

CONSONANT GEMINATION IN THE NORTH-EAST IBARAKI DIALECT*

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1. Introduction

In 'standard' Japanese, when the sequence '/r/ + a vowel (= V)' is immediately followed by /n/, it sometimes turns into a *hatuon* (= moraic nasal) in casual speech: *wakaranai* > *wakaNnai* 'I do not know', (*doo*) *suruno* > (*doo*) *suNno* 'what would you do'.¹ Similarly, very relaxed colloquial speech exhibits a *sokuon* (= moraic obstruent) derived from the sequence /rV/ immediately followed by an obstruent: (*soo*) *suruto* > (*soo*) *sutto* 'then', (*moNku*) *aruka* > (*moNku*) *akka* 'do you have (any objection)'.

Since these moraic consonants are derived from the sequence /rV/, it is obvious that a process of vowel deletion is involved in the phenomena. Further, we can recognize a process of consonant gemination here. There is a good reason to assume that the sequences 'a *hatuon* + /n/' (as in *wakaNnai*) and 'a *sokuon* + a voiceless obstruent' (as in *sutto*) are phonologically a nasal geminate and a voiceless obstruent geminate, respectively. In Japanese, the first element of geminates and that of partial geminates such as homorganic nasal-obstruent clusters (e.g., /mp/ and /nt/) are realized as a moraic consonant, i.e., either a *hatuon* or a *sokuon*.

Although 'standard' Japanese provides only a few cases of the gemination phenomena, there is a dialect which displays rich data of the phenomena: the north-east Ibaraki dialect.

This paper investigates the gemination phenomena mainly observed in the north-east Ibaraki dialect and attempts to clarify the nature of such phenomena. My fundamental claims are the following two points: (i) the vowel deletion applies wherever the segmental environment is satisfied; and (ii) 'recoverability' of the quality of deleted vowels determines

whether or not geminate forms can be realized.

The organization of this paper is as follows. Section 2 introduces basic data which illustrate the gemination phenomena. Section 3 reviews a previous analysis of them. Section 4 discusses the applicability of the vowel deletion rule and two classes of apparent exceptions to the rule and shows that revision of the rule excludes one of these classes from its target. In section 5, we claim that the other class of exception is better treated when we take 'recoverability' into consideration. Some concluding remarks are made in the final section.

2. Basic Data

In this section we introduce basic data of the gemination phenomena and observe what kinds of segmental changes take place.

2.1. Nasal Geminates

When the interrogative particle *-no* is attached to the indicative form of a verb, a certain segmental change is observed in some cases:

- | | | | | | |
|--------|---------|---------|---|--------------------|-------------------|
| (1) a. | tor- | 'take' | : | tor <u>-u-no</u> | to <u>N-no</u> |
| | nemur- | 'sleep' | : | nemur <u>-u-no</u> | nemu <u>N-no</u> |
| | b. kak- | 'write' | : | kak <u>-u-no</u> | *ka <u>N-no</u> |
| | asob- | 'play' | : | asob <u>-u-no</u> | *aso <u>N-no</u> |
| (2) | mi- | 'see' | : | mi- <u>ru-no</u> | mi- <u>N-no</u> |
| | tabe- | 'eat' | : | tabe- <u>ru-no</u> | tabe- <u>N-no</u> |

In (1) and (2), the leftmost column lists verb stems. In this paper, we will call verb stems ending with a consonant as shown in (1) 'C-final stems', and those ending with a vowel as in (2) 'V-final stems'. This difference determines their

selection of inflectional endings: C-final stems take /u/, while V-final stems take /ru/. Following de Chene (1988) and Mester and Itô (1989), we assume that the inflectional ending is underlyingly -u, positing /r/-epenthesis, which inserts the unmarked sonorant /r/ between a V-final stem and the V-initial inflectional ending -u. In (1a) and (2), when the particle -no is attached to the indicative forms, the sequence /run/ is formed. This sequence can be replaced by the geminate /nn/ as shown in the rightmost column.

Such geminates are considered to be a result of two phonological processes as analyzed in Nemoto (1993): (i) deletion of post-/r/ vowels and (ii) consonant gemination. Notice here that the /r/ in (1a) and the /r/ in (2) are different in their morphological status. That is, in (1a) the relevant /r/ is the stem-final consonant, while in (2) the /r/ is considered to be an epenthetic one.

