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Markedness, Leveling, and Analogy in the Japanese Verb I

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In a recent article, Fukushima (2004) presents an analysis of Japanese vowel-stem potentials of the type *mi-re-ru* "can see" according to which those innovative forms are the result of a rule deleting the sequence *-ra-* in potential (but not passive or honorific) uses of *mi-rare-ru*. On his account then, innovative potentials represent a morpheme-specific and use-specific development that neither reflects nor provides any evidence about the morphophonology of Japanese verbal inflection in general. In the course of his presentation, Fukushima criticizes an analysis that treats innovative potentials as the result of extension to vowel-stems of the consonant-stem potential suffix *-e-* (*kak-e-ru* "can write") in conjunction with a rule epenthesizing *-r-* intervocalically at verb stem boundary (de Chene 1987; see also de Chene 1985). On this latter analysis, innovative potentials illustrate two points about Japanese verbal inflection for which it is claimed that there is substantial additional evidence, namely that (a) consonant-stem suffixes are basic or unmarked with respect to vowel-stem suffixes and (b) there is an intervocalic verb-stem boundary *r*-epenthesis rule whose reality is shown by its application to new forms which come to meet its input conditions as the result of morphological change.[1]

The present paper proposes to revisit the question of innovative potentials and their place in the system of Japanese verbal morphology and morphophonology in the light of Kokuritu Kokugo Kenkyuuzyo (KKK) 1989-2003, which has made available for the first time nationwide data on the morphological changes that support claims (a) and (b) above. Throughout, our guidelines will be those enunciated by Lahiri (2000) in a summary of thirty years of work on morphological change in the generative paradigm: first, that morphological change is simplification; and second, that it is "constrained by the entire grammatical system" – that is, that "examining items that have changed individually is meaningful only if the grammatical system as a whole is taken into consideration." (Lahiri 2000:11-12). In an effort make all relevant assumptions explicit, we will begin with comments on framework, methodology, and formalism in section 1. Section 2 after introducing

the evidence for claims (a) and (b) and the analysis of Japanese verbal morphophonology they entail, compares that analysis with other possible analyses of the system. Section 3 returns to the question of innovative potentials, and section 4 considers the general implications of the analysis proposed.

1 Background Assumptions

1.1 Psychological Reality, Phonological Predictability, Change as Simplification

I adopt the standard generative assumption that language is a system of knowledge (Chomsky 1986), for the most part inaccessible to conscious introspection, that is localized in the mind/brain of individual speakers, and that it is the job of the linguist studying a particular language to eludidate the form of this knowledge. As a result, linguists must take seriously the question of the descriptive adequacy (i.e. psychological reality) of their accounts. With regard to inflectional morphophonology, in particular, a linguist is not licensed to choose an analysis solely on the basis that it maximizes the predictability of surface forms, in purely phonological terms, from the underlying forms postulated. This is because there is abundant evidence, typified by Hale's (1973) classic study of Maori, that native speakers do not always choose underlying forms so as to maximize phonological predictibility.

If we cannot rely uncritically on the criterion of phonological predictability, where are we to look for evidence concerning native speakers' analyses of inflectional systems? A very general rule of thumb, applicable to any case in which the inflectional system is less than completely stable, is that ongoing change points the way to the analysis that is in force—on the assumption that the ongoing change represents simplification. Here, I propose to be guided by a very specific instantiation of this rule of thumb, a first approximation to which can be stated, following Albright (2006:8), as "leveling is lexical simplification". This principle will be discussed in detail in section 1.3 below.

