Hiatus Resolution in Hiroshima Japanese*

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1. Goals

The segmental phonology of non-standard dialects of Japanese has been relatively understudied in the Generative literature.[1] In this paper, we wish to fill this gap by studying the properties of Hiroshima Japanese. First, we aim to document the patterns of hiatus resolution in Hiroshima Japanese. We show that hiatuses are resolved by a variety of strategies (i.e. a case of a conspiracy: Kisseberth 1970). Second, we analyze the patterns within the framework of Optimality Theory (Prince and Smolensky 2004) and discuss some theoretical consequences, which include: (i) palatalization should be represented as [-back], rather than [-back, +high]; (ii) MAX(F), but not IDENT(F), can account for the hiatus resolution pattern; (iii) various kinds of positional faithfulness constraints interact to yield complex patterns of hiatus resolution.

2. Data

In this paper, we focus on resolution of hiatuses created by a root-final vowel and an accusative case marker /-o/. We took data from three sources, which are listed in (1):

(1) K: A database of Hiroshima dialect (Kokuritsu-Kokugo-Kenkyuujo 2003), a conversation by three speakers recorded in 1977. Henceforth the Kokken database. (Recording is available on a CD-ROM.)

W: Websites (accessed in 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).

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* We would like to thank Bruce Hayes, Bill Idsardi, Kazu Kurisu, John McCarthy, Armin Mester, Lisa Shiozaki, Kyoko Takano, Betsy Wang, and audiences at the University of Delaware, UMass Phonology Group and NELS 38 for their comments. All remaining errors are ours.

[1] We acknowledge the following exceptions: Tôhoku dialect (Kanai 1982); Shizuoka dialect (Davis and Ueda 2002); Kagoshima dialect (Kaneko and Kawahara 2002).

A hiatus created by a root-final vowel and an accusative particle /-o/ is resolved by a variety of phonological alternations. Hiroshima Japanese therefore exemplifies a case of a conspiracy: different phonological processes eliminate the same phonological structure (Kisseberth 1970; see also Casali 1996 for conspiracies concerning hiatus resolution in other languages). When the accusative case particle /-o/ is attached to root-final back vowels ([a, o, u]), it assimilates to the preceding root vowel, as shown by the data in (2)[2]:

(2) /-o/ assimilates to root-final back vowels

/Ca+o/ → [Caa]

/sor**a+o**/	→	[sor**aa**]	'sky'	(W1)
/tam**a+o**/	→	[tam**aa**]	'ball'	(W1)
/hadak**a+o**/	→	[hadak**aa**]	'naked body'	(W1)
/makekat**a+o**/	→	[makekat**aa**]	'way of losing'	(W3)
/han**a+o**/	→	[han**aa**]	'flower'	(K: 16)
/naw**a+o**/	→	[naw**aa**]	'rope'	(K: 26)
/tab**a+o**/	→	[tab**aa**]	'bundle'	(K: 27)
/war**a+o**/	→	[war**aa**]	'straw'	(K: 27)
/naginat**a+o**/	→	[naginat**aa**]	'long sword'	(K: 41)
/arahir**a+o**/	→	[arahir**aa**]	'a kind of dance'	(K: 71)
/budoodan**a+o**/	→	[budoodan**aa**]	'vine stands'	(K: 77)
/mekat**a+o**/	→	[mekat**aa**]	'weight'	(K: 81)
/abur**a+o**/	→	[abur**aa**]	'oil'	(K: 85)
/keg**a+o**/	→	[keg**aa**]	'wound'	(K: 86)
/kagur**a+o**/	→	[kagur**aa**]	'divine dance'	(K: 95)
/tawar**a+o**/	→	[tawar**aa**]	'rice package'	(K: 97, 101, 107)
/sandaar**a+o**/	→	[sandaar**aa**]	'rice package'	(K: 102)
/ʃit**a+o**/	→	[ʃit**aa**]	'tongue'	(K: 109)

/Cu+o/ → [Cuu]

/sar**u+o**/	→	[sar**uu**]	'monkey'	(W1)
/mak**u+o**/	→	[mak**uu**]	'screen'	(W1)
/miz**u+o**/	→	[miz**uu**]	'water'	(K: 28)
/roosok**u+o**/	→	[roosok**uu**]	'candle'	(K: 94)
/waraguts**u+o**/	→	[waraguts**uu**]	'straw shoes'	(K: 101)
/retas**u+o**/	→	[retas**uu**]	'lettuce'	(H)
/haik**u+o**/	→	[haik**uu**]	'haiku'	(H)

/Co+o/ realizes as [Coo], as in (3).