In contrast to the examples in (1a) and (2), the same suffix does not trigger any change in the examples in (1b), where the /run/ sequence is not formed. Note that no difference but the segmental one plays a role in the occurrence of this change. First, the place of a morpheme boundary is not crucial: the /run/ sequence is morphologically *r-u-n* in *tor-u-no* in (1a), and *ru-n* in *mi-ru-no* in (2). Second, the number of the morae of the indicative forms, to which the particle is added, is not important: in (1a) *tor-u* has two morae and *nemur-u* has three morae. Third, the place of the pitch accent of the indicative forms does not affect the occurrence of the change: in the north-east Ibaraki dialect, as in 'standard' Japanese, *nemur-u* in (1a) is accentless and *tabe-ru* in (2) has an accent on the stem-final mora.

The same segmental change as the ones observed in (1a) and (2) takes place when an indicative form ending with /ru/ is immediately followed by one of /n/-initial morphemes such as the prohibitive imperative -na (*tor-u-na* > *toN-na* 'do not take (it)'), the provisional -nara (*tor-u-nara* > *toN-nara* 'if you take (it)'). In addition to the forms with /nn/, there

are some forms including the geminate /mm/ such as *toN-me*, which is derived from *tor-ame* 'you will take (it), will you' (cf. Nemoto 1993).

2.2. Obstruent Gemimates

A similar segmental change to the ones observed in (1a) and (2) can be found when a morpheme ending with an obstruent is attached to the indicative form of verbs. In (3), we give examples in which *-kara* 'because' is involved:

(3) a.	tor-	'take'	:	tor <u>-u</u> -kara		tok <u>-k</u> -kara
	nemur-	'sleep'	:	nemur <u>-u</u> -kara		nemuk <u>-k</u> -kara
	b. mi-	'see'	:	mi-ru <u>-k</u> -kara		mi-k <u>-k</u> -kara
	tabe-	'eat'	:	tabe-ru <u>-k</u> -kara		tabe-k <u>-k</u> -kara
	c. kak-	'write'	:	kak <u>-u</u> -kara		*kak-kara ²
	asob-	'play'	:	asob <u>-u</u> -kara		*asok-kara

In (3a, b), the geminate /kk/ arises in place of the sequence /ruk/. In this case, too, the deletion of post-/r/ vowels and the consonant gemination seem to be operative.

There are many other morphemes which are considered to be responsible for such a change: the interrogative *-ka* and *-ge*, the adversative *-kedo*, the conjunctive *-to*, the noun *-koto*, the presumptive *-be*, etc.³

3. Review of a Previous Study

In this section, we first review Nemoto's (1993) treatment of the gemination phenomena, and then examine the status of the morphological boundary which is relevant in the formulation of her vowel deletion rule.

3.1. Nemoto's (1993) Analysis

Nemoto (1993) mainly deals with the gemination phenomena

triggered by the presumptive particle *-be* and the negative presumptive suffix *-ame*. In her framework, the segmental changes as observed in section 2 can be accounted for by the following two rules:

(4) Post-/r/ Vowel Deletion (PVD):⁴

$V \longrightarrow \phi / r _ + [-cont]$

(Nemoto 1993: 112)

(5) Gemination:⁵

$$\begin{array}{cc} C & C \\ \vdash & | \\ \text{---} & \text{---} \\ \text{Root} & \text{Root} \end{array}$$

(Nemoto 1993: 113)

The rule in (4) states that a vowel preceded by /r/ and followed by a [-continuant] segment is deleted if a morpheme boundary intervenes between the vowel and the [-cont] segment. Gemination (5) applies to a heterogeneous C_1C_2 sequence and turns it into a geminate by delinking of the Root node of the first consonant and the simultaneous spreading of the Root node of the second consonant.