1.2 Stem-Formation, Word-Formation, Morphophonological Levels

I assume the distinction between roots and stems familiar from grammars of the older Indo-European languages, among many others. A root is any morpheme with a concrete meaning, whether free or bound; roots thus contrast with affixes, which are bound morphemes with abstract meanings, and with free grammatical morphemes. A stem is any morpheme or morpheme sequence to which inflectional elements can be added. In Japanese, as in many other languages, inflectable stems are in the general case derived by affixation (and compounding) from roots that are (at least partly) category-neutral. Thus the root

suzu- underlies both the verb stem (VS) *suzu-m-* "take the air" and the adjective stem (AS) *suzu-si-* "refreshing", and the root *sita-* underlies both the VS *sita-w-* "yearn for, adore" and the AS *sita-si-* "intimate". The inflected form *kuru-si-m-e-rare-ta* "was tormented" contains othe root *kuru-,* also seen in *kuru-w-* "go mad", followed by three derivational and two inflectional suffixes: *-si-* and *-m-* are the AS and VS formants seen above, while *-e-* transitivizes the intransitive VS *kuru-si-m-*; *-rare-* "passive" is an inflectional stem-forming suffix, and -ta "perfect" is an inflectional word-forming suffix, or ending. Inflectional stem-forming suffixes, called *zyodoosi* "auxiliary verbs" in traditional Japanese grammar, take stems as input and give stems as output and have parallels in many languages; a representative Latin example is the *-v-* that forms perfect stems from present stems in the verbal inflectional system.

I will also take for granted the observation, which underlies the theory of Lexical Morphology and Phonology (Kiparsky 1982, Mohanan 1982, and much subsequent work) and goes back at least to Chomsky and Halle 1968, that "[p] honology requires ... information about different kinds of morphological "construction types" such as affixation and co mpounding" (Mohanan 1995:27). The relevant construction types, embodied in the strata of Lexical Phonology, often correspond to the traditional division of morphology into compounding, derivation, and inflection, but some of the classic cases, such as Chomsky and Halle's (1968) distinction between class I and class II derivation in English and Mohanan's (1982, 1995:43) distinction between subcompounds (modifier-head compounds) and co-compounds (copulative compounds) in Malayalam, subdivide one of those traditional divisions. For present purposes, it will be sufficient to assume a distinction between stem-level phonology (corresponding to derivation and compounding), word-level phonology (corresponding to inflection), and postlexical phonology, with the internal structure of stems invisible to the word-level phonology and the internal structure of words invisible to the postlexical phonology. This three-way division corresponds to that postulated by Kiparsky (2003:110) for Finnish and by Giegerich (1999), within a "base-driven stratification" reinterpretation of Lexical Morphology and Phonology, for German. Its necessity for Japanese can be illustrated by a brief discussion of hiatus at VS boundary.

In the word-level phonology, hiatus at VS boundary is disallowed: vowel-final stems like *mi-* "see" and *ne-* "sleep" are never followed by vowel-initial inflectional suffix alternants. But no such restriction is observed either in the stem-level phonology or in the postlexical phonology. Thus, compound stems (*mi-otos-* "overlook", *ne-ir-* "fall asleep") and derived stems (*mi-e-* "be visible") freely display unresolved hiatus at apparent VS boundary, and

the postlexical rule that deletes /w/ before a nonlow vowel produces many instances of VS boundary hiatus that, equally, remain unresolved (*i-i* "say (adverbial)", *i-e* "id. (imperative)", *omo-oo* "think (hortative)"). Finally, the restriction against hiatus is specific to VS boundary within the word-level phonology; hiatus is freely tolerated as AS boundary (*osi-i* "regrettable (imperfect)").

In view of these facts, any account of Japanese verb inflection that includes a mechanism for resolving hiatus at VS boundary will need to limit the operation of that mechanism to the word-level phonology. This will be true, for example, of an account of the vowel-zero alternations of the continuative and negative suffixes illustrated in (1) and (2) that postulates (a) phonological forms that include the alternating vowels (i.e. continuative /-i/, negative /-ana-/) and (b) the vowel deletion rule (3).[2]

(1) a. ak-i "open (intr.) (continuative)"
b. mi- "see (continuative)"

(2) a. ak-ana- "open (intr.) (negative)"
b. mi-na- "see/look (negative)"

(3) $V \rightarrow \phi \ / \ V_{vs}]\ \_\_$

As we will see later, the Japanese proscription of hiatus at some morphological boundaries but not at others has a close parallel in Turkish.

