The Phonology of Emphatic Morphology in Japanese Mimetics
Category: Phonetics/Phonology

The goal of this paper is two-fold. First, I provide a comprehensive description of the phonology involved in /CVCV-CVCV/ and /CVCV-ri/ emphatic forms in Japanese mimetics. Second, I develop a unified analysis of it within the framework of OT (Prince & Smolensky 2004). Earlier studies have discussed this issue, but only fragmentally. On the theoretical side, I highlight the importance of two notions: multi-valued scalar violation assignment (de Lacy 2002) and Control Theory (Orgun & Sprouse 1999, 2009; Bye 2007). Their necessity is empirically justified by optionality and absolute ungrammaticality in the phonology of emphatic mimetics.

The examples in (1) and (2) show that gemination of C_2 is always possible in /C_1VC_2V-C_3VC_4V/ forms. As in (2), C_3 may be geminated under the following two conditions: (i) C_3 is less sonorous than C_2, and (ii) C_2 is voiced while C_3 is voiceless. This generalization expands on Nasu (2002) who finds that geminated fricatives and voiced obstruents are disfavored.

(1) C_2 gemination

Base	*Emphatic*	*Gloss*	*Base*	*Emphatic*	*Gloss*
pika-pika	pikka-pika	shiny	muɲa-muɲa	muɲɲa-muɲa	mumbling
gaba-gaba	gabba-gaba	over-sized	joro-joro	jorro-joro	stagy
mosa-mosa	mossa-mosa	hairly	jawa-jawa	jawwa-jawa	weak

(2) $C_2 \approx C_3$ gemination

Base	*Emphatic*		*Gloss*	*Base*	*Emphatic*		*Gloss*
pasa-pasa	passa-pasa	pasa-ppasa	powdery	keba-keba	kebba-keba	keba-kkeba	gaudy
giza-giza	gizza-giza	giza-ggiza	notched	tubu-tubu	tubbu-tubu	tubu-ttubu	lumpy
guɲa-guɲa	guɲɲa-guɲa	guɲa-gguɲa	spineless	sube-sube	subbe-sube	sube-ssube	smooth
zara-zara	zarra-zara	zara-zzara	rough				

Assuming /μ_e/ as the trigger of gemination associated with the emphatic morpheme (Davis & Ueda 2002; Kawahara 2007), default C_2 gemination is captured with the licensing constraint in (3a). Other augmentation processes like vowel lengthening and nasal insertion are foreclosed by IDENT-IO-V_μ and DEP-BR. *VOIGEM in (3b) militates against voiced geminates in general. *VOIGEM is motivated by the articulatory difficulty of retaining glottal cord vibration during long obstruent closure (Jaeger 1978; Westbury 1979; Ohala 1983) and by the perceptual difficulty of the duration of geminatted sonorants (Kawahara 2006).

(3) a. LICENSE(μ_e,σ_1): The emphatic morpheme /μ_e/ is licensed by the word-initial syllable.
b. *VOIGEM: Voiced geminates are prohibited.

The data in (2) show that the less sonorous a consonant is, the more likely to be susceptible to gemination it is (Kawahara 2007). This insight can be expressed with the universal hierarchy in (4).

(4) *GEMGLIDE » *GEMLIQUID » *GEMNASAL » *GEMFRICATIVE » *GEMSTOP

In OT, the optionality in (2) can be viewed as a phenomenon arising from free ranking of LICENSE(μ_e,σ_1), *VOIGEM, and the *GEM constraints. The problem with this analysis is that no potential ranking succeeds in modeling the fact that LICENSE(μ_e,σ_1) competes with the preference for gemination of consonants with low sonority. If LICENSE(μ_e,σ_1) is rerankable with *GEMGLIDE, optionality is expected only when C_2 is a glide. Likewise, we wrongly predict optionality only when C_2 is a particular manner of consonant, no matter which *GEM constraint is ranked freely with LICENSE(μ_e,σ_1). All the *GEM constraints need to be conflated.

I propose a solution appealing to the notion of scalar violation assignment (de Lacy 2002). The idea is that UG provides no intrinsically ranked constraints, but instead, different degrees of violation marks are assigned to different representations of the same family. I assume that geminated stops, fricatives, nasals, liquids, and glides incur one, two, three, four, and five *GEM violations, respectively. This idea dispenses with the crucial ranking of the constraints in (4) since the general *GEM constraint plays the same role as the hierarchy in (4).

Now, we can analyze (1) and (2) by assuming free ranking of LICENSE(μ_e,σ_1), *VOIGEM, and *GEM. In addition, I assume undominated MAX-μ_e that requires surface parsing of /μ_e/. As shown in (5), optionality is not found when gemination of C_3 does not fare better than that of C_2 with regard to *VOIGEM and/or *GEM.

(5)

	/pika-pika, μ_e/	MAX-μ_e	LICENSE(μ_e,σ_1)	*VOIGEM	*GEM
a.	pika-pika	*!			
b. ☞	pikka-pika				*
c.	pika-ppika		*!		*

The analysis of the examples in (2) is presented in (6) and (7). As shown in (6), when C_3 is lower than C_2 in sonority, gemination of C_2 performs worse than C_3 with respect to *GEM. Either (6b) or (6c) is generated, depending on the ranking of LICENSE(μ_e,σ_1) and *GEM. (7) demonstrates the analysis of cases where voicing is the crucial phonological factor. LICENSE(μ_e,σ_1) favors gemination of C_2, but gemination of C_3 is preferred by *VOIGEM. Thus, free ranking of LICENSE(μ_e,σ_1), *VOIGEM, and *GEM explains the entire pattern in (2).