Given these two rules, the derivation of the forms including a geminate given in section 2 is illustrated as in (6):

(6)		PVD (4)		Gemination (5)	
a.	<u>to</u> <u>r</u> <u>u</u> <u>no</u>	\longrightarrow	<u>to</u> <u>r</u> <u>no</u>	\longrightarrow	<u>to</u> <u>n</u> <u>no</u>
	r V+[-cont]		C C		C C
			\vdash		\vee
			R R		R
b.	<u>mi</u> <u>r</u> <u>u</u> <u>no</u>	\longrightarrow	<u>mi</u> <u>r</u> <u>no</u>	\longrightarrow	<u>mi</u> <u>n</u> <u>no</u>
c.	<u>to</u> <u>r</u> <u>u</u> <u>kara</u>	\longrightarrow	<u>to</u> <u>r</u> <u>kara</u>	\longrightarrow	<u>to</u> <u>k</u> <u>kara</u>
d.	<u>mi</u> <u>r</u> <u>u</u> <u>kara</u>	\longrightarrow	<u>mi</u> <u>r</u> <u>kara</u>	\longrightarrow	<u>mi</u> <u>k</u> <u>kara</u>

First, the vowel /u/ is deleted by PVD (4) because the vowel

is preceded by /r/ and followed by a [-cont] segment (/n/ in (6a, b) and /k/ in (6c, d)) and there is a morpheme boundary intervening between the vowel and the [-cont] segment. Next, the resulting sequences /rn/ and /rk/ are changed into /nn/ and /kk/, respectively, by Gemination (5).

3.2. The Morpheme Boundary and Post-/r/ Vowel Deletion

In this subsection we first consider two other cases of gemination, i.e., the case of the negative suffix *-(a)na* and the case of the provisional suffix *-eba*. Then we show that in order to maintain Nemoto's (1993) PVD (4), we should assume that each of these suffixes is comprised of two independent morphemes as argued in Zamma (1992).

We find a geminate form where the negative suffix *-(a)na-* is attached to /r/-ending verb stems. The relevant data are given below:

- | | | | | | |
|-----|--------|---------|---|---------------------|--------------------|
| (7) | tor- | 'take' | : | tor <u>ana</u> -i | toN <u>na</u> -i |
| | kir- | 'cut' | : | kir <u>ana</u> -i | kiN <u>na</u> -i |
| | nemur- | 'sleep' | : | nemur <u>ana</u> -i | nemuN <u>na</u> -i |
| | odor- | 'dance' | : | odor <u>ana</u> -i | odoN <u>na</u> -i |

In (7), the sequence of /ran/ arises as a result of the concatenation and this sequence is changed into a geminate /nn/. Notice that no change is observed where the sequence /ran/ is not formed:

- | | | | | | |
|-----|-------|---------|---|--------------------|--------------------|
| (8) | kak- | 'write' | : | kak <u>ana</u> -i | *kaN <u>na</u> -i |
| | asob- | 'play' | : | asob <u>ana</u> -i | *asoN <u>na</u> -i |
| (9) | mi- | 'see' | : | <u>mi</u> -na-i | *N <u>na</u> -i |
| | tabe- | 'eat' | : | <u>tabe</u> -na-i | *taN <u>na</u> -i |

In (8), the stems end with a consonant other than /r/. In (9), the stems end with a vowel and take *-na-*, not *-ana-*. In

both cases, the sequence /ran/ is never formed.

Next, consider the case of the provisional suffix *-eba*. There exists an intriguing case of gemination triggered by the suffix, which is observed in Kitaibaraki-shi in north-eastern Ibaraki and in a limited area of Iwaki-shi in south-eastern Fukushima. Observe the following examples:

- (10) a. tor- 'take' : tor-eba top-pa
 nemur- 'sleep': nemur-eba nemup-pa
 b. mi- 'see' : mi-reba mi-ppa
 tabe- 'eat' : tabe-reba tabe-ppa

In (10), the change from /reb/ into /pp/ is observed. Note that /r/ is inserted by /r/-epenthesis in (10b). Since the geminate /pp/ is regarded as a form derived from /bb/ through Devoicing in accordance with the Coda Condition (cf. Itô 1986; 1989),⁶ we can argue that PVD (4) and Gemination (5) are operative in this case.

However, if the two suffixes *-(a)na* and *-eba* are not decomposable, we cannot explain these examples by means of PVD (4) and Gemination (5): neither *tor-ana-i* in (7) nor *tor-eba* in (10a) satisfies the structural description of PVD (4), which requires a morpheme boundary between the target vowel and the following [-cont] segment.