1.3 Leveling and its Formal Correlate

Above, I proposed that it is often possible to tell something about native speakers' analysis of an inflectional system by examining instabilities and ongoing changes in that system, as Hale (1973) did in his study of the Maori case referred to above. Stated in this form, however, the principle in question is merely a heuristic suggestion. In this section, I will make explicit my assumptions regarding the interpretation of ongoing change, taking as a starting point, as indicated, Albright's (2006) claim that leveling is lexical simplification.

Albright introduces this claim in the context of a discussion of the well-known Latin change of (4a) to (4b) on the apparent model of (5) (see Albright 2005 for a detailed treatment), saying (2006:8) that leveling "involve [s] replacing an exceptional non-basic form with an innovative regularized form." The two forms in question are underlined in (4).

(4) a. honōs ～ honōr-is “honor (nom.sg.) ～ id. (gen.sg.)”
b. honor ～ honōr-is

(5) soror ～ sorōr-is “sister (nom.sg.) ～ id. (gen.sg.)”

More generally, the shift from (4a) to (4b) is characteristic of polysyllabic non-neuter stems ending in *s* (Hock 1991:179-180, Buck 1933:191-193); monosyllabic s-stems (*flōs* ～ *flōr-is* “flower”) and the majority of neuter s-stems (*genus* ～ *gener-is* “race, type”) retain the *s* ～ *r* alternation that was originally due to a rule voicing and rhotacizing *s* intervocalically. Note that while (4b) displays leveling of the *s* ～ *r* alternation apparent in (4a), the stem *honōr* has not become nonalternating: although the stage *honōr* for the nominative singular is attested (Albright 2005:1 (fn.1)), that form was quickly subject to a rule that shortened vowels before word-final sonorants in polysyllables, resulting in *honor*.

At the point when leveling of the *s* ～ *r* alternation in (4a) began, it seems clear that the rhotacization rule was no longer operative, at least for the relevant stems. This is because there is no way to explain the appearance of nominative *honōr* (→ *honor*) on the basis of an underlying form /honōs/ plus rhotacization. Nor is it plausible to postulate an inverted “minor rule” changing *r* to *s* word- finally in a lexically specified set of stems, with leveling taking the form of loss of the lexical specification in question (cf. Hock 1991:260). This is because the pattern in question was never extended (e.g. to words of the class (5)), giving us no reason to believe that speakers took it to constitute a rule. I will assume that for the stems that underwent leveling, the *s* ～ *r* alternation was lexicalized in the sense that both the stem allomorph with s and the stem allormorph with r came to be lexically listed, the former with a specification of environment and the latter as the elsewhere case, as in (6).

(6) “Lexicalized Alternation”: Lexical Representation of /honōr/ at Inception of Leveling

honōs / __ #
honōr

Leveling would then have taken the form of loss of the marked allomorph－that is, as suggested, the form of lexical simplification. As a result, /honōr/ would have come to be the unique lexical or underlying form, occurring word-finally as well as elsewhere and

undergoing the rule shortening vowels before word-final sonorants.

Taking the above case as representative, I will assume that in general, where s_1 and s_2 are phonological segments, elimination or leveling of an alternation $s_1 \sim s_2$ in favor of s_1 proceeds in two steps. The first is lexicalization of the alternating allomorphs, with the allomorph containing s_1 constituting the unmarked or elsewhere case for each morpheme; the second is loss of the marked allomorph—that is, failure of a new generation of speakers to learn it. These two steps are schematized in (7).

