'good'</td>
<td>'e</td>
<td>'skute</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>'a?o 'blue'</td>
<td>'a?o'i</td>
<td>'a?q kute</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>medete 'happy'</td>
<td>medete</td>
<td>medetakute</td>
</tr>
</tbody>
</table>
4c. Adjectives plus auxiliary verbs.

We can divide auxiliary verbs into two groups:

Group A.

When an auxiliary verb follows the atonic indicative form of an adjective, the preaccent of the auxiliary verb remains (AV 1).

\[
\text{\textbackslash"ase/\textbackslash"enta/} \xrightarrow{AV1} \text{\textbackslash"ase\textbackslash"enta/} \xrightarrow{\text PA1,3} \text{\textbackslash"ase\textbackslash"enta/} \quad \text{look shallow}
\]

\[
\text{\textbackslash"omote/\textbackslash"yooda/} \xrightarrow{AV1} \text{\textbackslash"omote\textbackslash"yooda/} \xrightarrow{\text PA1,3} \text{\textbackslash"omote\textbackslash"yooda/} \quad \text{look heavy}
\]

When an auxiliary verb follows the tonic indicative form of an adjective, the accent of the adjective remains and the syllable of the adjective following the accented syllable also has an accent (P2):

\[
\text{\textbackslash"o/\textbackslash"enta/} \xrightarrow{P2} \text{\textbackslash"o\textbackslash"enta/} \xrightarrow{\text PA1} \text{\textbackslash"o\textbackslash"enta/} \quad \text{look good}
\]

\[
\text{\textbackslash"o/\textbackslash"i/\textbackslash"yooda/} \xrightarrow{P2} \text{\textbackslash"o\textbackslash"i\textbackslash"yooda/} \xrightarrow{\text PA1} \text{\textbackslash"o\textbackslash"i\textbackslash"yooda/} \quad \text{look blue}.
\]
Group B.

Unlike the Tookyoo dialect, by adding /datta/ or /katta/ to the adjective stem, I cannot make an adjectival verb in the Hirosaki dialect. In the Hirosaki dialect, by adding /attā/ (<*eraita) or /arisuta/ (<*erisaita), we make an adjectival verb. /attā/ and /arisuta/ always follow a particle /kute/. As there is a minor phrase boundary between /kute/ and /attā/, /arisuta/, SC, P, AV rules do not apply to crossing over @, and PA 5 applies to the compound:

[?omotekucattā] 'was heavy'

[?a(okute?arisuta] → [?a(okute?arisuta] 'was blue'.

4d. Adjectives plus nouns.

When an adjective is followed by a noun, the PA rules apply to the adjective and the noun individually. There is a minor phrase boundary between an adjective and a noun.

\[
\begin{array}{ll}
/\text{tate}/ & /\text{ti}/ \\
\downarrow \text{PA2} & \downarrow \text{PA2} \\
[\text{tate} & \text{ti}]
\end{array}
\quad
\begin{array}{ll}
/\text{okkane}/ & /\text{tokage}/ \\
\downarrow \text{PA2} & \downarrow \text{PA2} \\
[\text{okkane} & \text{tokage}]
\end{array}
\]

't red blood'

'fearful lizard'

\[
\begin{array}{ll}
/\text{takari}/ & /\text{asa}/ \\
\downarrow \text{PA4} & \downarrow \text{PA4} \\
[\text{takari} & \text{asa}]
\end{array}
\quad
\begin{array}{ll}
/\text{nemute}/ & /\text{aki}/ \\
\downarrow \text{PA2} & \downarrow \text{PA1} \\
[\text{nemute} & \text{aki}]
\end{array}
\]

'bright morning'

'sleepy autumn'

\[
\begin{array}{ll}
/\text{tate}/ & /\text{tuku?e}/ \\
\downarrow \text{PA1} & \downarrow \text{PA2} \\
[\text{tate} & \text{tuku?e}]
\end{array}
\quad
\begin{array}{ll}
/\text{e}/ & /\text{e}/ \\
\downarrow \text{PA4} & \downarrow \text{PA4} \\
[\text{e} & \text{e}]
\end{array}
\]

'high desk'

'good picture'
/meigo?i/ % /sakana/
↓ PA1,5  ↓ PA2
[ meigo?i sakana ]
'cute fish'

/meigo?i/ % /suzume/
↓ PA1,5  ↓ PA1,3
[ meigo?i suzume ]
'cute sparrow'.