Although these suffixes are usually regarded as monomorphemic, we may assume that they are compositional if part of them can appear independently. In fact, the form *-na* appears with the potential suffix *-e*, as in *tor-e-na-i*, which suggests that it is an independent morpheme in itself. But how about *-a* and the suffix *-eba*? Crucial cases are pointed out in Zamma (1992):

- (11) a. yqb-a-ba yob-e 'call (me) so if you want to'
 b. ik-e-domo ik-e-domo 'how far a person goes'

- c. hitoziti o kaesi-te hosi-ku-ba
 'if you want (me) to send the hostage back'
 (cf. Zamma 1992: 121)

In (11a), the form *-a* appears with *-ba*. In (11b), *-e* appears independently of *-ba* and in (11a, c), *-ba* appears independently of *-e*. These facts lead Zamma to assume that there are independent morphemes *-a* and *-na*, and *-e* and *-ba*.

Given Zamma's analysis, we can circumvent the apparent problem mentioned above. Since the forms in question are represented as *tor-a-na-i* and *tor-e-ba*, PVD (4) applies to both forms. Thus, the proposal made in Zamma (1992) makes it possible to retain the morpheme boundary in the formulation of PVD (4).

4. The Target of Post-/r/ Vowel Deletion

There exist two cases to which PVD (4) apparently fails to apply, although its environment is satisfied: (i) where the vowel is included in a verb stem; (ii) where the vowel constitutes the potential suffix *-e*. In 4.1, we examine the data of these two exceptional cases. Then, in 4.2, we will revise PVD so that it does not apply to stem-vowels. In 4.3, we review how Nemoto (1993) deals with the case (ii) and point out that there are some problems in her analysis.

4.1. Relevant Data

4.1.1. Stem-Vowels and Post-/r/ Vowel Deletion

We have seen above that the negative form of V-stems is derived through suffixation of *-na*. Then, if a V-stem ends with one of the sequences of /ra/, /re/, /ri/, /ro/, and /ru/, such a sequence, immediately followed by /n/ of *-na-*, will form the exact environment of PVD (4). In Present-day Japanese, there is no verb stem which ends with /ra/, /ro/, and /ru/. Thus, the remaining possibilities are /ri/-ending

and /r/-ending verb stems. The negative forms of these stems are given below:

- (12) a. ori- 'get down': orina-i *oN-na-i
 kari- 'borrow' : karina-i *kaN-na-i
 b. hure- 'touch' : hurena-i *huN-na-i
 wasure- 'forget' : wasurena-i *wasuN-na-i

Here it is obvious that the stem-vowels cannot be deleted by PVD (4) even if the environment is met.⁷ It appears that the fact can be explained if we exclude /i/ and /e/ from the target vowel of PVD. However, as we have seen above, the vowel /e/ can be deleted as in *tor-e-ba* > *top-pa*. Moreover, we find the deletion of the vowel /i/: when the mild imperative *-na* or *-nas-a-* is attached to the inflectional form of /r/-ending stems, this /r/ and the inflectional ending *-i* are replaced with a *hatuon*. We give the examples involving *-na*:

- (13) a. tor- 'take' : tori-na toN-na
 nemur- 'sleep' : nemuri-na nemuN-na
 b. ori- 'get down': orina *oN-na
 kari- 'borrow' : karina *kaN-na

It is plausible to assume that PVD (4) is operative in (13a). Notice that the stem-vowels are not deleted in the examples in (13b), although they satisfy the structural description of PVD.

Thus, we should not limit the target vowel of PVD (4). Then, we have to explain why the stem-vowels in the examples in (12) and (13b) are not deleted.

4.1.2. The Potential Suffix *-e* and Post-/r/ Vowel Deletion

Next, let us consider the case in which the potential suffix *-e* is involved. We have seen that when the inflection-

al ending *-a* and the negative suffix *-na* are attached to /r/-ending stems, PVD (4) and the subsequent Gemination (5) jointly turn the sequence /ran/ into the geminate /nn/. In Japanese morphology, the suffix *-na* can follow the potential *-e* or *-are*, and the passive *-are*. Note that the sequence /ren/ is formed (i) when the suffix *-na* is attached to the sequence '/r/-ending stem + potential suffix *-e*' and (ii) when *-na* is suffixed to one of the potential suffix *-are* and the passive suffix *-are*. Can we find the gemination processes in these cases? The answer does not seem to be totally positive, as we observe in (14) and (15):⁸

(14) Potentials:

- | | | |
|----|--|-------------------------------|
| a. | tor <u>e</u> - <u>na</u> -i | *to <u>N</u> - <u>na</u> -i |
| b. | mi-r <u>a</u> - <u>re</u> - <u>na</u> -i | mi-ra <u>N</u> - <u>na</u> -i |

(15) Passives:

- | | | |
|----|--|--------------------------------|
| a. | tor- <u>are</u> - <u>na</u> -i | ?tor-a <u>N</u> - <u>na</u> -i |
| b. | mi-r <u>a</u> - <u>re</u> - <u>na</u> -i | ?mi-ra <u>N</u> - <u>na</u> -i |

The examples in (15b) show that the /re/ of the potential suffix *-are* turns into a *hatuon*; that is, it can be geminated. However, the potential *-e* is not deleted in (14a).⁹ Moreover, the passive *-are* may undergo the gemination processes, as shown in (15). The question marks in (15) indicate that the relevant form by itself sounds somewhat unnatural but is acceptable when an appropriate context is provided.

4.2. Revision of Post-/r/ Vowel Deletion

In this subsection, we provide an answer to the question of why stem-vowels are not deleted by PVD (4). In order to exclude stem-vowels from the target of PVD (4), we have at least two options: (i) to stipulate that the target of the rule is not a stem-vowel; (ii) to revise the rule itself. Here it should be noted that to restrict the application of

PVD (4) to polymorphemic words does not account for the fact that stem-vowels are not deleted: while it explains why the medial vowel in monomorphemic nouns like *iruka* 'dolphin' is not deleted, it never explains why the stem-vowel in suffixed forms such as *ori-na-i* is not deleted. In the present paper, we take the option (ii) rather than the option (i), since the latter requires some stipulation with respect to the target of the rule.

In Nemoto (1993), a revised version of PVD is suggested. Although she does not mention the issue of stem-vowels, the revised PVD excludes stem-vowels from its target. The formulation is cited below:

- (16) $V \longrightarrow \phi / (+)_a (ra) r (+)_b _ + [-cont]$
 Condition: + is realized in either a or b.
 (Nemoto 1993: 128, n. 15)

Note that the revised version of PVD never deletes the stem-vowels, since its structural description contains a morpheme boundary on each side of the target vowel.

Now, let us see how the revised version of PVD works. We can state that the formulation in (16) represents logically four possible environments of the vowel deletion. In (17) we illustrate the environments:

- (17) a. $V \longrightarrow \phi / + rar _ + [-cont]$
 b. $V \longrightarrow \phi / + r _ + [-cont]$
 c. $V \longrightarrow \phi / rar + _ + [-cont]$
 d. $V \longrightarrow \phi / r + _ + [-cont]$

She states that if '+' is realized at a-position, (i) *tabe-ru-be* and (ii) *tabe-rare-me* become *tabeppe* and *taberaNme*, respectively; and that if '+' is realized at b-position, (iii) *tor-u-be* and (iv) *tor-ame* become *toppe* and *toNme*, respectively. Thus we can interpret her statement as follows: rule (17a) applies to the form (ii), rule (17b) to the form (i),

and rule (17d) to the form (iii) and (iv).

Notice, however, that the formulation in (16) has two crucial problems. First, rule (17c) is not utilized: there is no case where a vowel is deleted in the environment of rule (17c). Moreover, when we adopt de Chene's (1988) /r/-epenthesis, which Nemoto (1993) utilizes, we have to eliminate rule (17b). Since de Chene characterizes epenthetic /r/ as 'a buffer between morphemes rather than a part of some particular morpheme' (p. 5), the form which seems to serve as an input of rule (17b) turns out to be an input of rule (17d): *tabe-ru-be* is in fact *tabe-r-u-be*.

Taking the above discussion into consideration, we can further revise Nemoto's (1993) PVD (16) as follows:

(18) Post-/r/ Vowel Deletion:

$$V \longrightarrow \phi / r + (ar)_- + [-cont]$$

The formulation represents the following two environments:

(19) a. $V \longrightarrow \phi / r + ar _ + [-cont]$

b. $V \longrightarrow \phi / r + _ + [-cont]$

The two rules illustrated in (19) cover the whole data discussed in this paper and in Nemoto (1993). Rule (19a) applies to the following forms: potential negative forms such as *mi-r-are-na-i* (14b) and *mi-r-are-me* (cf. Nemoto 1993), and passive negative forms such as *tor-are-na-i* (15a), *mi-r-are-na-i* (15b), *tor-are-me*, and *mi-r-are-me* (cf. Nemoto 1993). Rule (19b) applies to the following data: *tor-u-no* (1a) and *mi-r-u-no* (2), *tor-u-kara* (3a) and *mi-r-u-kara* (3b), *tor-u-be* and *mi-r-u-be* (cf. Nemoto 1993), *tor-a-na-i* (7), *tor-e-ba* (10a) and *mi-r-e-ba* (10b), *tor-i-na* (13a).