(7) Leveling of alternation $s_1 \sim s_2$ in favor of s_1

a. Lexicalization of Alternating Allomorphs

$$\begin{bmatrix} X\ s_2\ Y\ /\ E \\ X\ s_1\ Y \end{bmatrix}$$

b. Simplification of Lexicalized Alternation

/X s_1 Y/

The representation (7a) is intended to embody two claims about leveling that I take to be more or less self-evident and to skirt a number of other issues on which it is not necessary to take a position at this point. Both of the claims of (7a) concern the relationship between the allomorphs of a morpheme in which a particular alternation is undergoing leveling. The first claim is that the allomorphs are not in a rule-governed relationship in the sense that one is lexically listed and the other is derived from it by rule; if the relationship were rule-governed in this sense, we would expect the alternation to be stable rather than subject to leveling. The second claim is that while there is no rule-governed relationship between the allomorphs in question, there is a relationship of markedness: while both allomorphs are lexically listed, only one is listed with its environment, the other being the elsewhere case. The assumption of a markedness relationship is necessary to account for the direction of leveling.

It is worth noting as well what issues a formalization of leveling in terms of (7) takes no stance on. First, (7) does not presuppose that because the $s_1 \sim s_2$ alternation is being leveled in certain morphemes, the language has no rule relating s1 and s2; in the Latin case above, for example, we have left open the possibility of a rhotacization rule governing the alternations *flōs* ~ *flōr-is* and *genus* ~ *gener-is*. Second, (7) says nothing, of course, about

whether the leveling in question is motivated by a distinct paradigmatic pattern, as the leveling of (4) was evidently motivated by (5). Finally, (7) says nothing about what determines the direction of leveling. The minimal claims that (7) does make will be sufficient for our purposes below.

2. Japanese Verbal Inflection

Section 2.1 presents the basic data on alternations in Japanese verbal inflectional suffixes, taking as representative a conservative variety of Western Tokyo Japanese, the variety that forms the basis for the standard or "common" national language. Ten suffixes are considered, three stem-forming suffixes and seven endings. Section 2.2 then presents an overview of the changes that are in progress in the verbal inflectional system along with the analysis of the system that those changes imply under the assumptions of section 1.3, with section 2.3 adding detailed data on the ongoing changes from KKK 1989-2003. Finally, section 2.4 considers the place of the proposed analysis in the space of possible analyses of the system and the viability of alternative analyses.

2.1. Basic Data

Among verbal inflectional suffixes, the most fundamental division is between (a) those that alternate between vowel-initial forms after consonant-final stems (C-stems) and consonant-initial forms (or zero) after vowel-initial stems (V-stems) and (b) those that begin with /t/ ～ /d/ after both C-stems and V-stems but induce an idiosyncratic set of alternations (*onbin* "euphony") in a preceding stem-final consonant. Among the suffixes of set (a) we distinguish (1) endings and (2) stem-forming suffixes, as indicated above. Set (b) (not treated in de Chene 1985, 1987) contains a number of suffixes (perfect indicative /-ta/, gerund /-te/, conditional /-tara/, alternative /-tari/, past presumptive /-taroo/), all traditionally treated as inflected forms of *zyodoosi* "auxiliary verbs". For morphophonological purposes, perfect /-ta/ may be taken as representative of the entire set.

(8) below presents the ten suffixes we will consider, divided into three groups as just indicated. Suffixes are shown underlined, endings as parts of conjugated wordforms and stem-forming suffixes as parts of derived inflectional stems; the lexical stems used are /mat-/' wait' and /mi-/'see, look'). In (8a1), the suffixes are arranged in syllabary order by the initial vowel of the C-stem suffix alternant, as in traditional presentations, and the negative suffix is classified as an ending, as it is in western Japan (the expansion that makes an AS-forming suffix in eastern Japan is shown in parentheses). Of the three stem-forming suffixes of (8b), only the first two are traditional *zyodoosi*; the emergence of the C-stem

potential suffix *-e-*, as we will see in more detail in section 3, postdates the classical system on which the traditional analysis is based.

