

## Rendaku Dampening and Prefixes

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## Rendaku Dampening and Prefixes

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### Abstract

Although it is well-known that the honorific prefixes *o-*, *go-* and *mi-* block rendaku, it has long been noted that certain compound initial elements (not necessarily prefixes) also appear to block, or at the very least dampen, rendaku. Commented upon in the literature has been the role of the lowest numerals, *hito* ‘one’ and *futa* ‘two’, in severely inhibiting rendaku, as well as the fact that some elements, such as *oo-* ‘large’ and the allomorphs *ko-* and *o-* ‘small’, appear to have no dampening effect on rendaku whatsoever.

Not examined in the research to date, however, are other elements, such as *kata* ‘one (often of two)’, *hacu* ‘first, initial’ or *šira* ‘white’, which also dampen rendaku. Possible triggers for rendaku dampening include boundness, productivity, optional generation of the mora obstruent, and apophony. Using data from the rendaku database, this presentation will seek to make sense from the confusing behaviour of these and other elements and show that, ultimately, the trigger for dampening appears to lie in numerality.\*

**Key words:** Japanese, rendaku, morphophonology, compounds, prefixes

### 1. Preliminaries: Rendaku and its restrictions

Rendaku, or sequential voicing, is a well-known morphophonological phenomenon found in Japanese, whereby the voiceless initial consonant of a non-initial element in a compound may be voiced, as in:

- |                   |                                    |   |                               |   |                                      |
|-------------------|------------------------------------|---|-------------------------------|---|--------------------------------------|
| (1) <i>k ~ g:</i> | <i>waka</i><br>‘young’             | + | <i>kaeru</i><br>‘change’      | > | <i>wakagaeru</i><br>‘be rejuvenated’ |
| <i>s ~ z:</i>     | <i>neko</i><br>‘cat’               | + | <i>se</i><br>‘back’           | > | <i>nekoze</i><br>‘hunchback’         |
| <i>š ~ j:</i>     | <i>šio</i><br>‘salt’               | + | <i>šake</i><br>‘salmon’       | > | <i>šiojake</i><br>‘salted salmon’    |
| <i>t ~ d:</i>     | <i>moji</i><br>‘letter, character’ | + | <i>toori</i><br>‘accordingly’ | > | <i>mojidoori</i><br>‘literally’      |
| <i>c ~ z:</i>     | <i>cuke</i><br>‘attach, stick’     | + | <i>cume</i><br>‘finger nail’  | > | <i>cukezume</i><br>‘false nails’     |

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$\check{c} \sim j$ :	<i>mi</i>	+	<i>čika</i>	>	<i>mijika</i>
	one's body		near		'familiar, close'
$h \sim b$ : <sup>1</sup>	<i>daNGo</i>	+	<i>hana</i>	>	<i>daNGobana</i>
	'dumpling'		'nose'		'button nose, snub nose'
$f \sim b$ :	<i>čuunen</i>	+	<i>futori</i>	>	<i>čuunenbutori</i>
	'middle-age'		'fatness'		'middle-age spread'

Over the years, a number of different factors have been put forward claiming to block, dampen, constrain, or otherwise restrict rendaku. In approximate order of fame, these have included:

- **Motoori-Lyman's Law.** Discovered, in all likelihood independently, by Motoori (1822) and Lyman (1894). If a non-initial element contains a voiced obstruent, rendaku is blocked: thus, morphemes such as *kubi* 'neck', *toride* 'fortress' or *kangae* 'thought' never undergo rendaku in compounds.<sup>2</sup> Violations of Motoori-Lyman's Law are rare, but include a number of compounds containing *hasigo* 'ladder', as well as a few other infrequent or obscure compounds, such as *funjibaru* 'tie up' and *adajiogarai* 'horribly salty' (see also Martin 1987: 115, Suzuki 2005).
- **Right Branch Condition.** Proposed by Otsu (1980) and refined by Itô and Mester (1986), but see criticism in Vance (1980b: 234, 1987: 138–139) and Kubozono (2005: 12–15). Here, rendaku is restricted to elements on the right branch of a constituent structure. In other words, a compound eschews rendaku when it is itself the head of a larger compound: e.g. *fuyooteate* 'family allowance' or *jidoofurikomi* 'automatic transfer' (where *teate* 'allowance' and *furikomi* 'cash transfer' are themselves compounds). Violations of the right branch condition are not infrequent and include compounds containing, amongst others, the compounds<sup>3</sup> *kimono* 'kimono', *sakaya* 'off-licence, liquor store, bottle shop', *šiai* 'match, contest, bout', *šikake* 'device, contraption', *šitate* 'tailoring', *cukiai* 'relationship', *seriai* 'competition' and *kamišimo* 'kamishimo'.
- **Coordinate Compounds.**<sup>4</sup> Coordinate compounds are double-headed and, as noted by Okumura (1955), in these compounds rendaku is blocked: e.g. *temahima* 'time and labour', *ikišini* 'life and death', *sukikirai* 'likes and dislikes, personal preferences'. Violations are extremely rare, but include *amazuoŋpai* 'sweet-and-sour', *miegakure* 'appearing and disappearing' and *itagayui* 'painfully itchy'. Reduplicated coordinate compounds show no constraints on rendaku, however: e.g. *kiregire* 'fragments, scraps', *cunezune* 'always', *samuzamu* 'wintry, bleak'.<sup>5</sup>
- Restrictions based on **lexical stratum.** Elements from the foreign stratum (*gairaigo*)<sup>6</sup> block