Note that this simplified formulation, as well as the one in (16), insures that the rule does not delete stem-vowels, since the target vowel must be preceded by a morpheme boundary and followed by another one.

(21) a. Derivational:

[[tor]e]_{vs} 'can take': tor-e-me
*toN-me

b. Inflectional:

[[mi] rare]_{vs} 'can see' : mi-r-aree-me
mi-r-aN-me

(cf. Nemoto 1993)

She argues that PVD applies only at the inflectional level. Thus, while the vowel /e/ is deleted in *mi-r-are-me*, the same vowel cannot be deleted in *tor-e-me*.

However, there are two problems in her analysis. First, although Nemoto claims that the potential suffix *-e* as in *tor-e* is a derivational one, the status of the suffix is a matter of controversy. From the historical point of view, the form *tor-e* in (21a) can be regarded as the shortened form of *tor-are*, while the form *mi-e* in (20a) does not seem to be the shortened form of *mi-r-are*. Rather, the relation between *mi-* 'see' and *mi-e* 'is visible' seems parallel with that between *ni-* 'boil (transitive)' and *ni-e* 'boil (intransitive)'.¹

Moreover, we find a potential suffix *-e* which can be regarded as an inflectional suffix. Observe the examples in (22):

(22) Potential:

a. *mi-r-e* 'can see'

b. *tabe-r-e* 'can eat'

The forms given in (22) are the shortened forms of the potential *mi-r-are* and *tabe-r-are*, respectively. Notice here that /r/ is inserted between the stem and the suffix *-e* by /r/-epenthesis. Since /r/-epenthesis is applicable only at the inflectional level, it follows that the relevant suffix is an inflectional one. In fact, de Chene (1988) differentiates the suffix *-e* in *mi-e* 'is visible' and the homophonous suffix

in *mi-r-e*, characterizing the latter as an inflectional suffix and the former as a derivational suffix 'that reverses the transitive/intransitive polarity of the stem to which it is added' (pp. 4f.).

Now, turn to the issue of the suffix *-e* in *tor-e*. It is not clear whether the suffix is derivational or inflectional, since /r/-epenthesis is not involved here. We may argue that there are two homophonous forms *tor-e*, i.e., one including the derivational *-e* as in *mi-e* and another including the inflectional *-e* as in *mi-r-e*. Thus, we cannot regard the suffix exclusively as derivational without further researches. This may weaken Nemoto's (1993) claim.

The second problem is that the inflectional suffix *-e* mentioned above does not undergo PVD. Examples are given below:

(23) Potential Negative:

<i>mi-r-e-na-i</i>	'cannot see'	* <i>mi-N-na-i</i>
<i>tabe-r-e-na-i</i>	'cannot eat'	* <i>tabe-N-na-i</i>

Since Nemoto claims that PVD is applicable at the inflectional level, we expect that the rule applies to the forms in (23). Our expectation, however, turns out to be wrong, which implies that Nemoto has to provide some explanation for this point.¹⁰ If this is indeed the case, her system on the whole may lose its main motivation. Recall her claim that PVD cannot apply at the derivational level is crucially based on the observation that the form including a derivational suffix does not undergo PVD (e.g., **toN-me* < *tor-e-me*). The failure of *mi-r-e-na-i* with an inflectional suffix to undergo PVD, thus, poses a problem to her claim.

We will provide a new point of view for the case of the potential suffix *-e* in the following section.