(8) Verbal Inflectional Suffixes

a. Suffixes Distinguishing V-Initial (C-stem) and C-initial (V-stem) Forms

1. Endings

Nam	C-stem	V-stem
Negativ	mat-an(a-)	mi-n(a-)
Infinitive	mat-i	mi-ϕ
Imperfect	mat-u	mi-ru
Provisional	mat-eba	mi-reba
Imperative	mat-e	mi-ro
Hortative	mat-oo	mi-yoo

2. Stem-Forming Suffixes

Nam	C-stem	V-stem
Passive	mat-are-	mi-rare-
Causative	mat-ase-	mi-sase-
Potential	mat-e-	mi-rare-

b. Invariably C-initial Suffixes (representative example)

Nam	C-stem	V-stem
Perfect	mat-ta	mi-ta

2.2 **Change in Progress: Overview and Analysis**

Below, we will consider the morphological changes revealed by KKK 1989-2003 suffix by suffix, but we will start this section with an overview of those changes. For that purpose, it is useful to reclassify the suffixes of (8) above on the basis of the kind of alternation between C-stem forms and V-stem forms they display. This is done in (9) below.

(9) Suffixes Classified by Alternation-Type

Number	Name	C-stem	V-stem	Alternation
1	Imperfect	mat-u	mi-ru	r ～ ϕ
2	Provisional	mat-eba	mi-reba	r ～ ϕ
3	Passive	mat-are-	mi-rare-	r ～ ϕ
4	Hortative	mat-oo	mi-yoo	y ～ ϕ
5	Causative	mat-ase-	mi-sase-	s ～ ϕ
6	Infinitive	mat-i	mi-ϕ	i ～ ϕ
7	Negative	mat-an(a-)	mi-n(a-)	a ～ ϕ
8	Imperative	mat-e	mi-ro	e ～ ro
9	Potential	mat-e-	mi-rare-	e ～ rare
10	Perfect	mat-ta	mi-ta	---------

For suffixes 1-3, V-stem forms are C-stem form preceded by /r/. Suffixes 4-9 display other types of alternations between C-stem and V-stem forms, and the suffixes represented by suffix 10 do not alternate on the basis of the C-stem/V-stem distinction at all. Looking more closely at the group 4-9, we find, in order, two cases in which the V-stem alternant consists of the C-stem alternant preceded by a consonant other than /r/, two cases in which the C-stem alternant consists of the V-stem alternant preceded by a vowel, and two cases in which the relationship between the two alternants is idiosyncratic in that it cannot be described in terms of the presence or absence of a single segment.

The data of KKK 1989-2003 is not equally informative about all ten suffixes of (9), but the basic picture it presents of countrywide stability and variation with regard to those suffixes is both striking and apparently unambiguous in its implications. This picture is summarized in (10) (Ryuukyuu dialects are temporarily excluded from consideration because of irrelevant additional changes they show).

(10) a. For suffixes 1-3 and 10, both C-stem forms and V-stem forms are stable everywhere.

b. For suffixes 4-9, C-stem forms are stable, but V-stem forms are not: there is a tendency, varying in strength from suffix to suffix, to (1) eliminate the existing alternation in favor of the value shown by the C-stem form and (2) generalize the alternation seen in suffixes 1-3, where the V-stem form consists of the C-stem form preceded by *r*.

c. There is no systematic change in progress other than that of (10b).

The result of the two changes indicated in (10b) is that for suffixes 1-9, the existing V-stem suffix alternants are gradually replaced by the six innovative V-stem suffixes of (11).

(11) a. Hortative *-roo*
b. Causative *-rase-*
c. Infinitive *-ri*
d. Negative *-ran* (W. Japan)
e. Imperative *-re*
f. Potential *-re-*

Let us look at the grammatical correlates of the changes of (10b)—that is, at how those changes reflect and are reflected in the rules and representations of the language. We will start by asking how the change (10b1) will be accounted for on the assumptions we introduced in section 1.3, taking as an example the negative suffix, category 7 in (9).

