Hiatus resolution in Hiroshima Japanese

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Goals

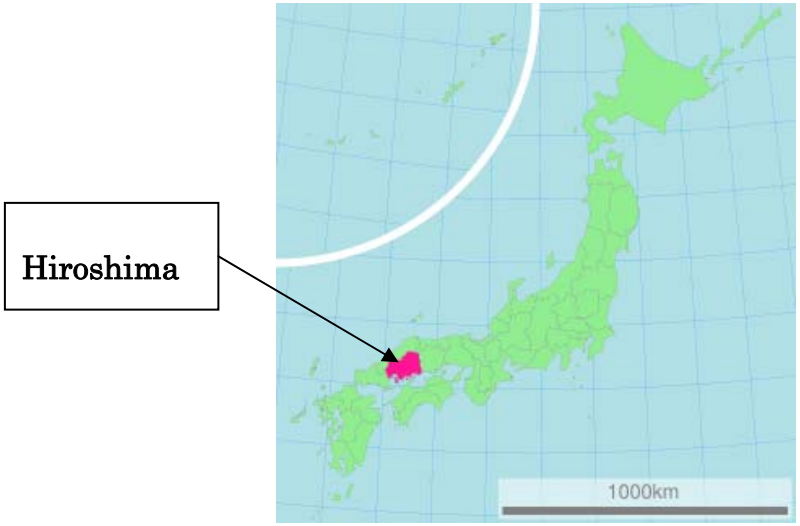
An overarching theme:

The (segmental) phonology of non-standard dialects of Japanese has been understudied in the Generative literature, except for a few exceptions.

- **Tôhoku dialect (Kanai 1982; Muraki 1970).**
- **Shizuoka dialect (Davis & Ueda 2002).**
- **Kagoshima dialect (Kaneko & Kawahara 2002).**
- **Mitsukaido dialect (Sasaki 2008)**
- **(Tonal patterns of several dialects: Haraguchi 1977, also Smith 1998).**

Goals

This is a gap we wish to fill presently, by studying properties of **Hiroshima Japanese.**



(from Wikipedia.org)

Goals

1. Document patterns of hiatus resolution in Hiroshima Japanese.

2. Analyze the patterns and discuss some theoretical consequences:

- ✧ Hiatuses are resolved by a variety of strategies.
  I.e. conspiracy
- ✧ Palatalization should be represented as [-back].
- ✧ Max(F) is necessary.
- ✧ Various kinds of positional faithfulness interact to yield complex patterns of hiatus resolution.

Outline

1. Goals
2. **Data**
3. Analysis
4. Further data
5. Summary

Data

Hiatus resolution of a root-final vowel and an accusative case marker /-o/.

/CV –o/

Data Sources

- **K**: A database of Hiroshima dialect (Kokuritsu-Kokugo-Kenkyuujo 2003), a conversation by three speakers recorded in 1977. Henceforth, the Kokken database.
- **W**: Websites (last accessed Sept. 2007):

  W1: http://www.ikemac.jp/kohza/bunpo2.html

  W2: http://motmot.s1.xrea.com/cgi-bin/dotch/dotch.xcg

  W3: http://www.chugoku-np.co.jp/c-hanb/hougen/index.html
- **H**: The intuition of the second author (a native speaker of Hiroshima dialect).

Outlook

A hiatus created by a root-final vowel and an accusative particle /-o/ is resolved by a variety of phonological alternations
—a case of conspiracy.

Conspiracy: multiple phonological processes eliminate the same phonological structure (Kisseberth 1970; see also Casali 1996**).**

Back Vowel /a/

When the accusative case particle /-o/ is attached to root-final back vowels, it assimilates to the preceding root vowel

Ca+o/ → [Caa]

/sora+o/	→	[soraa]	'sky'	(W1)
/tama+o/	→	[tamaa]	'ball'	(W1)
/hadaka+o/	→	[hadakaa]	'naked'	(W1)
/makekata+o/	→	[makekataa]	'way of losing'	(W3)
/hana+o/	→	[hanaa]	'flower'	(K: 16)

Back Vowel /u/

/Cu+o/ → [Cuu]

/saru+o/	→	[saruu]	'monkey'	(W1)
/maku+o/	→	[makuu]	'screen'	(W1)
/mizu+o/	→	[mizuu]	'water'	(K: 28)
/roosoku+o/	→	[roosokuu]	'candle'	(K: 94)
/waragutsu+o/	→	[waragutsuu]	'straw shoes'	(K: 101)

Back Vowel /o/

/Co+o/ realizes as [Coo], presumably with a long vowel:

/Co+o/ → [Coo]

/nagaino+o/	→	[nagainoo]	'long one'	(K: 33)
/ohuro+o/	→	[ohuroo]	'bath'	(K: 36)
/iʃiko+o/	→	[iʃikoo]	'stone powder'	(K: 36)

Front Vowel /e/

/e/ palatalizes the preceding C; /e/ itself deletes; /-o/ lengthens

/Ce+o/ → [Cʲoo]

/kane+o/	→	[kanʲoo]	'money'	(W1)
/ume+o/	→	[umʲoo]	'plum'	(W1)
/sake+o/	→	[sakʲoo]	'sake'	(W1)
/are+o/	→	[arʲoo]	'that'	
				(K: 24, 26, 35, 55, 79, 101, 102)
/sore+o/	→	[sorʲoo]	'that'	
				(K: 28, 34, 57, 59, 65, 80, 81, 82)

Front Vowel /i/

/i/ palatalizes C; it deletes; the following /-o/ raises to [u] and lengthens

/Ci+o/ → [C^{j}uu]

/kaki+o/	→	[kak^{j}uu]	'persimmon'	(W1)
/kari+o/	→	[kar^{j}uu]	'debt'	(W1)
/meʃi+o/	→	[meʃuu]	'meal'	(W1)
/dottʃi+o/	→	[dottʃuu]	'which'	(W2)
/uʃi+o/	→	[uʃuu]	'cow'	(K: 16)

Interim Summary

Back Vowels: assimilates to root-final back vowels:

/Ca+o/ → [Caa]

/Cu+o/ → [Cuu]

/Co+o/ → [Coo]

Front Vowels: ***/e/*** palatalizes the preceding C; /e/ itself deletes; /-o/ lengthens:

/Ce+o/ → [C^{j}oo]

/i/ palatalizes C; it itself deletes;

the following /-o/ raises to [u] and lengthens:

/Ci+o/ → [C^{j}uu]

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Back Vowel /u/

The progressive assimilation of /-o/ to /u/.

MAX(+high)$_{Root}$ » MAX(-high)$_{Affix}$

/saru+o/	*V_iV_j	MAX(+high)$_{Root}$	MAX(-high)$_{Affix}$
a. → saruu			*
b. saruo	*!		
c. saroo		*!	

Back Vowel /a/

The assimilation of /-o/ to /a/.

Max(+low)$_{Root}$ » Max(-low)$_{Affix}$

/sora+o/	*V_iV_j	MAX(+low)$_{Root}$	MAX(-low)$_{Affix}$
a. → soraa			*
b. sorao	*!		
c. soroo		*!	

Front Vowels: Palatalization

/kane+o/ → [kan^{j}oo]

/kaki+o/ → [kak^{j}uu]

Both [e] and [i] cause palatalization

→ C^{j} is [-back]

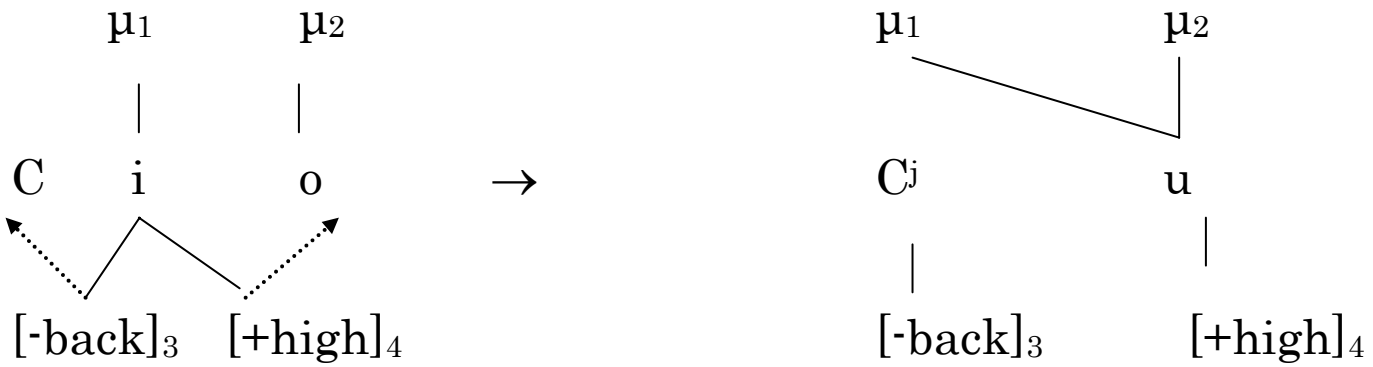
Front Vowel: /Ce+o/

- Given underlying /Ce+o/ sequences, Hiroshima Japanese prefers palatalization (i.e. [C^{j}oo]) to assimilation (i.e. [Coo] or [Cee])
- Palatalization preserves both the [-back] feature of the root vowel and the [+back] feature of the particle vowel.

