

Lengthened vowels and geminate consonants as compensations for a vowel loss ¹

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Outline

- 1 The 'non-past' forms
 - The 'non-past' forms of Saga western dialect
 - The 'non-past' forms of Old Japanese
 - The standard polite forms and the 'non-past' forms of the /n/ consonant-final verbs in Yamaguchi dialect
- 2 A previous study
 - Hayata 1998
 - Discussion of two plausible explanations
- 3 Analysis
 - Koga and Ono's 2010 morpheme-based morphology
 - Morpho-phonemic and phonological surface constraints
 - CodaCond, S-Opt and DYG-AC for CG and CL
 - Predictions

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The non-past forms plus the head noun /toki/ 'time', 'when ...' in western Saga dialect

- The 'non-past' form of every 1) so-called vowel /e/-final base verb and 2) strong base verb, necessarily ending with /ru/ in standard Japanese and Fukuoka Yanagawa dialect, ends with the former part of the geminate consonant if immediately followed by a noun beginning with a consonant in the dialect.

/**nut** toki/ 'when (he) sleeps, ...'

cf. /**nuru** toki/ [Fukuoka Yanagawa]

/**neru** toki/ [Standard]

- See Table 1.

[m-class]	S-western	S-Takeo	F-Yanagawa	Standard
[C-final]				
'float'	uku toki	uku toki	uku toki	uku toki
'sell'	u: toki	u _t toki	u <u>ru</u> toki	u <u>ru</u> toki
[/e/-final]				
'sleep'	n <u>u</u> t toki	n <u>u</u> t toki	n <u>u</u> ru toki	n <u>er</u> u toki
'eat'	tab <u>u</u> t toki	tab <u>u</u> t toki	tab <u>u</u> ru toki	tab <u>er</u> u toki
[/i/-final]				
'wear'	ki: toki	ki _t toki	ki <u>ru</u> toki	ki <u>ru</u> toki
'wake'	oki: toki	oki _t toki	oki <u>ru</u> toki	oki <u>ru</u> toki
[strong]				
'come'	ku _t toki	ku _t toki	ku <u>ru</u> toki	ku <u>ru</u> toki

Table: 1 The 'non-past' forms of verbs plus /toki/ 'when ...'

- Note that the former part of every geminate consonant can never result in the latter part of a lengthened vowel, as exemplified in
 - ***/nu:** toki/ 'when (we) sleep',
 - ***/tabu:** toki/ 'when (we) eat...', and
 - ***/ku:** toki/ 'when (we) come'.
- that the vowels immediately before the geminate consonants are the phoneme /u/ for all.

- The 'non-past' form of every vowel /i/-final base verb and consonant /r/-final base verb **ends with the latter part of the lengthened vowel.**

/u: toki/ 'when (he) sells (them), ...'

/oki: toki/ 'when (he) wakes up, ...'

cf. /uru toki/ [F-Yanagawa, Standard Japanese]

/okiru toki/ [F-Yanagawa, Standard Japanese]

- See Table 1.

Baković's 2013 complementarity, or an *elsewhere-condition* phenomenon

- The former part of a geminate consonant occurs in place of the final /ru/ of a 'non-past' form if the verb is a so-called vowel /e/-final one or a strong base one; elsewhere, the latter part of the lengthened vowel occurs.
- The latter part of the lengthened vowel in place of the final /ru/ of a 'non-past' form is actually **blocked by the former part of a geminate consonant in place of that** if the verb is a so-called vowel /e/-final base one or a strong base one.

- The set of the situations where the former part of a geminate consonant occurs in place of the final /ru/ of a 'non-past' form is a proper subset of the set of the situations where the latter part of the lengthened vowel occurs.

- The western Saga counterparts of the 'non-past' forms for the 266 verbs used most frequently in daily conversation can be heard at the following URL:

`http://www.chiikigaku.saga-u.ac.jp/sound_db/saga-hogen.html`

- This database is the official one of the Center for Regional Studies of History and Culture, Saga University. The sound files are of the utterances by a native speaker of western Saga dialect coming from Shiroishi in Kishima County.

The 'non-past' forms of Old Japanese

- **The final /ru/** of each sentence-final 'non-past' form of the vowel /e/-final base verbs and strong base verbs, but NOT of the /r/ consonant-final base verbs, **is absent**, whereas it is not absent, i.e., is present in its prenominal counterpart.