In rapid speech, when an atonic adjective is followed by a noun, a noun plus a particle, or a noun plus an auxiliary verb, the syllables between high pitches also become high-pitched:

[tumetekeze] → [tumetekeze] 'cold wind'

[?okkanetokage] → [?okkanetokage] 'fearful lizard'

[mari?atama] → [mari?atama] 'round head'


[?okkanetokageda] → [?okkanetokageda] 'is a fearful lizard'.

When a tonic adjective is followed by a noun, the syllables between high pitches do not become high-pitched in rapid speech:

[Hayesakana] → *[Hayesakana] 'fast fish'

[?ekatana] → *[?ekatana] 'good sword'.

In a compound in which a tonic adjective is followed by a noun, a noun plus a particle, or a noun plus an auxiliary verb, if the adjective is emphasized, the accent of the noun, the particle or the auxiliary verb is deaccented:

/?atig?/sake/ → [?atigisake] 'hot sake'

/nage?/asi/ → [nageasi] 'long legs'

/take?/ko?ega/ → [takeko?ega] 'loud voice (nominative)'


/syakkō/i/%/kara/ → [syakko ikara] "even a cold body"

/ra?oi/i/%/mekara/(me#/kara) → [ra?oi imekara] "from blue eyes".

The accent of a noun is not deaccented in the compound emphasizing an adjective if the adjective is atonic:

/ra?akari/i/%/hi/ → [ra?akarihi], *[ra?akarihi] 'clear day'

/ra?utukusi/i/%/hana/ → [ra?utukusihana], *[ra?utukusihana] 'beautiful flower'

/ma/i/%/mitigo/ → [ma mitigo], *[ma mitigo] 'delicious strawberry'.
footnotes

1 I do not distinguish between a glottal stricture and a glottal stop in a phonetic level. (?) should be changed to a glottal stricture in a phonetic level if it does not occur at the beginning of utterance, that is, if it does not occur after a pause.

2 Haruhiko Kindaichi (1968:313) uses the term "taki". Suppose 0 means an unaccented syllable and • means an accented syllable, instead of writing •0 (like the word /'pæm/ 'rain'), he uses a taki. •0 = 00, 0• = 00. In this paper, I am using the notion of Kindaichi's taki, and there are other scholars who use the different notions for the fall and raise of pitch. Kindaichi argues that to use only taki is enough and more precise.

For the Hirosaki dialect, I use a taki in the Phonemic level and put one taki for most morphemes. Some morphemes do not have takis and some morphemes have more than one takis in the underlying forms. There is a taki either between syllables, or after the final syllable, or before the initial syllable, 00 or 00' or '00, respectively. A taki indicates a pitch dropping after a syllable, but it is not always so on the surface form as I discuss later. I use a taki in the phonemic level to indicate the position of accent and use a straight line over a syllable in the phonetic level to indicate a high pitch: /00/ \(\rightarrow [\ddot{00}]\).

3 These terms, "initial accented pattern", "middle accented pattern" and "final accented pattern", correspond to the Japanese notions "atamadaka gata", "nakadaka gata" and "odaka gata", respectively.

4 In Japanese notions, it is called "heiban gata".

Samuel Martin (1967:247) uses the term "atonic" and writes as follows:
"...atomic, having no significant fall of pitch within it (word)".

5 Here I chose /ga/ as the particle. Even if I chose a particle /no/, there is no change of the place of accent in the Hirosaki dialect:

/hanə#/no/'of' → /hanano/'of a flower'.

But in the Tokyo dialect, the particle /no/ is not very reliable for testing because it is fairly irregular. For example:

/hana/'a nose'#/no/ → [hanano]'of a nose'
/hana/'a flower'#/no/ → [hanano]'of a flower'.

In the Hirosaki dialect, /hana/#/no/ → [hanaŋo]'of a nose'.

In both the Tokyo and Hirosaki dialects, /hana/ 'a flower' is a "final accented" word, /hanəga/. There is no rule in the Tokyo dialect that, when the particle /no/ is preceded by a "final accented" word, the phrase becomes "atonic". James McCawley presents the no-rule (1968:181).