/kane+o/	*V_iV_j	MAX(-back)$_{Root}$	MAX(+back)$_{Affix}$	*C^{j}
a. → kan^{j}oo				*
b. kaneo	*!			
c. kanoo		*!		
d. kanee			*!	

Front Vowel: /Ci+o/

- We analyze the mapping /Ci+o/ → [Cʲuu] as *fission*:
- [i]'s [-back] docks onto the preceding consonant and [+high] to the following vowel (see Causley 1997 for similar examples in Chipewyan and Navajo; see also Struijke 2000).



/Ci+o/: Max(F)

- This analysis is dependent on MAX(-back) and MAX(+high), rather than IDENT(F)
- These features survive even when the host segment—/i/—redistributes their features.

/nani+o/	*V_iV_j	MAX(-bk)$_{Rt}$	MAX(+hi)$_{Rt}$
a. → nan^{j}uu			
b. nanio	*!		
c. nanuu		*!	
d. nan^{j}oo			*!

MAX(F) picks out a correct outcome.

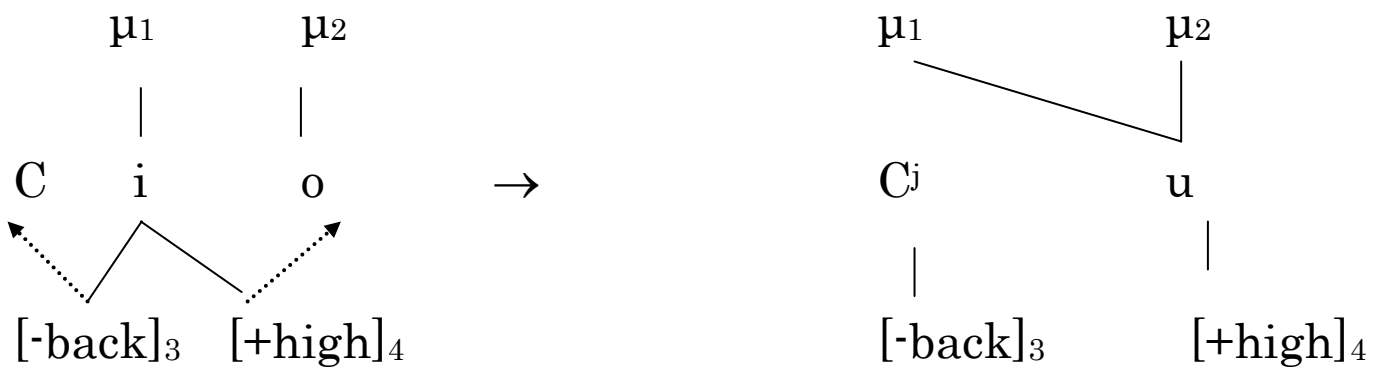
Strawman Tablaux

If we employed Ident(F) instead,...

/nan$_1$i$_2$+o$_3$/	*V$_i$V$_j$	ID(bk)	ID (hi)
a. nan$^j{}_{1,2}$uu$_{2,3}$		*$_1$*$_2$	*$_3$
b. nan$_1$i$_2$o$_3$	*!		
c. nan$_1$uu$_{2,3}$		*$_2$	*$_3$
d. nan$^j{}_{1,2}$oo$_3$		*$_1$	

IDENT(F) would favor losers.

[-back] for Palatalization



- This mapping also shows that palatalization must be represented as [-back], not [-back, +high].
- If the underlying [+high] could be realized as a part of palatalization, that would satisfy MAX(+high), making the raising of /-o/ unnecessary.

Interim Summary

Back Vowels: (progressive) assimilation

/$V_{i[+back]}$+o/ → [V_iV_i]

MAX(+high)$_{Root}$ » MAX(-high)$_{Affix}$

Front Vowels: palatalization

/Ce+o/ → [C^{j}oo]

[-back] rather than [-back, +high]

fission

/Ci+o/ → [C^{j}uu]

MAX(F), rather than IDENT(F)

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Monosyllabic roots

- Monosyllabic words do not undergo palatalization.
- They delete the particle /-o/ and lengthen the root vowel.