/nu/. '(He) sleeps. [Old Japanese]'

/nuru toki/, ... 'when (he) sleeps, ... [Old Japanese]'

/tabu/. '(He) eats (it). [Old Japanese]'

/taburu toki/, ... 'When (he) eats (it), ... [Old Japanese]'

- See Table 2.

m-class	S-final	Prenominal ('when ...')	Standard Japanese
C-final	uku.	uku toki	uku
	uru.	uru toki	uru
/e/-final	nu.	nuru toki	neru
	tabu.	taburu toki	taberu
/i/-final	kiru.	kiru toki	kiru
	oku.	okuru toki	okiru
strong	ku.	kuru toki	kuru
	su.	suru toki	suru

Table: 2 The sentence-final and prenominal 'non-past' forms in old Japanese

- **The verb final /i/ of each sentence-final 'non-past' form will be replaced with /u/ in each sentence-final form if the verb is a vowel /i/-final base verb and is equal to or longer than two moras like /oki/, and the sequence /ru/ is added for its prenominal counterpart.**

/oku/. '(He) wakes up. [Old Japanese]'

/okuru toki/, ... 'when (he) wakes up, ... [Old Japanese]'

cf. /okiru/. [F-Yanagawa, Standard Japanese]

- See Table 2.

The standard polite forms and the 'non-past' forms of the /n/ consonant-final verbs in Yamaguchi dialect

- **The final /ru/'s** of the 'non-past' polite forms, which are analyzed as a kind of the strong base verb /s/ 'do', **are absent.**

/-masu/. '... [polite].' [Old Japanese]

*/masuru/

cf. */su/. [F-Yanagawa, Standard Japanese]

/suru/ '(He) does so.' [F-Yanagawa, Standard Japanese]

- See Table 3.

V-forms	'-Polite'	'do' [Saga]	Yamaguchi	Saga
Non-past	-masu	*su	*sinu	sinu
	*-masuru	suru	sinuru	*sinuru
Non-past-if	*-masureba	?sureba	*sineba	sineba
	*-maseba	*seba	sinureba	*sinureba
Past	-masita	sita	siNda	siNda
Neg	-maseN	seN	sinaN	sinaN

Table: 3 The 'non-past' polite forms in standard Japanese and the non-past form of the verb /sin/ 'die' in Yamaguchi dialect

- The 'non-past' form of **the /n/ consonant-final base verb /sin/ 'die' has /ru/ added to its end.**

/sinuru/. '(He) dies.' [Yamaguchi]

cf. /sinu/. [Saga W, F-Yanagawa, Standard Japanese]

- See Table 3.

- Every final /ru/ which immediately follows /u/ and corresponds to the former part of a geminate consonant in western Saga dialect is grammatically optional with the oddness of the /ru/-absent 'non-past' forms left for the explanations outside of the core components of grammar.

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Hayata 1998

The target language is Saga-Takeo dialect. See Table 1.

- Argumentation: **The underlying form of the 'non-past' affix is /ru/**, but NOT the former segment of the geminate consonant.

His analysis consists of:

- Vowel change [1]: $e \rightarrow u / ___]_{verb\ stem}$
- Verb final /u/ elimination [2]: $u \rightarrow \emptyset / r___]_{verb}$
- /R/-regressive assimilation [3]: $r \rightarrow C_i / ___]_{verb} C_i$

See Table 4 for derivations.

ne ru toki	oki ru toki	UR
nuru toki		[1]
nur toki	okir toki	[2]
nut toki	okit toki	[3]
nuttoki	okittoki	

Table: 4 Derivation of the geminate consonant from the dental liquid

Hayata 1998 will not be adequate if the scope is expanded beyond Saga-Takeo dialect.

- It will not capture the difference in **Saga western dialect** between:
 - the **geminate consonant**, [...uC_{*i*},*non-past*]*#*C_{*i*}..., if the verb is a vowel /e/-final base verb or one of the two strong base verbs, and
 - the **vowel lengthening**, [...V:*non-past*]*#*C..., if it is a vowel /i/-final base verb or an /r/ consonant-final base verb.
 - cf. /...Vru_{*non-past*}]*#*C.../ [F-Yanagawa, Standard Japanese]

Such an analysis along the line of Hayata 1998 as below is stipulative, as Baković 2013 points out regarding elsewhere conditions.