[2] The patterns we discuss in this paper do not apply—at least regularly—to root-internal vowel sequences; e.g. /maru-g**ao**/ → *[maru-g**aa**] 'round face'. In other words, vowel sequences are resolved only in derived environments. We set this issue aside in this paper (but see Lubowicz 2002; McCarthy 2003 for discussion on derived environment effects in Optimality Theory).

(3) /Co+o/ → [Coo]

/nagain**o+o**/	→	[nagain**oo**]	‘long one’	(K: 33)
/ohur**o+o**/	→	[ohur**oo**]	‘bath’	(K: 36)
/iʃik**o+o**/	→	[iʃik**oo**]	‘stone powder’	(K: 36)

When the root-final vowel is /e/, the preceding consonant palatalizes, /e/ deletes, and the particle /-o/ lengthens, as shown in (4). When no consonants precede the hiatus, [j] appears: /ma**e+o**/ → [ma**joo**] ‘front’ (K: 34).

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

/Ce+o/ → [C^{j}oo]

/kan**e+o**/	→	[ka**n^{j}oo**]	‘money’	(W1)
/um**e+o**/	→	[u**m^{j}oo**]	‘plum’	(W1)
/sak**e+o**/	→	[sa**k^{j}oo**]	‘sake’	(W1)
/ar**e+o**/	→	[a**r^{j}oo**]	‘that’	(K: 24, 26, 35, 55, 79)
/sor**e+o**/	→	[so**r^{j}oo**]	‘that’	(K: 28, 34, 57, 59, 65)
/hatak**e+o**/	→	[hata**k^{j}oo**]	‘field’	(H)
/kir**e+o**/	→	[ki**r^{j}oo**]	‘slice’	(H)

When the root-final vowel is /i/, the preceding consonant palatalizes, /i/ deletes, and the following /-o/ lengthens and raises to [uu], as in (5):

(5) /i/ palatalizes C; it deletes; the following /-o/ raises to [u] and lengthens[3]

/Ci+o/ → [C^{j}uu]

/ka**ki+o**/	→	[ka**k^{j}uu**]	‘persimmon’	(W1)
/ka**ri+o**/	→	[ka**r^{j}uu**]	‘debt’	(W1)
/me**ʃi+o**/	→	[me**ʃuu**]	‘meal’	(W1)
/do**ttʃi+o**/	→	[do**ttʃuu**]	‘which’	(W2)
/u**ʃi+o**/	→	[u**ʃuu**]	‘cow’	(K: 16)
/nan**i+o**/	→	[na**n^{j}uu**]	‘what’	(K: 29)
/dehai**ri+o**/	→	[dehai**r^{j}uu**]	‘in and out’	(K: 31)
/hana**bi+o**/	→	[hana**b^{j}uu**]	‘firework’	(K: 72, 74)
/taaramom**i+o**/	→	[taaramo**m^{j}uu**]	‘packaged rice seeds’	(K: 95, 108)
/to**ʃi+o**/	→	[to**ʃuu**]	‘age’	(K: 107)
/miko**ʃi+o**/	→	[miko**ʃuu**]	‘portable shrine’	(K: 111)
/har**i+o**/	→	[ha**r^{j}uu**]	‘needle’	(H)
/tor**i+o**/	→	[to**r^{j}uu**]	‘bird’	(H)

[3] We found a few exceptions in the Kokken database; some /e, i/-final tokens show progressive assimilation rather than palatalization: /ar**e+o**/ → [ar**ee**] ‘that’ (K: 53); /sor**e+o**/ → [sor**ee**] ‘that’ (K: 82, 104); /sak**e+o**/ → [sak**ee**] ‘sake’ (K: 114); /hanaʃ**i+o**/ → [hanaʃ**ii**] ‘conversation’ (K: 41); /sarabakar**i+o**/ → [sarabakar**ii**] ‘libra’ (K: 56); /ʃooʒ**i+o**/ → [ʃooʒ**ii**] ‘shooji’ (K: 79); /tereb**i+o**/ → [tereb**ii**] ‘TV’ (K: 101). One /i/-final item shows palatalization without raising: /matsur**i+o**/ → [matsi**r^{j}oo**] ‘festival’ (K: 58).