5. Recoverability

We have seen in 4.1. that the forms with the potential suffix *-e* do not have the corresponding geminate forms. We have pointed out that Nemoto's (1993) explanation utilizing the distinction between derivational and inflectional levels has some problems. The relevant issue could be simply stated as follows: the vowel of this suffix cannot be a target vowel of PVD (18). In this paper, however, we do not exclude the vowel of the potential suffix *-e* from the target of PVD and assume that the rule applies whenever the environment is met. We claim that whether a geminate form can be realized or not depends on recoverability of the original vowel. Specifically, we argue that forms with *-e* can undergo PVD (18) and that the geminate forms derived from them is filtered out because of unrecoverability of the deleted vowel.

When we hear a geminate form including a certain inflectional form of a verb, we can reconstruct /rV/ in place of the first half of the geminate. This is because PVD applies only to the form including the sequence '/rV/ + [-cont]'. Then, how can we specify the quality of the 'missing' vowel?

Consider the following characteristics of morphemes which trigger PVD: 11

- (24) a. *-no*, *-na* (which forms prohibitive imperatives), *-nara*, *-be*, *-ge*, *-ka*, *-kara*, *-kedo*, *-to*, and *-koto* are attached to the inflectional form 'verb stem + inflectional ending *-u*'.
- b. *-na* (which forms mild imperatives) and *-nas-a* are attached to the inflectional form 'verb stem + inflectional ending *-i*'.

Given the rigid correspondence between these morphemes and inflectional forms of verbs, we can recover the appropriate vowel by means of the relevant morpheme, which remains intact

after the application of PVD (18) and Gemination (5).

Now, let us turn to the cases where the correspondence is less straightforward. First, consider the case involving the particle *-ba*:

- (25) *-ba* is attached to (i) the inflectional form 'verb stem + inflectional ending *-e*'; and to (ii) the inflectional form 'verb stem + inflectional ending *-a*'.

In this case, we have two ways to recover the original vowel immediately before *-pa*, the devoiced version of *-ba*. In Present-day Japanese including the Ibaraki dialect, however, the attachment of *-ba* to /a/-ending forms described in (ii) is rather restricted: such attachment produces a form with an ancient and literary flavor. Since the geminate forms under consideration are usually found in colloquial Japanese, it seems natural to recover the vowel /e/ immediately before *-pa*.

Next, let us consider the case in which the negative suffix *-na* is involved. The suffix can be attached to quite a variety of forms as shown below:¹²

- (26) a. C-final stem + inflectional ending *-a*:
e.g. *tor-a*
b. V-final stem: e.g. *ori-*
c. C-final stem + potential *-e*: e.g. *tor-e*
d. V-final stem + potential *-e*: e.g. *mi-r-e*
e. V-final stem + potential *-are*: e.g. *mi-r-are*
f. C-final stem + passive *-are*: e.g. *tor-are*
g. V-final stem + passive *-are*: e.g. *mi-r-are*
h. C-final stem + causative *-ase*: e.g. *tor-ase*
i. V-final stem + causative *-ase*: e.g. *mi-s-ase*

First, consider the geminate forms containing the sequence /*ranna*/ as *tor-aN-na-i* (cf. (26f)), *mi-r-aN-na-i* (cf. (26e,

g)). In these cases, the passive and potential suffixes do not disappear completely. The 'residue' of the relevant *-are* makes it possible to recover the vowel /e/ in this position.

In contrast, if we hear the geminate forms containing the sequence /nna/ as *toN-na-i*, we may recover either /ran/ or /ren/ from the geminate /nn/. In this case, however, it is more natural to recover the vowel /a/, because the relation between *-a* and *-na* is 'closer' than that between *-e* and *-na*. While *-e* has its own status as a potential suffix, *-a* in itself is merely an inflectional ending which 'connects' a verb stem with the following suffixes such as the negative *-na*. In other words, the sequence '*-a + -na*' can be said to be 'unmarked', while the sequence '*-e + -na*' can be said to be 'marked'. Then, it seems plausible that one recovers from *toN-na-i* the simple negative form *tor-a-na-i* with an 'unmarked' sequence, rather than the potential negative *tor-e-na-i*. Thus, the form *toN-na-i*, although it can be derived from both *tor-a-na-i* and *tor-e-na-i*, is interpreted as the former and *toN-na-i* as the geminate form of *tor-e-na-i* is not realized.