- (1) a. $r \rightarrow C_i / \left[\begin{array}{l} +\text{high} \\ +\text{back} \end{array} \right] \# ______]_{\text{verb}} C_i$
b. $r \rightarrow V_i$ elsewhere in $V_i ______]_{\text{verb}}$

Is the replaced /u/ a part of the stem?

- If the vowel /u/ replacing the stem final /e/ (and the stem final /i/ in old Japanese) were a part of another stem, then this would apply to the /n/ consonant-final verbs in Yamaguchi dialect, and so /sinu/ would be another stem.
- - e.g., **ne, nu** 'sleep', **tabe, tabu** 'eat'
 - e.g., **oki, oku** 'wake up'
 - **k, ku** 'come', **s, su** 'do'
 - **sin, sinu** 'die'

- Q1: Why are those stems **used only in the 'non-past' forms (and the conditional forms the tense of which is the non-past)**?
- Q2: Why were those **stems used as the 'non-past' forms** in old Japanese?
These problems will be solved by the analyses as follows:
- The vowel /u/ that immediately precedes a geminate consonant in western Saga dialect is a part of the 'non-past' affix.
- The stems of the vowel /e/-final base verbs and the strong base verbs include those with the final /u/ absent like /n/ 'sleep', /tab/ 'eat', /k/ 'come' and /s/ 'do'.

Table: Verb stems in all the various verb forms

m-class	language	Non-past	Non-past*/ Conditional	Past	Imperative	Neg	Voice
C-final			uk	uk	uk	uk	uk
			...				
/n/-final	Yamaguchi		sin	sin	sin	sin	sin
	Yamaguchi		...				
	Old Japanese	sin	sin	sin	sin	sin	sin
	Old Japanese	...					
/e/-final	western Saga		n	ne	ne	ne	ne
	western Saga		...				
	western Saga		tab	tabe	tabe	tabe	tabe
	western Saga		...				
	Old Japanese	n	n	ne	ne	ne	ne
	Old Japanese	tab	tab	tabe	tabe	tabe	tabe
	Old Japanese	...					
/i/-final			ki	ki	ki	ki	ki
			...				
	Old Japanese	ok	ok	oki	oki	oki	oki
	Old Japanese	...					
strong			k	k	k	ko	ko
	western Saga		s	s	se	se	se/s
	Old Japanese	k	k	k	k	ko	ko
	Old Japanese	s	s	s	se	se	se/s

Non-past means sentence-final 'non-past' forms. Non-past* means prenominal 'non-past' forms.

Stem vowel change in the Old Japanese potential verb?

- We may be tempted to analyze **the stem final /e/ → /u/ as that of the old Japanese potential verb /e/.**

'non-past'	prenominal	'past'	'neg'	'causative'
<u>u</u>	<u>uru</u> toki	<u>eta</u>	<u>enu</u>	<u>esase</u>
tab <u>u</u>	tab <u>uru</u> toki	tab <u>eta</u>	tab <u>enu</u>	tab <u>esase</u>

Table: 5 The verb forms of /e/ 'obtain' or 'can' in Old Japanese

Problem: The hypothetical /u/-final stem will be even if the lexeme is not associated with another stem with the final vowel /e/:

- for example, /sinu/ 'die' and /sin/, but */sine/ in the stems of the /n/-final base verbs in Yamaguchi dialect,
- for example, /oku/ 'get up' and /oki/, but */oke/ in the stems of the vowel /i/-final base verbs with the stem heavier than one mora in Old Japanese, and
- for example, /ku/ 'come', /ko/ and, possibly /k/, but */ke/ in the stems of the strong base verbs in standard Japanese, western Saga dialect and Old Japanese.

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Koga and Ono's 2010 morpheme-based morphology

Analyses:

- Each lexeme of **the so-called vowel /e/-final base verbs and the strong base verbs** is associated with **another stem with the final vowel (/e/ or /o/) absent**: E.g., /ne/ and /n/ 'sleep', /tabe/ and /tab/ 'eat'.
- **The tense expletive /(r)u/ selects itself (as well as the base form of verb), and the whole is another tense expletive**, as in [*tense* [*tense* u] [*tense* ru]] 'Non-past'.²

The tense expletive may be duplicated due to prosodic minimality on the 'non-past' forms.

²The second analysis is different from Koga and Ono 2010 and Koga 2012.