3. Analysis

3.1 Preliminary: The underlying form of the accusative particle

Before going into an OT analysis of the patterns presented in §2, we first discuss the underlying representation of the accusative particle /-o/. One may posit a floating mora as an underlying representation of the accusative particle based on the data in (2), which looks like vowel lengthening. However, we instead posit /-o/—the same underlying form as Standard Japanese—for three reasons. First, hiatus resolution is optional, and when it fails to apply, the accusative particle surfaces as [o]. In the Kokken database (p. 31), for example, we found one speaker (Speaker A) saying [dehair**i-o**] 'in and out', and another speaker (Speaker C) saying [dehai**r^{j}uu**]. Second, when the particle attaches to nasal-final roots, it realizes as [o] ([wakaimoN-o] 'young people': W3; [kasseN-o] 'fighting': K: 43; [haŋgiN-o] 'a unit of weight': K: 51). Third, positing the underlying /-o/ explains why [oo] and [uu] surface in (4) and (5): /-o/'s [+back] feature is preserved, resulting in surface [oo] and [uu] (see (7) below).

3.2 Back vowels

We now move on to our OT analysis, starting with some general aspects. First of all, we observe that an offending vowel sequence resolves to a long vowel, not a short vowel[4]: therefore MAX(μ), which preserves the counts of the underlying moras (McCarthy 2000), outranks *LONGVOWEL (Rosenthall 1994). Second, 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, which prohibits any sequences of two non-identical vowels (=*DIPHTHONG+*HIATUS: Casali 1996; Rosenthall 1994).

In addition to *V_iV_j, we deploy a positional faithfulness constraint specific to roots, MAX(+high)$_{Root}$ (McCarthy and Prince 1995 and Beckman 1998), which is ranked above MAX(-high)$_{Affix}$. MAX(+high)$_{Root}$ yields the progressive assimilation of /-o/ to [u], as illustrated in the OT tableau in (6) below (the use of MAX(F), rather than IDENT(F), is defended below).[5] Candidate (b), which has unresolved vowel sequences is ruled out by *V_iV_j. The direction of assimilation is determined by the ranking MAX(+high)$_{Root}$ » MAX(-high)$_{Affix}$: the ranking prefers the preservation of the [+high] feature of the root vowel at the cost of losing the [-high] feature of the affixal vowel.

(6)

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

[4] We found one exception in the Kokken database: /sor**e+o**/ → [so**r^{j}o**] 'that' (K: 28, 81). This exceptional behavior may be due to the fact that *sore* is a functional word with high frequency of use, which tends to undergo lenition/reduction (Bybee 2001).

[5] Our dataset does not provide evidence for using both MAX(+F) and MAX(-F). Cross-linguistically, however, high vowels are more likely to delete than non-high vowels (Howe and Pulleyblank 2004; Kaneko and Kawahara 2002). This asymmetry may require that MAX(+high) and MAX(-high) be distinguished.

Similarly, the ranking MAX(+low)$_{Root}$ » MAX(-low)$_{Affix}$ explains the progressive assimilation of the affixal /-o/ to root [a] (a tableau is not shown due to space limitation).

3.3 Front vowels: Palatalization

Next, we move on to the analysis of front vowels. Since both [e] and [i] cause palatalization, we postulate that C^j is [-back]. Given the underlying /Ce+o/ sequences, Hiroshima Japanese prefers palatalization (i.e. [C^joo]) to assimilation (i.e. [Coo] or [Cee]) because palatalization preserves both the [-back] feature of the root vowel and the [+back] feature of the particle vowel, as shown in (7).