6 Konoshima (1961) uses the accent mark [ ¯ ] which indicates that a high pitch falls to a low one within a syllable. Kindaichi (1968:203) explains it by dividing a mora into a phoneme. He discuss it with the example of /ʔame/ 'rain' in the Kyooto dialect. The /me/ of /ame/ consists of two phonemes, /m/ and /e/; /m/ has an accent but not whole /me/. /ʔame/is accented as 00. That is, /me/, 0 is considered as the combination of 0 and 0.

The pitch of /me/ falls from high to low is the same as the Hirosaki dialect, but there is not the 0 type accent in the underlying forms in the Kyooto and Hirosaki dialects. In the Kyooto and Hirosaki dialects, /ʔame/, in isolation, is pronounced as 00, but when /ʔame/ is followed by other morphemes, for instance, /ga/, it is pronounced as 000. This means that the underlying accent of /ʔame/ is 00 or 00̃, not 00 or 00̃, and 0 or 0̃ is pronounced as 0, 0̃, or 0̃
on the surface form if the syllable is not followed by another morpheme. That is, *[hanayaka] or *[?enude] never exists in the Hirosaki dialect. The dialect which has the 0 type in the underlying form shows the accent of /ame/ plus /ga/ as 000, such as the Takamatsu dialect (the Kyooto-Oosaka type).

There is another solution on which to establish the underlying form as 0 in the Hirosaki dialect, and when 0 is followed by another morpheme, 0 becomes 0 on the surface form.

7 A mora consists of either V₁, CV, CyV, N(mora nasals), V₂(after vowel, vowel gemination) or Q(mora obstruent). The last three are called bound moras, which can have no kind of meaning. A syllable consists of either one, two or three moras.

\[
\begin{array}{c}
(C)(y) & V & (V) & N \\
\underline{\text{mora}} & \underline{\text{mora}} & \underline{\text{mora}} & \underline{\text{syllable}}
\end{array}
\]

Thus, /kingyo/'gold fish', /seeya/'holy night', /kitto/'surely' consist of three moras and two syllables for each, /tensuu/'score', /bannin/'a guard', /hakken/'discovery', /kyoo/ /dei/'a brother' consist of four moras and two syllables for each.

8 McCawley (1968:180) explains the syllable boundary as follows: "... the proper bearer of abstract accent marks is not the syllable but rather the syllable boundary. ...; in cases where the position for accent insertion turns out to be in the middle of a syllable, the accent is to go on the syllable boundary at the end of that syllable".

McCawley is here talking about the abstract accent, and not the surface form. Thus, in /kan/ 'a can', the accent is in the middle of a syllable, but the abstract accent will be indicated as /kan/, which is on the syllable
boundary. I put the accent on the syllable boundary in the abstract sense and the accent becomes high-pitched over the syllable on the surface form:

/ōo/ → [ōo], /ōōo/ → [ōōo].

9 Following McCawley (1968), the term rank of a rule indicates the juncture defining the stretches on which the rule operates and, as I mentioned before, the juncture forms a hierarchy under which any occurrence of a juncture also counts as an occurrence of all "weaker" junctures. That is, if a rank is [%, the rule operates on the juncture [%], [#], [+] or [&]. The examples of PA2 are as follows:

#/ sakura/+^moti/# → / sakuramotii/ → [sakuramoti] 'sakuramochi' (a kind of rice cake)

%/ sakuramotii/#/ga/% → / sakuramotiga/ → [sakuramotiga] 'sakuramochi (nominative)'

The rank means that the rule cannot operate over the juncture in rank or over a higher juncture than it. That is, PA2 does not apply to the following sentence:

/' sakuramotiga/ω/ʔaru/ → *[sakuramotigaʔaru], but [sakuramotiga]ω[ʔaru] → [sakuramotigaʔaru]

'There is sakuramochi'

10 /hoomonkyaku/, /gensiryoku/ and /sensulkan/ consist of two nouns for each:

/ hoomon/+^kyaku/ → /hoomonkyaku/
/gensii/+^ryoku/ → /gensiryoku/
/sensui/+^kan/ → /sensulkan/.