- Between /nuru/ ($[[tense\ [v[bse]\ n]\ [[tense\ u]\ [tense\ ru]]]]$) 'sleep-Non-past' and */nu/ ($[[tense\ [v[bse]\ n]\ u]]$), for example, the former grammatical form is preferred to the latter since the former, but NOT the latter, is heavier than one light syllable (the prosodic minimum).
- See Koga and Ono 2010 for an explanation of the preference. Selections of verb stems are determined by constraints of various components (Anderson 2011; Koga 2012).

McCarthy's 2008 Harmonic Serialism

- The framework of the phonological component that we use is a version of Optimality Theory, McCarthy's 2008 Harmonic Serialism, using Hayes' 1989 moraic theory.
- The phenomenon in western Saga dialect consists of 1) the final vowel /u/-absence and 2) CG or CL for the vowel absence with the stranded post-alveolar tap absent.

$$\left. \begin{array}{l} \text{i) } \dots VC_i \# \# C_i \dots \\ \text{ii) } \dots V : \# \# C_i \dots \end{array} \right\} \text{ — } \dots Vr \# \# C_i \dots \text{ — } \dots Vru \# \# C_i \dots$$

tabut##toki — *tabur##toki* — *taburu##toki*

oki : ##toki — *okir##toki* — *okiru##toki*

to : ##toki — *tor##toki* — *toru##toki*

Figure: Final vowel /u/-absence and CG or CL

Constraints for final vowel /u/-absence

The final vowel /u/ is absent in western Saga dialect when the final of the non-past form of the standard form is /nu/ as in:

- 1) the negative forms of the verbs like [awan] 'does not meet' in western Saga dialect for /awanu/ in Old Japanese if the underlying forms are assumed to be their classical forms, and
- 2) the non-past form of the verb [sin] 'die' in western Saga dialect for /sinu/ in standard Japanese.

Short unstressed vowels are present or absent in the environment of V[+ voiced, +sonorant] __# in Isthmus Nahatul, spoken in Veracruz, Mexico (Kenstowicz and Kisseberth 1979: 298).

The phenomenon in western Saga dialect is morpho-phonemic, i.e., is not purely phonological,

- as in [ha:], but not *[haru], corresponding to the standard verb [haru] 'apply [Non-past]' and
- as in [haru], but not *[ha:], corresponding to the standard noun [haru] 'spring'

The geminate consonant occurs at the underlying /r/-final of the tense expletive form whichever consonant, a voiced obstruent, a post-alveolar tap, is at the onset of the next syllable.

- .[tabur ramen] for /taberu remen/ 'the noodle that (we) eat'
- .[tabub budo:] for /taberu budou/ 'the grape that (we) eat'
- .[tabud daikon] for /taberu taikon/ 'the radish that (we) eat'

Hayata 1998 observes that the glottal stop occurs in place of the former part of the geminate consonant if the next syllable begins with a vowel, or does not have an onset consonant.

Markedness constraint: The sequence of the voiced sonorant coronal segment (the liquid and the dental nasal) and [+ high, + back] vowel is not appropriate at the final of the tense expletive form (or the form with [*tense* TF_{FORM} *exp/l*]) in western Saga dialect, as represented in Figure 2.

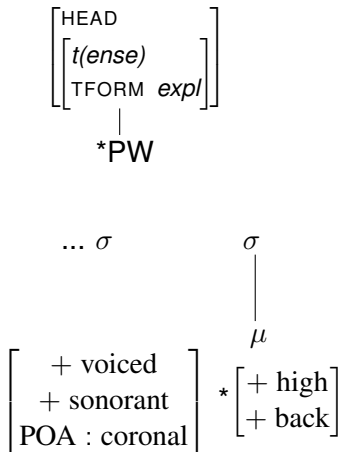


Figure: The final *[+voiced, +sonorant, +coronal][+high, +back] of the tense expletive forms

- Faithfulness constraint: Max[Place]: Let *input Place tier* = $p_1 p_2 p_3 \dots p_m$ and *output Place tier* $P_1 P_2 P_3 \dots P_m$. Assign one violation mark for every p_x that has no correspondent P_y .
- Markedness constraint: HavePlace: Assign one violation mark for every segment that has no Place specification.
- Prosodic faithfulness constraint, Max- μ : Assign one violation for each mora in the input that is not present in the output.
- Faithfulness constraint, Max-V, C: Assign one violation for each segment V(owel) or C(onsonant) in the input that is not present in the output.