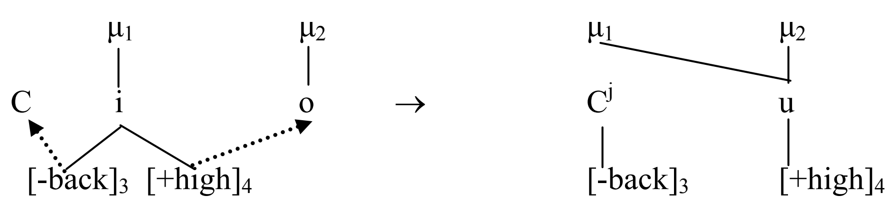
(7)

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

Although candidate (c) avoids having palatalized consonants, it loses the underlying [-back] feature of the root vowel, and hence is ruled out by MAX(-back)$_{Root}$. Candidate (d) is also ruled out because it loses the [+back] feature of the affix /-o/. As a result, candidate (a) wins despite the fact that it has a marked palatalized consonant[6].

Finally, we analyze the mapping /Ci+o/ → [C^juu] in (5) as bidirectional fission, as illustrated in (8) where indices represent correspondence (McCarthy and Prince 1995). The [-back] feature of /i/ 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).

(8)



This analysis requires MAX(-back) and MAX(+high), as shown by the tableau in (9), because these features survive by reassociating to segments other than the original host segment /i/. In this sort of situation, IDENT constraints would favor losers, as illustrated in (10) (indices stand for correspondence relationships; ☹ represents the desired winner which fails to win; (→) represents a wrong winner). The problem with IDENT(F) constraints is that they assign extra violations when features are redistributed; that is, IDENT(F) constraints favor deletion of features over redistribution of features. As a result, the desired candidate (10a) is harmonically bounded by candidate (c) and candidate (d).

[6] Although the constraint $*C^j$ is not active in the patterns under discussion, we nevertheless posit the constraint because not all languages allow palatalized consonants.

(9)

/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.

(10)

/nan$_1$i$_2$+o$_3$/	$*V_iV_j$	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.

The mapping in (8) and (10) 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.[7]

4. Further data: Evidence for positional faithfulness constraints
4.1 Monosyllabic roots

In Hiroshima Japanese, there are two more interesting sets of data which point to an important role of positional faithfulness constraints: monosyllabic roots and roots ending with long vowels. First, monosyllabic words do not undergo palatalization, but instead delete the particle /-o/ and lengthen the root vowel, as illustrated in (11).

(11) Monosyllabic roots fail to palatalize

	/te+o/	→	[tee]	*[t^{j}oo]	'hand'	(H)
	/me+o/	→	[mee]	*[m^{j}oo]	'eye'	(H)
	/e+o/	→	[ee]	*[joo]	'picture	(H)
cf.	/kane+o/	→	[kan^{j}oo]		'money'	
	/ki+o/	→	[kii]	*[k^{j}uu]	'consideration'	(W3)
	/ni+o/	→	[nii]	*[n^{j}uu]	'two'	(H)
	/hi+o/	→	[hii]	*[h^{j}uu]	'fire'	(H)
cf.	/kani+o/	→	[kan^{j}uu]		'crab'	

To account for the failure of palatalization in (11), we use MAX(root node)$_{\text{Initial-V}}$, which prevents initial vowels from being reduced to secondary palatalization, assuming that [vocalic] distinguishes vowels from consonantal segments, including secondary palatalization (Padgett to appear). This constraint is a positional faithfulness constraint (Beckman 1998), which is grounded in the imperative to protect initial syllables, because initial syllables play an important role in lexical access (e.g. Hawkins and Cutler 1988). The tableau in (12) illustrates this analysis.

[7] If palatalized consonants are [-back], how would we distinguish palatalized non-back (i.e. anterior) consonants from plain consonants? We postulate that plain consonants are unspecified for [±back] and palatalized consonants are specified as [-back]; e.g. [n]=[øback], [n^j]=[-back] (Clements 1985).