The preaccents of the second nouns remain in these compounds which I will discuss later (Other rules for compounds, P. 18).

11 I assume /bokusii/ and /siryoku/ are the underlying forms which are the surface forms in the Tookyoo dialect.

12 P1 and P2 apply not only to compounds with particles but also to compounds with auxiliary verbs.
I follow Hirayama's classifications (1969) of auxiliary verbs (zyodooshi).

/w/ is /p/ in the underlying form. McCawley (1968) represents the phonological rules by which /p/ becomes /w/ (Rules 9, 10 and 30). In this paper I start from /w/ ignoring its sound change.

CVCCV becomes CVCCV. In formal speech, some people pronounce /no/ without dropping /o/. Then, /no/ does not have a high pitch on the syllable.

/tab eru#/ /nodabe/ /tab eru nodabe/ [tab eru nodabe].
Appendix

The demonstrations by using the rules for compound nouns.

A. Native nouns.

a) CN A and PA 2.

CN A $\sigma \rightarrow \langle ^{1}\text{acc} \rangle / ^{\#} \langle ^{1}\text{acc} \rangle \ldots + (\ldots . . . ) ^{\#} \text{nat} \text{n}$

PA 2 [ ] $\rightarrow \lbrack \text{high pitch} \rbrack / ^{\#} \langle ^{1}\text{acc} \rangle \ldots \ldots \ldots ^{\#}$

'/ko/+/?yagi/CNA '/koyagi/PA2[koyagi] 'a small cow'
'/?i/+/?hukuro/CNA '/?ibukuro/PA2[?ibukuro] 'stomach'
'/?ame/+/?sama/CNA '/?amedama/PA2[?amedama] 'taffy'
'/take/+/?hasi/CNA '/takebasi/PA2[takebasi] 'bamboo chopsticks'
'/tikara/+/?tanesi/CNA '/tikaradanesi/PA2[tikaradanesi] 'testing one's power'
'/sakura/+/?moti/CNA '/sakuramoti/PA2[sakuramoti] 'rice cake with a cherry leaf'
'/takenoko/+/?yama/CNA '/takenokoyama/PA2[takenokoyama] 'a bamboo mountain'
'/niwatori/+/?ko/CNA '/niwatorigoya/PA2[niwatorigoya] 'a chicken house'
'/?onsen/+/?miyage/CNA '/?onsenmiyage/PA2[?onsenmiyage] 'a souvenir of a spa'
'/yuubin/+/?hako/CNA '/yuubinbako/PA2[yuubinbako] 'a mail box'

b) CN B, PA 1 and PA 3.

CN B $\sigma \rightarrow \langle ^{1}\text{acc} \rangle / ^{\#} \ldots \ldots \ldots \ldots ^{\#} \text{nat} \text{n}$

PA 1 [ ] $\rightarrow \lbrack \text{high pitch} \rbrack / \ldots \ldots \langle ^{1}\text{acc} \rangle \ldots ^{\#}$

PA 3 [ ] $\rightarrow \lbrack \text{high pitch} \rbrack / \odot \ldots \ldots \lbrack \text{high pitch} \rbrack (\ldots ) ^{\#}$

/me/+/?kusu/CNB '/megusu/PA1[megusu] 'eye lotion'
/wata/+/?tebukuro/CNB '/watatebukuro/PA1[watatebukuro] 'cotton glove'
/budoo/+/?hatake/CNB '/budooihatake/PA1[budooihatake] 'a vineyard'
c) CN C and PA 4.

CN C  σ → <1acc>/<...SS<1acc>+(...[+low]<V<1acc> n at.n
PA 4 <1acc> → [high-falling]/ $... ...$ $...$

/yū+/hana/CNC /yubanā/PA4 [yubanā] 'the flower in a bath'
/kika-/koya/CNC /kikaigoya/PA4 [kikaigoya] 'a shed with machine in it'
/yane+/ura/CNC /yaneura/PA4 [yaneura] 'an attic'
/sagyoo+/heya/CNC /sagyoobeya/PA4 [sagyoobeya] 'working room'
/ôya+/beke/CNC /ôyabaka/PA4 [ôyabaka] 'an overindulgent parent'
/minami+/sima/CNC /minamizima/PA4 [minamizima] 'a south island'
/ame+/sora/CNC /amezora/PA4 [amezora] 'a rainy sky'
/kawa+/makura/CNC /kawamakura/PA4 [kawamakura] 'a leather pillow'
/hana+/kase/CNC /hanagasā/PA4 [hanagasā] 'a painted paper parasol'
/sumi+/koya/CNC /sumigoya/PA4 [sumigoya] 'a charcoal burning shed'
/otoko+/namida/CNC /ototokonamida/PA4 [ototokonamida] 'men's tear'

d) CN D, (free variation PA 0,) and PA 1 and PA 3.