/e+o/ → [ee] *[joo] 'picture' (H)
/me+o/ → [mee] *[mʲoo] 'eye' (H)
cf. /kane+o/ → [kanʲoo] 'money'

/ki+o/ → [kii] *[kʲuu] 'consideration' (W3)
/ni+o/ → [nii] *[nʲuu] 'two' (H)
cf. /kani+o/ → [kanʲuu] 'crab'

Max(vocalic)$_{\text{Initial-V}}$

Assumption:

[vocalic] distinguishes vowels and consonantal segments including secondary palatalization (Nevins & Chitoran 2008; Padgett 2008)

Max(vocalic)$_{\text{Initial-V}}$ prevents root-initial vowels from being reduced to palatalization.

(1)

/ki+o/	MAX(vocalic)$_{\text{Initial-V}}$	MAX(+bk)$_{\text{Affix}}$
a. → kii		*
b. kʲuu	*!	

How about *C^{j}]$_{\sigma 1}$?

/me+o/ → [mee] *[m^{j}oo] 'eye' (H)

/ki+o/ → [kii] *[k^{j}uu] 'consideration' (W3)

- The positional markedness constraint, *C^{j}]$_{\sigma 1,}$ prohibits palatalized consonants in initial syllables.
- The blockage of palatalization in initial syllables could potentially be also explained by this.
- However, this positional markedness constraint does not explain /e+o/ → [ee], *[joo].

*$C^j]_{\sigma 1}$ is typologically odd

- Initial syllables usually license a wider variety of sounds than non-initial syllables (Beckman 1998; Smith 2002; Zoll 1997, 1998).
  - In Sino-Japanese, non-coronal palatalized consonants are licensed only in initial syllables (Kawahara, Nishimura & Ono 2002).
  - In Japanese mimetics, non-coronal palatalized consonants are attracted to initial syllables (Mester & Itô 1989; Zoll 1997).
  - See Smith (2002) in particular for a related discussion.
- Hence, we employ MAX(vocalic)$_{\text{Initial-V}}$.

Underlying long vowels

Underlying long vowels cannot be reduced to palatalization:

/kakee+o/	→	[kakee]	*[kak^{j}oo]	‘family budget’	(H)
/koohii+o/	→	[koohii]	*[kooh^{j}uu]	‘coffee’	(H)

Max(root node)$_{\text{LongVowel}}$

- Max(root node)$_{\text{LongVowel}}$ prohibits deletion of a root node of an underlyingly long vowel.
- (For long-vowel specific faithfulness constraints, see Beckman 1998; Kirchner 2000; Steriade 1994.)

/kakee+o/	*V_iV_j	MAX(root node)$_{\text{LongV}}$	MAX(+bk)$_{\text{Affix}}$
a. → kakee			*
b. kak^{j}oo		*!	
c. kakeeo	*!		

Positional Faithfulness Constraint

- The resistance of long vowels against reduction can only be accounted for by positional faithfulness constraints, not by positional markedness constraints (Zoll 1997, 1998).

- Palatalized consonants can be created from short vowels (e.g. /kane+o/ → [kanʲoo]),

- But not from long vowels (e.g. /kakee+o/ → *[kakʲoo]).

- Since the constraint must refer to underlying length differences, it must be a faithfulness constraint (Moreton 1996/1999).

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Descriptive summary

Hiroshima Japanese resolves hiatus in a variety of strategies:

- (progressive) assimilation — /$V_{i[+back]}$+o/ → [V_iV_i]; /[V_i]$_{\sigma 1}$+o/ → [V_iV_i]
- palatalization — /Ce+o/ → [C^{j}oo]
- palatalization + raising — /Ci+o/ → [C^{j}uu]
- deletion of V2 — /V_iV_i+o/ → [V_iV_i]

Theoretical consequences

The status of palatalization

Disagreement in the previous literature about the status of palatalization of consonants:

(i) [-back]
(Hall 1997: 82; Ní Chiosáin 1991, 1994; Padgett 2003; Rubach 1993: 102; Sagey 1986; Schein & Steriade 1986)

(ii) [+high] (Lahiri & Evers 1991)

(iii) [+high, -back] (Keating 1988; Keating & Lahiri 1993; Ní Chiosáin & Padgett 1993)

(see also Bhat 1978)

[-back] for Palatalization

Hiroshima Japanese supports the first position that palatalization should be expressed as [-back].

- Both /e/ and /i/ cause palatalization.