(12)

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

The blockage of palatalization in initial syllables could potentially be explained by the positional markedness constraint, $*C^j]_{\sigma 1}$, which prohibits complex palatalized consonants in initial syllables. However, this constraint does not explain the behavior of the onsetless monosyllabic roots (/e+o/ → [ee], *[joo]): $*C^j]_{\sigma 1}$ fails to rule out a structure like *[joo] because [j] is not a complex palatalized segment. MAX(vocalic)$_{\text{Initial-V}}$ on the other hand rules out a change from /e/ to [j]. Moreover, the positional markedness constraint $*C^j]_{\sigma 1}$ is typologically odd: initial syllables usually license a wider variety of sounds than non-initial syllables (Beckman 1998; Smith 2002; Zoll 1998). In fact, in Sino Japanese, palatalized consonants are limited to stem-initial syllables (Kawahara, Nishimura and Ono 2002), and moreover in Japanese mimetic words, non-coronal palatalized consonants are attracted to initial syllables (Mester and Itô 1989). A constraint like $*C^j]_{\sigma 1}$ would go against these typological generalizations. See also Smith (2002) for a related discussion from a cross-linguistic perspective.

4.2 Long vowels

Similar to root-initial vowels, underlying long vowels cannot be reduced to palatalization. Instead, roots ending with long vowels delete the accusative particle, as in (13):

(13) Long vowels are not reduced

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

As illustrated in (14), long vowels’ resistance to reduction can be explained by MAX(root node)$_{\text{LongVowel}}$, which prohibits deletion of the root node of a long vowel in the input (we assume that secondary palatalization does not have its own root node). MAX(root node)$_{\text{LongVowel}}$ is again a positional faithfulness constraint which is grounded in the imperative to prohibit large perceptual changes (Beckman 1998; Steriade 1994.) In addition to this constraint, we need a constraint against a superlong vowel, $*[\mu\mu\mu]_\sigma$ (McCarthy 2007a), to rule out a candidate with progressive assimilation, as in (14d).

(14)

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

The resistance of long vowels against reduction can only be accounted for by positional faithfulness constraints, not by positional markedness constraints (Zoll 1998). Palatalized consonants can be created from short vowels (e.g. /kane+o/ → [kan^{j}oo]), but not from long vowels (e.g. /kakee+o/ → *[kak^{j}oo]). Since the constraint must refer to underlying length differences, it must be a faithfulness constraint (Moreton 1996/1999). Markedness constraints would rule out palatalized consonants regardless of whether they are created from short vowels or long vowels.

5. Summary and discussion
5.1 Descriptive summary

Hiroshima Japanese resolves hiatus in a variety of strategies, as summarized in (15):

(15) Summary of hiatus resolution patterns

a. (progressive) assimilation	/$V_{i[+back]}$+o/ → [V_iV_i]	(2)
	/$[V_i]_{\sigma 1}$+o/ → [V_iV_i]	(11)
b. palatalization	/Ce+o/ → [C^{j}oo]	(4)
c. palatalization + raising	/Ci+o/ → [C^{j}uu]	(5)
d. deletion of V2	/V_iV_i+o/ → [V_iV_i]	(13)

The patterns of hiatus resolution are thus a case of a conspiracy (Casali 1996; Kisseberth 1970). We have proposed the following ranking to account for the patterns in (15).

(16) Ranking summary

MAX(rt node)$_{\text{LongV}}$ MAX(vocalic)$_{\text{Ini-V}}$ MAX(-bk)$_{\text{Root}}$ *V_iV_j MAX(+hi)$_{\text{Root}}$ *$[\mu\mu\mu]_\sigma$

MAX(+bk)$_{\text{Affix}}$ MAX(-hi)$_{\text{Affix}}$

*C^j

5.2 Theoretical consequences
5.2.1 The status of palatalization

There is disagreement in the previous literature about the status of palatalization of consonants, as summarized in (17):

(17) Previous theories on the representation of palatalization

(i)	[-back]	(Hall 1997: 82; Ní Chiosáin 1994; Padgett 2003; Rubach 1993: 102; Sagey 1986)
(ii)	[+high]	(Lahiri and Evers 1991)
(iii)	[+high, -back]	(Keating 1988; Keating and Lahiri 1993)

Hiroshima Japanese supports the first position that palatalization should be expressed as [-back] for two reasons.[8] First, both /e/ and /i/ cause palatalization. Second, if [+high] is a part of palatalization, the raising of /-o/ to [u] due to fission of /i/ would be unexpected.