CN D  σ → <1acc>/<...+(... S) # <n at.n
PA 0 +(...SC[+high]<V S) # → +...S<1acc>S S #

/ôe+/hude/CND /ôehude/PA1 [ôehude] 'a painting brush'
/te+/ôasi/CND /ôeôasi/PA1 [ôeôasi] 'a hand and a leg'
/te+/hukuro/ [tebukuro] 'a glove'
/hibasira/ [hibasira] 'a pillar of fire'
/konayuki/ [konayuki] 'powdery snow'
/irō/ [irotami] 'colored paper'
/oyayubi/ [oyayubi] 'a thumb'
/kataguruma/ [kataguruma] 'piggy-back'
/yama?arasi/ [yama?arasi] 'mountain storm'
/mugi/ [mugimochi] 'boiled rice with barley'
/haru/ [harusame] 'spring rain'
/matu/ [matukasa] 'a pine cone'
/kinu/ [kinu] 'silk thread'
/haru/ [haruyama] 'spring mountain'
/matubayashi/ [matubayashi] 'a pine wood'
/hari/ [harisigoto] 'needlework'
/haru/ [haruitago] 'spring strawberry'
/tatamakazu/ [tatamakazu] 'the number of people'
/tanuki/ [tanukibaba] 'a foxy old woman'
/hotaru/ [hotarubikari] 'the glow of a firefly'
/kuziraniiku/ [kuziraniku] 'meat of a whale'
/Amorimuse/ [Amorimuse] 'an Amori girl'
/hanagatakebu/ [hanagatakebu] 'a favourite'
\(/\text{suzume/+/hako/CN2} /\text{suzumebako/P41} [\text{suzumebako}]\)
'a box for a swallow'

\(/\text{huro/+/mizu/CN2} /\text{huromizu/P41} [\text{huromizu}]\) 'bath water'

\(/\text{kabuto/+/musi/CN2} /\text{kabutomusi/P41} [\text{kabutomusi}]\) 'a beetle'

B. Sino-Japanese.

a) CN 1, AR A, PA 1, PA 3 or PA 4.

CN 1  \(\sigma \rightarrow <1\text{acc}/ \# \ldots +(\ldots <1\text{acc}> \ldots) \rangle_{S-J} #\)

AR A  \(\% (C(y)V<1\text{acc}>S\ldots) \rightarrow \% S3<1\text{acc}>\ldots\)

if the accented syllable is not followed by one short syllable.

\(/\text{kikai/+/koya/CN1} /\text{kikaigoya/P44} [\text{kikaigoya}]\) 'a shed with a machine'

\(/\text{kentiku/+/sagyo/CN1} /\text{kentikusagyo/A4A/kentikusagyo}\) 
\(\text{P44} [\text{kentikusagyo}]\) 'a building work'

\(/\text{denki/+/ryokin/CN1} /\text{denkiryokin/P41} [\text{denkiryokin}]\)
'electric rates'

\(/\text{denki/+/hatudoki/CN1} /\text{denkihatudoki/P41} [\text{denkihatudoki}]\)
'an electric motor'

\(/\text{senpaku/+/muserkyoku/CN1} /\text{senpakumuserkyoku/P41}, 3\)
\([\text{senpakumuserkyoku}]\) 'a ship's radio station'

\(/\text{hatu/+/hoomonkyaku/CN1} /\text{hatuhoomonkyaku/P41}, 3\)
\([\text{hatuhoomonkyaku}]\) 'the first visitor'

\(/\text{matukawa/+/ziken/CN1} /\text{matukawaziken/A4A/matukawaziken}\)
\(\text{P43} [\text{matukawaziken}]\) 'the Matsukawa affair'

\(/\text{gentai/+/siryoku/CN1} /\text{gentaisiryoku/A4A/gentaisiryoku}\)
\(\text{P41} [\text{gentaisiryoku}]\) 'decreasing of eye sight'

b) CN 2, AR A, PA 1, PA 3 or PA 4.