- Faithfulness constraint, Dep-V: Assign one violation for each V(owel) in the output that is not present in the input.
- Faithfulness constraint, Ident[cont]: Assign one violation for every output segment that differs from its input correspondent in the feature [cont(inuant)].
- Ranking: {Max- μ , Dep-V} \gg *[+v,+s,c] U_{TE} \gg HavePlace \gg {Max[Place] \gg Ident[cont], Max-V,C}

Table: 7 The postulated intermediary forms of the non-past forms with the underlying final /ru/

[m-class]	meaning	Intermediary Forms	western Saga
C-final	'sell'	ur toki	u _̣ toki
	'knead'	ner toki	ne _̣ toki
	'cut'	kir toki	ki _̣ toki
	'paint'	nur toki	nu _̣ toki
	'open [pages]'	kur toki	ku _̣ toki
	'rub'	sur toki	su _̣ toki
/e/-final	'sleep'	n#u#r toki	nu _̣ toki
	'eat'	tab#u#r toki	tabu _̣ toki
/i/-final	'wear'	ki#r toki	ki _̣ toki
	'wake'	oki#r toki	oki _̣ toki
strong	'come'	k#u#r toki	ku _̣ toki
	'do'	s#u#r toki	su _̣ toki

See Tableau 1.

CodaCond, S-Opt and DYG-AC

There is one of the following two present in place of the coda post-alveolar tap after the final vowel /u/-absence.

- Compensatory Gemination (CG): The vowel at the nucleus is lengthened and audible at the coda, as in some in Table 7.
- Compensatory Lengthening (CL): The consonant at the onset of the next syllable is prepared and audible, or having a geminate, at the coda, as in the rest in Table 7.

This is a 'realization problem' the same as that in ancient Greek (Kiparsky 2011): Figure 3 or Figure 4.

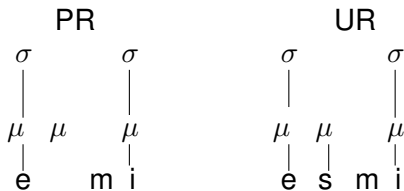


Figure: 3 CL in Attic

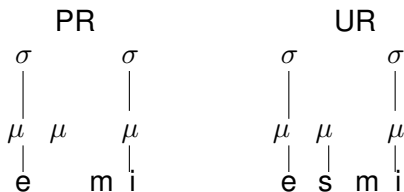


Figure: 4 CG in Lesbian and Thessalian

CodaCond

- CodaCond: Assign one violation mark for every token of Place that is not associated with a segment in the syllable onset (McCarthy 2008: 279).
- 'Place is licensed by association with an onset consonant; a Place node that is so licensed can also be associated with a preceding coda without violation CodaCond.'

Kiparsky's 2011 super-optimality

- The Input-Output pair (I, O) is super-optimal if and only if:
 - 1 there is no super-optimal (I, O') more harmonic than (I, O), and
 - 2 there is no super-optimal (I', O) more harmonic than (I, O).
- If there is a more harmonic super-optimal input-output pair with either the input I and a different output O' or a different input I' and the output O, then the pair (I, O) will not be super-optimal.

Duke of York Gambit across components

The 'non-past' forms of the verb stems /tab/ 'eat', /n/ 'sleep', have the morpheme of the tense expletive doubled / $[tense\ u]\#[tense\ ru]$ / in morpho-syntax (Koga and Ono 2010).

- /nuru/, [$tense\ [v[bse]\ n]$ [[$tense\ u]$ [$tense\ ru$]]], 'sleep-Non-past'
- */nu/, [$tense\ [v[bse]\ n]\ u$]
- /taburu/, [$tense\ [v[bse]\ tab]$ [[$tense\ u]$ [$tense\ ru$]]] 'eat-Non-past'
- */tabu/, [$tense\ [v[bse]\ tab]\ u$]

- (2) a. Morpho-Syntax: n u (toki)
sleep [tense *expl*]
- b. Morpho-Syntax: n u ru (toki)
sleep [tense *expl*] [tense *expl*]
- c. Morpho-Phonology: n u r
sleep [tense *expl*] [tense *expl*]
(toki)
- d. Morpho-Phonology: n u (toki)
sleep [tense *expl*]
- e. Morpho-Phonology: *n u :
sleep [tense *expl*] [tense *expl*]
(toki)