Given our proposal that palatalization is [-back], one may raise the following question: If palatalization is [-back] rather than [-back, +high], how would we account for a language, such as standard Japanese, in which only high front vowels cause palatalization? We believe that it is a matter of constraint interaction. There are two separate constraints, one that requires palatalization next to high front vowels (PAL/_i), and one that requires palatalization next to front vowels in general (PAL/_[-bk]). When only the former constraint is active, the result is a language in which only [i] causes palatalization (see also Padgett to appear for related discussion).[9]

5.2.2 MAX(F)

Recall that in the /Ci+o/ → [C^juu] mapping, the underlying /i/ redistributes its [-back] and [+high] features at the surface, as in (8). This mapping requires MAX(F) instead of—or in addition to—IDENT(F) because IDENT(F) constraints do not prefer redistribution of underlying features, as illustrated in (9) and (10) (Casali 1996; Causley 1997; Lombardi 1998; McCarthy 2007b; Parker 1997; Pulleyblank 1998; Walker 1997; Zhang 2000; see also Struijke 2000).

One may argue that we do not need to resort to MAX(F) if we regard the pattern as counterbleeding opacity (Kiparsky 1973; see McCarthy 2007a for a recent review). That is, we could postulate that /-o/ is raised to [u] when it is next to /i/ but not next to /e/ or /C^j/, and that the trigger /i/ is subsequently reduced to palatalization, as in (18).

(18)	/Ci+o/	/Ce+o/	
	Ci+u	N/A	Raising of /-o/ due to /i/
	C^j+uu	C^j+oo	Palatalization with lengthening

However, raising of /-o/ next to /i/ is not independently motivated in Hiroshima Japanese—when hiatus resolution fails to apply, /-o/ next to /i/ surfaces as [o] rather than [u]: [dehair**i-o**] 'in and out' (K: 31).

Another alternative analysis is a theory of contrast preservation: the raising of /-o/ occurs in order to preserve the underlying contrast between /e/-final roots and /i/-final roots. Since both /e/ and /i/ are reduced to palatalization, speakers raise /-o/ after an underlying /-i/ to preserve the contrast between underlying /e/ and /i/ (see Lubowicz 2003

[8] Some proposals represent vowel backness as [-ant, COR] (Hume 1996 and references cited therein). The Hiroshima Japanese data are compatible with these views too, as long as palatalization does not involve a height feature (though see Flemming 1995 for critical arguments against this view).

[9] Kazutaka Kurisu (p.c.) points out a possibility that phonologically, palatalization features can differ across languages but these features are all phonetically realized as the same "palatalization" (i.e. palatal gesture with consequent raising of F2). This is an interesting hypothesis which is worth pursing in future research.

and references cited therein). A problem with this theory is that the pressure to preserve contrast itself does not explain why speakers resort to raising rather than something else: to avoid contrast neutralization, speakers could have *lowered* /-o/ after an underlying /-i/, but such a pattern of contrast neutralization avoidance does not seem to be attested (see McCarthy 2007a: 51-55 for related discussion of this problem). In short, the contrast preservation theory fails to capture the connection between raising and the [+high] feature of the underlying /i/.

5.2.3 Positional faithfulness constraints

We have proposed that various kinds of faithfulness constraints are at work in Hiroshima Japanese. First, the blockage of alternations in monosyllabic words requires MAX(root node)$_{\text{Initial-V}}$ (Beckman 1998). Second, the blockage of reduction of long vowels to palatalization requires MAX(root node)$_{\text{LongVowel}}$, a faithfulness constraint specific to long vowels (Steriade 1994). Third, 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. /sor**a+o**/ → [sor**aa**] 'sky'). The progressive assimilation derives from root-specific faithfulness constraints (Beckman 1998; McCarthy and Prince 1995), as analyzed in §3.2. In sum, hiatus resolution in Hiroshima Japanese involves an interaction of various kinds of positional faithfulness constraints.

5.3 Overall summary

In this paper, we have documented and analyzed patterns of hiatus resolution in Hiroshima Japanese. We have shown that hiatus is resolved by a variety of strategies (i.e. a case of conspiracy), and discussed three theoretical consequences: (i) palatalization should be represented as [-back] rather than [-back, +high]; (ii) MAX(F) is necessary instead of IDENT(F) to account for the hiatus resolution pattern; (iii) various kinds of positional faithfulness constraints interact to shape the hiatus resolution patterns.

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