CN 2  \(\sigma \rightarrow <1\text{acc}/ \# \ldots +(S \ldots) \rangle_{S-J} #\)

\(/\text{kanzei/+/kaitei/CN2} /\text{kanzeikaitai/P41} [\text{kanzeikaitai}]\)
'tariff revision'

\(/\text{ziyu/+/sekai/CN2} /\text{ziyuusekai/A4A/ziyuusekai}\)
\(\text{P44} [\text{ziyuusekai}]\) 'free world'
C. The compound nouns with monosyllabic and special nouns.

Group A. SC 1 or SC 2.

SC 1  o  →<iacc>/@<tacc>......%.....@
SC 2  o  →<iacc>/@.............%.....<tacc> @

hyoǔ 'list'
/ʔuriʔage/+/hyoǔ/SC1 /ʔuriʔagehyoo/PA2 [ʔuriʔagehyoo]
'a list of sales'
/zikan/+/hyoǔ/SC2 /zikanhyoo/PA4 [zikanhyoo] 'a timetable'
/tooroku/+/hyoǔ/SC2 /toorokuhyoo/PA4 [toorokuhyoo]
'a list of registrations'

huuǔ 'style'
/tookyyoo/+/huuǔ/SC1 /tookyyoohuǔ/PA2 [tookyyoohuǔ]
'the Tookyyoo style'
/paɾi/+/huuǔ/SC2 /pariɦuǔ/PA4 [pariɦuǔ] 'the Paris style'
/nihon/+/huuǔ/SC2 /nihonhuǔ/PA4 [nihonhuǔ] 'the Japanese style'

kaʔ 'person'
/kinben/+/kaʔ/SC1 /kinbenka/PA2 [kinbenka] 'a hard worker'
/\enzetu/\ reconcile /\enzetuk\ a public speaker
ko\ powder
/moliko/ a powder for rice cake
/komugiko/ wheat flour
/yoo\ use
/gakkoo\ school use
/kazoku\ family use
/kokumin\ people use
/siki\ style
/towada\ Towada style
/towadasiki\ the Towada style
/igirisu\ the English style
/igirisusiki\ the Greek style
/tura\ facade
/turan\ pose as a girl
/sin\ pose as a gentleman
/sinzuru\ pose as a man
/husi\ type of musical composition
/towada\ the Towada busi
/kusimotobusi\ the Kusimoto busi
/kyuusyuubusi\ the Kyuusyu busi

Group B.
SC 2 applies.
za* 'seat, theater'
/kabuki/+ /za* /qG/ /kabuki4 /PA4 /kabuki4 /PA4 /'the kabuki theater'
/"yooon/+/za* /qG/ /yooon4 /PA4 /yooon4 /PA4 /'Oogon za'
(the name of a theater)
/meizizi/+/za* /meizizi4 /PA4 /meizizi4 /PA4 /'Meijiza'
(the name of a theater)

goo* 'issue'
/tokusyuuu/+/goo* /qG/ /tokusyuugoo4 /PA4 /tokusyuugoo4 /PA4 /'a special issue'
/sangatuu/+/goo* /qG/ /sangatugoo4 /PA4 /sangatugoo4 /PA4 /'March's issue'
/"yitigattu/+/goo* /qG/ /"yitigatugoo4 /PA4 /"yitigatugoo4 /PA4 /'January's issue'

Group C.
SC 3 or SC 4 and PA 1 or (and) PA 3.
SC 3 σ → <1acc> / $ (S) <1acc> ... % <1acc> ... $
SC 4 σ → <1acc> / $ ... <1acc> ... % ... $