- (3) a. Morpho-Syntax: n u (toki)
sleep [tense *expl*]
- b. Morpho-Syntax: n u ru (toki)
sleep [tense *expl*] [tense *expl*]
- c. Morpho-Phonology: *n u r
sleep [tense *expl*] [tense *expl*]
(toki)
- d. Morpho-Phonology: *n u (toki)
sleep [tense *expl*]
- e. Morpho-Phonology: n u t (toki)
sleep [tense *expl*]

- (4) Markedness constraint: DYG-AC: A form with a morpheme morpho-syntactically doubled, $/S_a S_b \# S_c S_d/$, cannot be appropriately associated with only one morpheme remaining and with the last segment phonologically lengthened, $[S_a S_b S_b]$.
 $[Xp] \# [Xp]$
- (5) Faithfulness constraint: Ident[nasal]: Assign one violation mark for every segment that changes its value for the feature nasal between the input and output.

Ranking: DYG-AC \gg S-Opt

- (6) Max- μ \gg CodaCond \gg HavePlace \gg {Ident [nasal],
DYG-AC} \gg S-Opt \gg {Max[Place] \gg Ident[cont],
Max-V,C}

- The effect of Super-optimality is that the tense expletive form must not have the geminate consonant from the onset consonant of the next syllable at the coda of the final syllable.
- The effect of DYG-AC is that the tense expletive form must not have the vowel lengthened at the coda of the final syllable if the nucleus vowel is exactly the tense expletive form.
- The applicational condition of the latter is a subset of that of the former. In other words, DYG-AC is a special one, and Super-Optimality is a general one.

A special constraint is ranked higher than a general one (Baković 2013).

	U	
S-Opt	× okiru (okiR)	Q
	⊗ DYG-AC	× neru (nuQ, *nuR)
	× kiru (kiR)	× taberu (tabuQ, *tabuR)
	× uru (uR)	× kuru (kuQ, *kuR)
		× suru (suQ, *suR)

U: Standard /ru/-final 'non-past' forms of verbs

Q: /Ru/-final 'Non-past' forms of verbs corresponding to ones with Q in the dialect

Figure: Complementarity between Q and R

Predictions

HS in OT with the given markedness and the faithfulness constraints for the coda makes correct predictions that

- 1) the intermediary form *nur* 'sleep [Non-past]', whose morpheme boundaries are $n\#u\#r$, as mentioned in 3.1 and its UR will be given in the upper part of Tableau 2, is associated with [nut] (*toki*),
- 2) the intermediary form *nur* 'paint [Non-past]', whose morpheme boundaries are nur , as its UR will be given in the upper part of Tableau 3, is associated with [nu:],
- 3) the intermediary form *nir* 'resemble [Non-past]', whose morpheme boundaries are $ni\#r$, as its UR will be given in the upper part of Tableau 4, is associated with [ni:],

as we will see below for each.

i) Regarding nur 'sleep [Non-past]' (n#u#r)

See Tableau 2.

- Either of the forms nu:, nut and nun does not violate Max- μ .
- The form nu: violates DYG-AC.

The tense expletive form /u/ is phonologically lengthened with the underlying latter one of the morphologically doubled tense expletive morpheme /u#ru/, /ru/, absent.

ii) Regarding nur 'paint [Non-past]' (nur)

See Tableau 3.

- a) The form nu: does not violate DYG-AC.
- b) The form nu: does not violate S-Opt.
- c) The form nut violates S-Opt.

c) Except for the evaluation of S-Opt, the form nuH can be associated with this form nut since both the form nut as well as the form nu: invite the least serious violations of the violable constraints.

For the other directionality, the form nut cannot be associated with nuH or nur, which is a verb stem as a whole, since the form nut (toki) is associated with the form nuH and nur with the vowel at the nucleus being the tense expletive form, or n#u#r, as we saw before.

b) Except for the evaluation of S-Opt, the form nuH can be associated with this form nu: since both the form nut as well as the form nu: invite the least serious violations of the violable constraints, as we saw. For the other directionality, nu: is associated with nur since there is no more harmonic one.

iii) Regarding nir 'resemble [Non-past]' (ni#r)

See Tableau 4.

- a) The form ni: does not violate DYG-AC.
- b) The form ni: does not violate S-Opt.
- c) The form nit violates S-Opt.

c) The form nit would be associated with nir only if the nucleus vowel /i/ were the tense expletive.