(6)

	/pasa-pasa, μ_e/	MAX-μ_e	LICENSE(μ_e,σ_1)	*VOIGEM	*GEM
a.	pasa-pasa	*!			
b. ☞	passa-pasa				**
c. ☞	pasa-ppasa		*		*

(7)

	/keba-keba, μ_e/	MAX-μ_e	LICENSE(μ_e,σ_1)	*VOIGEM	*GEM
a.	keba-keba	*!			
b. ☞	kebba-keba			*	*
c. ☞	keba-kkeba		*		*

/C_1VC_2V-ri/ forms exhibit different behavior from /CVCV-CVCV/ forms. (8a) suggests that C_2 undergoes gemination when it is voiceless. As in (8b), nasal insertion occurs when C_2 is a voiced consonant other than a liquid. Finally, no emphatic form exists when C_2 is a liquid, as exemplified in (8c).

(8)

	Base	*Emphatic*		*Gloss*
a.	pika-ri	pikka-ri		flashing
	basa-ri	bassa-ri		drastic
b.	zabu-ri	zaNburi		splashing
	guɲa-ri	guNɲa-ri		limp
	huwa-ri	huNwa-ri		soft
c.	hura-ri	*hurra-ri	*huNra-ri	aimless
	turu-ri	*turru-ri	*tuNru-ri	smooth

In (8a), gemination of C_2 follows from the analysis above. Nasal epenthesis in (8b) is generated if DEP-IO is dominated by *VOIGEM and *GEM, as in (9). As aforementioned, DEP-BR is undominated. The separation of DEP-IO and DEP-BR explains why nasal epenthesis occurs only in /CVCV-ri/ emphatic forms.

(9)

	/zabu-ri, μ_e/	MAX-μ_e	LICENSE(μ_e,σ_1)	*VOIGEM	*GEM	DEP-IO
a.	zabu-ri	*!				
b.	zabbu-ri			*!	*	
c. ☞	zaNbu-ri					*

Both *VOIGEM and *GEM should outrank DEP-IO because *VOIGEM and *GEM are rerankable constraints. Given *GEM » DEP-IO, one question is why nasal epenthesis does not take place in (8a). Nasal epenthesis is prevented in (8a) to respect *NC̥ that forbids a nasal followed by a voiceless consonant (Pater 1999). *NC̥ is inviolable in the mimetic vocabulary of Japanese (Ito & Mester 1995).

Finally, I claim that the lack of emphatic forms in (8c) is absolute ungrammaticality. Davis & Ueda (2002) view it as underparsing of /μ_e/. Their analysis predicts ambiguity of forms like [hura-ri] since inputs with and without /μ_e/ converge on the same output. In reality, no ambiguity is observed, suggesting that the absence of emphatic forms should be interpreted as absolute ungrammaticality. Davis & Ueda (2002) assume *NL (a constraint against nasal-liquid sequences) as a descriptive constraint, but I deploy it as a real constraint. *NL is motivated by the fact that a nasal is deleted before a liquid in languages like Bahasa Indonesian and Frisian (Flemming 2005). Mimetic forms like [raN-raN] 'pleasant' exists, so *NL takes a morpheme as its domain.

I propose an analysis that utilizes Control Theory (Orgun & Sprouse 1999, 2009; Bye 2007). In this theory, the optimal form chosen by EVAL is submitted to the Control component. Control consists only of inviolable constraints. The candidate emitted by EVAL surfaces if it satisfies all the constraints in Control. Otherwise, the candidate is abandoned, resulting in absolute ungrammaticality. Let us assume that *NL is in Control in Japanese mimetics. As in (10), EVAL picks [huNra-ri], but it crashes due to its violation of *NL in Control.

(10)

	/hura-ri, μ_e/	MAX-μ_e	LICENSE(μ_e,σ_1)	*VOIGEM	*GEM	DEP-IO
a.	hura-ri	*!				
b.	hurra-ri			*!	****	
c. ☞	huNra-ri					*

Approaches with MPARSE (Prince & Smolensky 2004; Raffelsiefen 2004; Wolf & McCarthy 2009) and paradigmatic consideration (Rice 2003, 2005, 2007) are conceivable rival accounts. They are similar in that EVAL makes the ultimate decision of output. If we add undominated *NL to (10), EVAL would choose a form with a geminated [r] in (10b). Thus, we need some markedness constraint that disfavors this undesired form. Geminated [r] appears in emphatic /CVCV-CVCV/, as illustrated in (1). The conjoined constraint defined in (11) disallows geminated [r] only in /CVCV-ri/ forms by the power of the OCP. The OCP militates against two identical consonants across a vowel (Rose 2000).

(11) *[rr] & OCP: [r] and geminated [r] may not cooccur across a vowel.

This conjoined constraint is problematic. The co-relevance of the two conjoined constraints is not clear, so it is vulnerable to the general problem with constraint conjunction that typologically unattested patterns are potentially created (McCarthy 2007; Pater 2009; Potts et al. 2010). My Control analysis avoids this problem because *[rr] & OCP is not required for eliminating [hurra-ri]. *VOIGEM, *GEM » DEP-IO is enough.

The Control analysis above is consistent with Kurisu (2010). He argues that the absence of a palatalized consonant before [e] and the absence of palatalized [r] are best analyzed with Control Theory. Coupled with Kurisu (2010), the data in (8c) empirically support the Control-based approach to absolute ungrammaticality.

In sum, /CVCV-CVCV/ and /CVCV-ri/ mimetic forms show different behavior in emphatic morphology. Two theoretical insights emerged. First, optionality found in /CVCV-CVCV/ forms is conditioned by voicing and sonority. This optionality phenomenon supports multi-valued scalar violation assignment. Second, nasal epenthesis and absolute ungrammaticality are observed in /CVCV-ri/ forms. Among three approaches, only Control Theory enables us to offer a principled analysis of the absolute ungrammaticality effect.