In the case of the negative suffix, change (10b1), elimination of the existing alternation in favor of the value shown by the C-stem form, is elimination of the *a* ∼ *ϕ* alternation of (9) in favor of *a*. In 1.3 we proposed that eliminination of the alternation $s_1 \sim s_2$ in favor of s1 in *a* particular morpheme takes place in two steps, lexicalization of the alternating allomorphs, with that containing s1 constituting the unmarked subcase, and simplification of the lexicalized alternation by elimination of the marked subcase. This means that at the point when leveling commences, the lexical representation of the negative suffix will be as in (12).

(12) Lexical Representation of Negative Suffix at Onset of Leveling of the *a* ∼ *ϕ* Alternation

$$\begin{bmatrix} \text{n} \;/\; \text{V}_{\text{vs}}] \;\_\_ \\ \text{an} \end{bmatrix}$$

Leveling itself then takes the form of gradual elimination of the marked subcase of (12), the one specifying that the negative suffix is *-n* after a vowel-final stem. After leveling is complete, the consonant-stem suffix alternant *-an* becomes the suffix's unique lexical representation.

(10b) of course states not only that the existing alternation is leveled for the suffixes 4-9 of (9), but that it is replaced in each case by an alternation of C-stem -X with V-stem -rX—in the case at hand, by an alternation of C-stem *-an* with V-stem *-ran*. With regard to its motivation, the innovative V-stem suffix *-ran* clearly divides into two parts. The above

account of the loss of the a ～ ϕ alternation, according to which /-an/ becomes the lexical representation of the suffix, suggests that the an of *-ran* is identifiable with this lexical representation, identical to the C-stem suffix alternant. Indeed, no alternative account for the presence of an in the innovative suffix alternant suggests itself.

In contrast, the *r* of *-ran* is not motivated by anything internal to either original alternant of the negative suffix and thus can only be interpreted as having been supplied by the speaker—that is, as being the result of a rule of some generality. This impression is confirmed, of course, by observing the presence of *r* in all six of the innovative suffixes of (11). We noted in section 1.2 that in the word-level phonology, hiatus at VS boundary is disallowed. The *r* of negative *-ran* and the other innovative suffixes of (11) is clear evidence that this restriction is real for speakers and that their method of enforcing it is intervocalic epenthesis of r at the boundary in question. It is on this basis that we postulate the *r*-epenthesis rule (13), a rule of the word-level phonology.

(13) ϕ → r / V $_{VS}$] __ V

The existence of rule (13) means that as soon as the marked subcase is eliminated in the lexical representation (12), the remaining representation /-an/ will be subject to *r*-epenthesis when affixed to a vowel-final stem. As a result, there is no stage at which the suffix becomes nonalternating; rather, the morpheme-specific *a* ～ ϕ alternation is replaced with the more general *r* ～ ϕ alternation. That there is nothing unusual in such a sequence of developments is suggested by the case of Latin *honōs* ～ *honōr-* → *honor* ～ *honōr-*: as we saw above, the *s* ～ *r* alternation of such lexical items was leveled in favor of *r*, but was replaced by a vowel length alternation because of the rule shortening vowels before word-final sonorants in polysyllables.

We have cited the presence of *r* in all six of the innovative V-stem suffixes of (11) as evidence for the existence of rule (13). What about the motivation for speakers' postulation of such a rule? A glance at the chart of (9) reveals immediately that there are three preexisting instances of the *r* ～ ϕ alternation and that no other alternation appears more than once. It is clearly on this basis that speakers have taken the *r* ～ ϕ alternation to be the regular one; the directionality of the rule capturing the *r* ～ ϕ alternation is dictated by the choice of C-stem suffixes as basic, a move whose motivation we will return to below.[3]