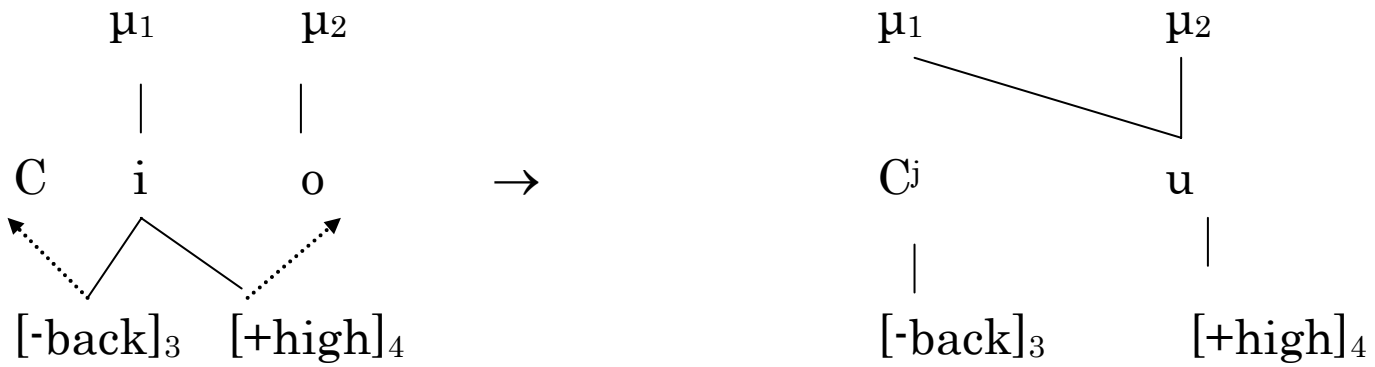
- The case of /Ci+o/ → [C^{j}uu]:

  If [+high] can be “sucked in” to palatalization,

  the raising of /-o/ to [u] due to fission of /i/ would be unexpected.

Max(F)

The case of /Ci+o/ → [C^{j}uu]: The underlying /i/ redistributes its [-back] and [+high] features at the surface



Only MAX(F) but not IDENT(F) can capture this mapping.

(Casali 1996; Causley 1997; Lombardi 1998, 2001; McCarthy 2007; Parker 1997; Pulleyblank 1998; Walker 1997; Zhang 2000).

Positional faithfulness

(i) The blockage of alternations in monosyllabic words
→ MAX(vocalic)$_{\text{Initial-V}}$ (Beckman 1998).

(ii) The blockage of reduction of long vowels to palatalization
→ MAX(root node)$_{\text{LongVowel}}$, a faithfulness constraint specific to long vowels (Steriade 1994).

Positional faithfulness

(iii) Cross-linguistically, to resolve V_iV_j sequences, V_j is retained by default, perhaps due to a faithfulness constraint specific to morpheme-initial segments

(Casali 1996)

Hiroshima Japanese shows the opposite direction of assimilation.

e.g. /sora+o/ → [soraa] 'sky'

This progressive assimilation derives from root-specific faithfulness constraints (Beckman 1998; McCarthy & Prince 1995).

Concluding Remark

Hiatus resolution in Hiroshima Japanese involves an interaction of various kinds of faithfulness constraints.

Thank you

For more data and full references,

Google “Shigeto Kawahara” or “Yurie Hara”.

/o/ as the underlying form

- The data with back vowels look like vowel lengthening.
- Observing this data, one may posit a floating mora as an underlying representation of the accusative particle.
- However, we instead posit /o/—the same underlying form as Standard Japanese—for three reasons:

(i) Hiatus resolution is optional; when it fails to apply, the accusative particle surfaces as [o].

e.g. Kokken database (p. 31) Speaker A [dehairi-o] 'in and out'

Speaker C [dehairʲuu]

(Speaker C (p. 32) also uses an unresolved form [sore-o] 'that')

/o/ as the underlying form

(ii) When the particle attaches to nasal-final roots, it realizes as [o]

[wakaimoN-o] ‘young people’: W3;

[kasseN-o] ‘fighting’: K: 43;

[haNgiN-o] ‘a unit of weight’: K: 51

(iii) Positing the underlying /o/ explains why [oo] and [uu] surface: [o]’s [+back] is preserved resulting in [oo] and [uu]

*V_iV_j

- When vowel sequences are resolved, heteromorphemic vowel sequences cannot be parsed faithfully: they are parsed neither as hiatuses nor as diphthongs.

- We therefore use *V_iV_j as an encapsulated constraint (=*DIPHTHONG+*HIATUS: Casali 1996; Rosenthall 1994).

Max(μ) » *LongVowel

- An offending vowel sequence resolves to a long vowel, not a short vowel
- therefore MAX(μ), which preserves the underlying mora counts, outranks *LONGVOWEL (Rosenthall 1994).

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