Finally, consider the hypothetical form **mi-N-na-i* as the geminate form of *mi-r-e-na-i*. Why is it that the vowel /e/ cannot be recovered in this case? The unacceptable form **mi-N-na-i*, as well as *toN-na-i*, includes the sequence /nna/. Thus, in the first place, the first half of the nasal geminate is replaced by /ra/, resulting in an unacceptable form **mi-r-a-na-i*. Even if we try to associate the form **mi-N-na-i* with the simple negative form *mi-na-i*, it does not contain the sequence /rV/. Thus, the form *mi-N-na-i* is filtered out, and is not realized.

It can be said that the explanation in terms of recoverability has the following two advantages: (i) it allows us to maintain the consistent application of PVD; and (ii) it is intuitively natural because we can change or abbreviate a certain linguistic form only when the original form is recoverable in some way.

6. Concluding Remarks

In this paper, we have dealt with the gemination phenomena typically observed in the north-east Ibaraki dialect. We have reviewed the previous study by Nemoto (1993), making clear both its advantage and disadvantage. Admitting its fundamental line, we have presented a fresh view for the apparent exceptions to PVD, that is, forms including the potential suffix *-e*. Our analysis in terms of recoverability allows PVD to apply whenever its environment is satisfied.

Finally, it should be noted that there is a remaining issue: why is it that geminate forms such as *mi-r-aN-na-i* and *tabe-r-aN-na-i* are interpreted as the forms including the potential suffix *-are* rather than the ones including the homophonous passive suffix *-are*, where there is no contextual information? To give a clear answer to the question, however, is a difficult task, which is to be left for detailed future investigation.

NOTES

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The area referred to by 'the north-east Ibaraki' covers

Hitachi-shi, Taga-gun, Takahagi-shi, and Kitaibaraki-shi.

¹ Japanese has two types of moraic consonants, i.e., *hatuon* and *sokuon*. The former is a nasal which itself counts as a mora as in *hoN* 'book' and *riNgo* 'apple'. The latter is usually a voiceless obstruent which also counts as a mora in itself. The latter differs from the former in that it never occurs by itself and always constitutes the first half of a geminate as in *kippu* 'ticket' and *gakki* 'musical instruments'.

² The vowel /u/ in *kak-u-kara* can be devoiced because it is between two voiceless consonants. This phenomenon should be distinguished from the gemination phenomena in question.

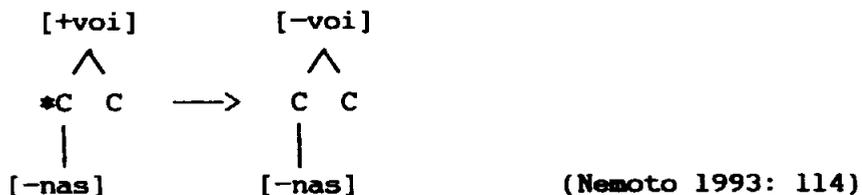
³ In fact, there are some morphemes which do not trigger the change: e.g., *-ta-i* 'want to'.

⁴ This rule is originally formulated in Tanaka et al. (1992). In fact, Nemoto (1993) revises it in her note 15, as we will see in section 4.2.

⁵ The idea of the rule is found in Itô and Mester's (1986) analysis of voicing in Japanese (p. 59).

⁶ Nemoto (1993) formulates the devoicing rule as follows:

(i) Devoicing



⁷ There are a few exceptional cases to PVD (18): *kuN-na-i* < *kure-na-i* 'do not give', *taN-na-i* < *tari-na-i* 'is not enough' (cf. *taN-na-i* < *tar-a-na-i* 'is not enough').

⁸ In (14b) and (15b), /r/ is inserted immediately before the suffix *-are* by /r/-epenthesis.

⁹ We find the following geminate form: *kamo siN-na-i* < *kamo sir-e-na-i* 'may'. But **siN-na-i* by itself is not acceptable as the geminate form of *sir-e-na-i* 'is not known'.

¹⁰ I appreciate Zamma's suggestion.

¹¹ Although this *-na* is homophonous with the interrogative particle *-na* in (24a), the forms including them can be distinguished by means of pitch accent: *to'r-u-na* 'do not take (it)', *mi'-r-u-na* 'do not look at' (including the particle *-na* given in (24a)) vs. *tor-i-na* 'take (imperative)', *mi-na* 'look (imperative)' (including the particle *-na* given in (24b)). This is pointed out to me by Zamma (personal communication).

¹² We tentatively assume that the /s/ in (26i) is an epenthetic consonant.

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