In summing up the conclusions of this section, let us start by noting again that of the twenty suffix alternants in (9), just six are unstable from a nationwide perspective, namely

the V-stem alternants of suffixes 4-9. Among the nine suffixes whose C-stem alternants begin with vowels, these are precisely the six V-stem alternants that do not consist of the corresponding C-stem alternant preceded by *r*, and and all six are being reshaped to accord with this pattern. No countervailing tendencies are in evidence, a point to which we will return. The tendency to reshape V-stem suffixes on the basis of C-stem suffixes suggests immediately that the latter are taken by speakers to be basic; we arrived at this conclusion, and at a particular formal interpretation of it, through application of the device introduced in section 1.3 for representing lexicalized alternations—alternations that are in the process of being leveled. The tendency to generalize the $r \sim \phi$ alternation, as we have just noted, means that speakers take that alternation as regular; in conjunction with the postulation of C-stem suffixes as basic, this entails the *r*-epenthesis rule (13). To this point, we have treated in detail only one of the six suffixes that are undergoing reshaping, the negative; below, the lexical representations that we postulate for all six are given in the same format as we did for that suffix in (12) above (we suppress indications of the distinction between endings and stem-forming suffixes). In each case, the V-stem alternant is listed with its environment, while the C-stem alternant is the elsewhere case.

(14) a. Hortative

yoo / V $_{vs}$] __	
oo	

b. Infinitive

ϕ / V $_{vs}$] __	
i	

c. Imperative

ro /V $_{vs}$] __	
e	

d. Causative

sase / V $_{vs}$] __	
ase	

e. Negative

n(a) / V $_{vs}$] __	
an(a)	

f. Potential

rare /V $_{vs}$] __	
e	

Finally, let us comment briefly on the treatment of the innovative r-suffixes of (11) in the dialectological literature. That literature, including KKK 1989-2003, typically describes forms with the innovative V-stem suffixes of (11) ("innovative *r*-suffixes") as displaying the conjugational pattern of *r*-stems. This is because the only precedents in the standard or common language for the sequence "*r* + C-stem suffix" are forms in which the r belongs to the stem. The innovative *ki-ran* "does not wear" (replacing *ki-n*), for example, is segmentally homophonous with *kir-an* "does not cut", and is naturally described, at least

informally, in terms of the paradigm of the latter. The description of forms with innovative *r*-suffixes as *r*-stem forms, however, cannot be taken literally; such an interpretation is belied by the fact that the changes that introduce the innovative forms always proceed suffix by suffix, and not stem by stem. Rather, as we have already seen, innovative *r*-suffixes represent the extension of the $r \sim \phi$ alternation already present in suffixes 1-3 of (9). Only when the $r \sim \phi$ alternation has been extended to all applicable suffixes, it would seem, are V-stems reanalyzed as *r*-stems, thus eliminating the V-stem paradigm; this has happened in the city of Kagoshima (Sadowara 1957), as confirmed by the /t+t/ of forms with t-initial suffixes (see de Chene 1985:179-181).

NOTES

1 Unfortunately, Fukushima's comments on the analysis of de Chene 1987 are characterized by so many errors (e.g. attribution to that analysis of an s-epenthesis rule (Fukushima 2004:185)) and omissions (there is no mention of point (a) above nor of the evidence for point (b)) that it would be extremely difficult for a reader to gain much understanding of that analysis on the basis of Fukushima's presentation.

2 Fukushima's (2004:195 (fn.4)) criticism of the r-epenthesis rule of de Chene 1987 for incorporating such a restriction is thus based on a misunderstanding: the restriction in question is a property of the data and not of any particular analysis thereof. As for Fukushima's claim (loc.cit.) that appeal to the inflectional/derivational distinction in phonology is itself dubious or ad hoc, the quarter-century tradition of Lexical Phonology, referred to above, provides ample refutation. With regard to Japanese in particular, the literature at least since Bloch 1946 displays little if any disagreement about which affixes fall into which categories, and the standard criteria of productivity and semantic regularity are sufficient to make the distinction on a principled basis.

3 There is thus no basis for the claim (Fukushima 2004:185) that the choice of *r* as an epenthetic consonant is arbitrary or unmotivated, either from the point of view of the linguist or from the point of view of the native speaker.