'ke 'family'
/"yikeda/+/"yke /qG/ /"yikeda4 /PA4 /"yikeda4 /PA4 /'the Ikeda family'
/saidoo/+/"yke /qG/ /saidooke /PA4 /saidooke /PA4 /'the Saidoo family'
/kobayasi/+/"yke /qG/ /kobayasike /PA4 /kobayasike /PA4 /'the Kobayasi family'
/hatanoke/+/"yke /qG/ /hatanoke /PA4 /hatanoke /PA4 /'the Hatano family'

'bi 'beauty'
/towadabi/+/"ybi /qG/ /towadabi /PA4 /towadabi /PA4 /'Towada beauty'
/sizenbi/+/"ybi /qG/ /sizenbi /PA4 /sizenbi /PA4 /'natural beauty'
/hakutibi/+/"ybi /qG/ /hakutibi /PA4 /hakutibi /PA4 /'idiotic beauty'
"teki -ish"
/seizi+/"teki/SC3 /seiziteki/PA1 [seiziteki]PA3
[seiziteki] 'political'
/syakai+/"teki/SC3 /syakaiteki/PA1 [syakaiteki]PA3
[syakaiteki] 'social'
/keizai+/"teki/SC3 /keizaiteki/PA1 [keizaiteki]PA3
[keizaiteki] 'economical'
/americika+/"teki/SC4 /americaketeki/PA1 [americaketeki]
PA3 [americaketeki] 'American'

gaku 'ology'
/syakai+/"gaku/SC3 /syakagaku/PA1 [syakagaku]PA3
[syakagaku] 'sociology'
/seizi+/"gaku/SC3 /sezigaku/PA1 [sezigaku]PA3
[sezigaku] 'political science'
/gengo+/"gaku/SC4 /gengogaku/PA1 [gengogaku]PA3 [gengogaku]
'linguistics'
/buturi+/"gaku/SC4 /buturigaku/PA1 [buturigaku]PA3
[buturigaku] 'physics'

geki 'theater'
koten+/"geki/SC3 /kotengeki/PA1 [kotengeki]PA3
[kotengeki] 'classical play'
eigo+/"geki/SC3 /eigogeki/PA1 [eigogeki]PA3
[eigogeki] 'English play'
/kindai+/"geki/SC3/kindageki/PA1 [kindageki]PA3
[kindageki] 'modern play'
huranusu+/"geki/SC4 /huranusugeki/PA1 [huranusugeki]PA3
[huranusugeki] 'French play'

coutry'
/kyoowa+/"koku/SC4 /kyoowakoku/PA1 [kyoowakoku]PA3
[kyoowakoku] 'a republic'
/ziyuu+/"koku/SC3 /ziyukoku/PA1 [ziyukoku]PA3
[ziyukoku] 'a free country'
/India/ 'India'
/Asian countries/ 'Asian countries'

/force/ 'force'
/power to control/ 'power to control'
/power to regulate/ 'power to regulate'
/atomic power/ 'atomic power'
/export power/ 'export power'

/policy/ 'policy'
/a policy for liberation/ 'a policy for liberation'
/a policy to relieve/ 'a policy to relieve'
/a defence policy/ 'a defence policy'
/a segregation policy/ 'a segregation policy'