Summary

We provided the data of the non-past forms of verbs in Japanese-western Saga dialect, in addition to Hayata's 1998 observation of those in Japanese-Saga Takeo dialect, corresponding to the /ru/-final non-past forms of standard Japanese. The data were contrasted with those of Japanese Fukuoka-Yanagawa dialect, and furthermore 1) the pre-nominal non-past forms and the sentence-final non-past ones of verbs in old Japanese, 2) the forms of the polite affix and 3) the non-past forms of the /n/ consonant-final base verbs in Japanese-Yamaguchi dialect.

We showed that Hayata 1998 is not adequate to explain the difference between the geminate consonants and the lengthened vowels in western Saga dialect. If extended to the complementarity phenomenon of the western Saga dialect, there will be no other way to stipulate the *elsewhere* rule, and the rule will be ad hoc and we need to stipulate the order between rules. We argued in favor that the vowel /u/ corresponding to the stem final /e/ is NOT a part of the verb stem, and that the alternation is NOT the same as that of the potential verb /e/ in old Japanese.

We proposed an HS explanation in Koga and Ono's 2010 morpheme-based morphology. The morphological framework assumes two kinds of stems for three kinds of the verbs and affixes' selections of verb stems. The vowel /u/ corresponding to the stem final /e/ is the morpheme of the tense expletive as well as the sequence /ru/ is. The tense expletive, or the unmarked tense morpheme, in contrast with the past, or marked, morpheme, may be duplicated.

The HS explanation carries Hayata's 1998 insight that CL&G in place of the underlying final /ru/ of the tense expletive forms of verb consists of two associations in ...V:##C_i... or ...VC_i##C_i... — ...Vr##C_i... — ...Vru##C_i...: 1) the final /u/ absence, as found in other languages, and 2) what we interpret, the CL&G in compensation of the absent post-alveolar tap at the coda, as usual in CL&G in languages.

The complementarity in western Saga dialect was explained by ranking the more specific constraint Duke of York Gambit Across Components (DYG-AC) higher than the more general constraint Super-optimality (S-Opt).

Implications

The current study implies that CodaCond and other markedness and faithfulness constraints, typical in order for CL&G, in HS work well together with the three markedness constraints—*[+voiced, +sonorant, coronal][+high.+back], Duke of York Gambit Across Components and Super-optimality—to explain the CL&G in western Saga dialect, following Baković's 2013 superiority of OT to rules.

The vowel final absence constraint, motivated by Isthmus Nahatul, received another support from western Saga dialect. Kiparsky's 2011 Super-optimality is supported by western Saga dialect.

Further research is required to examine whether there is any phenomenon in other languages in which there are a marked morpheme and an unmarked morpheme for one identical syntactic category and to which the novel constraint Duke of York Gambit Across Components (DYG-AC) is relevant.

If our analysis is correct, then it will mean that the unmarked affix (but NOT a marked one) may be duplicated, for example, due to the prosodic minimality, and further contracts to the bare minimum to reduce the too oversized sequence phonologically, in some dialect as long as the contraction is grammatical, as schematized as follows.





- Dialect A: $stem [s_1] \dots [s_n] \# affix [S_1] \dots [S_j] \dots [S_m]$,
where each $[s_n]$ is the n -numbered phoneme and the sequence of $[s_1] \dots [s_n]$ constitutes a stem of a verb, and each $[S_m]$ is the m -numbered phoneme and the sequence of $[S_1] \dots [S_j] \dots [S_m]$ constitutes an affix, and n , j and m are arbitrary natural numbers.
- Dialect B: $stem [s_1] \dots [s_n] \# affix [S_1] \dots [S_j] \dots [S_m] affix [S_1] \dots [S_j] \dots [S_m]$,
where the affix is unmarked and repeated.³
- Dialect C: $stem [s_1] \dots [s_n] \# affix [S_1] \dots [S_j] \dots [S_m] affix [S_1] \dots [S_j]$,
where the affix is unmarked and repeated and the contracted form with $[S_{j+1}] \dots [S_m]$ absent.

³The past affix is repeated with its shorter allomorph in western Saga dialect.



The morpheme-based morphology with affixes' being the head and selecting verb stems, fits Japanese well, which is an agglutinative language.

A future research will decide whether we can explain the 'non-past' forms of other dialects and old Japanese in a more straightforward manner, as we did for western Saga dialect, if the corresponding vowel /u/ to the verb stem final /e/ is analyzed as the tense expletive (Koga and Ono 2010 and Koga 2012).

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