/entrance ceremony/ 'an entrance ceremony'
/a graduation ceremony/ 'a graduation ceremony'
/diving ceremony/ 'diving ceremony'
/wedding/ 'wedding'
Group D.
SC 5 or SC 4 or (and) AR 3.
SC 5 σ → ⟨acc⟩ / C⟨acc⟩...%⟨acc⟩... %
AR B ...C(y)V⟨acc⟩S j % → ...S S⟨acc⟩ %
"ka" -ification
/bizin+/"ka/SC5 /bizinka/PA1 [bizinka] 'beautification'
/nooritu+/"ka/SC5 /noorituka/ARB /noorituka/PA4
[noorituka] 'development for efficiency'
/kikai+/"ka/SC4 /kikai/PA1 [kikai] 'mechanization'
"kyo" 'mirror, lens'
/kontyuu+/"kyo/SC5 /kontyuukyoo/PA1 [kontyuukyoo]
'an insect lens'
/kenbi+/"kyo/SC4 /kenbikyoo/PA1 [kenbikyoo]
'a microscope'
/sanmen+/"kyo/SC4 /sanmenkyoo/PA1 [sanmenkyoo]
'a triple mirror'
"sen" 'battle'
/kyokutoo+/"sen/SC5 /kyokutoosen/PA1 [kyokutoosen]
'a battle in the Far East'
/setuzyoku+/"sen/SC5 /setuzyokusen/ARB /setuzyokusen/
PA4 [setuzyokusen] 'a return match'
/taihelyoo+/"sen/SC4 /taihelyoosen/PA1 [taihelyoosen]
[taihelyoosen] 'the Pacific War'
"ta" 'party'
/?ettoo+/"ta/SC5 /?etto?ai/PA1 [?etto?ai]
'a party to pass the winter'
/kansoku+/"ta/SC5 /kansokutai/ARB /kansokutai/PA4
[kansokutai] 'a survey party'
/gerirat+/"ta/SC4 /geriratai/PA1 [geriratai]
[geriratai] 'a guerrilla party'
"hoo" 'law'
/kyozyu+/"hoo/SC5 /kyozyuyoo/ARB /kyozyuyoo/PA4
[kyozyuyoo] 'teaching method'
/koomuʔin/+/hoo/SC4 /koomuʔinho/PA1[koomuʔinho]PA3
[koomuʔinhol] 'civil service law'
/kyyoʔikuʔiʔin/+/hoo/SC4 /kyyoʔikuʔiʔinho/PA1
[kyyoʔikuʔiʔinhol] 'a law for a member of the Board of Education'.

/kûan/ 'rock'
/kasεi/+/gans/SC5 /kaseiʔan/PA1[kaseiʔan] 'an igneous rock'
/tikuseki/+/gans/SC5 /tikusekigann/PA4
[tikusekigann] 'an accumulated rock'
/sebû/+/gans/SC4 /sebûʔan/PA1[sebûʔan]
[sebûʔan] 'a basalt'
/kazan/+/gans/SC4 /kazanʔan/PA1[kazanʔan] 'a volcanic rock'
Group E.
SC 4 applies.
ha" 'sect'
/kyuusin/+/ha/SC4 /kyuusinha/PA2[kyuusinha]
[kyuusinha] 'the radicals'
/ujoku/+/ha/SC4 /ujokuha/PA1[ujokuha]
[ujokuha] 'the right wing'

/sen/ 'railway line'
/towada/+/sen/SC4 /towadassen/PA2[towadassen]
[Towada railroad]
/tookaidoo/+/sen/SC4 /tookaidoosen/PA1[tookaidoosen]
[tookaidoosen] 'Tookaidoo railroad'

/kawa/ 'river'
/hakodate/+/kawa/SC4 /hakodategawa/PA2[hakodategawa]
'Hakodate river'
/kimon/+/kawa/SC4 /kimongawa/PA2[kimongawa]
'Kimon river'
/edo/+/kawa/SC4 /edoʔawa/PA1[edoʔawa]
[edoʔawa] 'Edo river'
/iwaki/+/'kawa/SC4 /iwakigawa/PA1 [iwakigawa] PA3
    [iwakigawa] 'Iwaki river'
/rondon/+/'kawa/SC4 /rondongawa/PA1 [rondongawa] PA3
    [rondongawa] 'London river'

mati 'city'
/towada/+/'mati/SC4 /towadamati/PA2 [towadamati]
    'Towada city'
/teppoo/+/'mati/SC4 /teppoomati/PA2 [teppoomati]
    'Teppoo city'
/ghu/+/'mati/SC4 /ghumati/PA1 [ghumati] PA3 [ghumati]
    'Gihu city'
/tanbu/+/'mati/SC4 /tanbumatati/PA1 [tanbumatati] PA3
    [tanbumatati] 'Tanabu city'
/naizyosi/+/'mati/SC4 /naizyosimati/PA1 [naizyosimati] PA3
    [naizyosimati] 'Naizyosi city'
Bibliography
Hirayama, Teruo, Zenkoku Akusento Jiten [All-Japan Accent Dictionary], (Tokyo, Tokyooodoo, 1969).
Kindaichi, Nihongo On-In no Kenkyuu [The Study of the Japanese Phonology], (Tokyo, Tokyooodoo, 1968).
Konoshima, Masatoshi, Simpan Aomoriken no Hoogen The Aomori Dialect , (Hirosaki, Tsugarusyoboo, 1868).