<sup>1</sup> Morpheme-initial Modern Japanese *b* and *f* derive from an earlier *p* (Kiyose 1985, Numoto 2007), hence the *b~b* and *f~b* allomorphies.

<sup>2</sup> See Vance (1980a, 2007) for variants of Motoori-Lyman's Law.

<sup>3</sup> Whether these examples are actually perceived as compounds or not by native speakers, and the relationship between any possible perception and right branch condition violation, is beyond the scope of this paper.

<sup>4</sup> Also known as copulative or dvandva compounds.

<sup>5</sup> Reduplicated coordinate compounds which can be interpreted as onomatopoeic in nature block rendaku, in line with onomatopoeic morphemes in general: e.g. *fusafusa* 'bushy, tufty', *šivaširwa* 'wrinkly, crinkled'. The same applies to child language: *haihai* 'crawling', *tete* 'hand'.

<sup>6</sup> See Irwin (2011: 4–14) for an overview of vocabulary strata in Japanese.

rendaku. Violations are highly sporadic, but include a few compounds containing *karuta* ‘card game’ and *kiseru* ‘pipe’ (Irwin 2011: 150–153). Elements from the Sino-Japanese stratum (*kango*, *jiongo*) severely dampen rendaku, with perhaps only 10% or so of compounds evincing the phenomenon (Irwin 2005).

- Restrictions based on **part of speech**. Rendaku is heavily dampened when all elements are verbs (Okumura 1955, Vance 2005): e.g. *cumikasanaru* ‘accumulate’, *dakišimeru* ‘embrace, hug’.<sup>7</sup> When the non-initial element is a deverbal noun, argument type compounds – those where the initial element is the internal argument of the verb – evince rendaku dampening (Okumura 1955, Yamaguchi 2011): e.g. *kubicuri* ‘suicide by hanging’, *yofukaši* ‘staying up late’.

Even when none of the five factors above applies, rendaku will often still fail to be triggered. Many morphemes show a strong predilection towards rendaku (*tokoro* ‘place’, *kao* ‘face’, *suši* ‘sushi’), others a strong antipathy against it (*take* ‘mushroom’, *kuso* ‘shit’, *cuči* ‘soil, earth’). Yet other morphemes appear rendaku immune (*šio* ‘tide’, *saki* ‘tip, point, ahead’, *kasu* ‘dregs, lees’): see Rosen (2003) and Irwin (2009a). Certain compounds may even show rendaku and non-rendaku variants (*cukeširu* ~ *cukejiru* ‘dipping sauce’, *yocuri* ~ *yožuri* ‘night fishing’, *curibaši* ~ *curibaši* ‘rope bridge’).

## 2. Rendaku and prefixes: The literature

Significantly neglected as a dampening factor on rendaku has been the effect of certain compound-initial elements. To the author’s knowledge, the subject has been touched upon to any extent in the literature only by Nakagawa (1966), Satō (1989) and Itō (2008). The former notes that:

数詞の基本形ヒト・フタ・ミ…の系列に接する連濁可能語彙は、〈お・み〉等の接頭語のつく場合と同様、原則として連清形をとる。と言っても、フタ（二）にかぎり、〈フタゴコロ・フタバ・フタゴ〉のごとき連濁形をも有しているのは…当然追求されねばならない

[When sequentially voiceable lexemes are prefixed by basic numerals such as *hito* ‘one’, *futa* ‘two’ or *mi* ‘three’, they do not undergo rendaku, as is the case also with the honorific prefixes *o-*, *mi-*, etc. That said, there are examples where rendaku does occur with *futa* ‘two’, such as *futagokoro* ‘duplicity’, *futaba* ‘bud’ and *futago* ‘twin’, and research here is required.]

Nakagawa (1966: 314)

Nakagawa here claims that there are two types of compound initial element which block rendaku: honorifics and numerals. That the former block rendaku is widely accepted and this issue will not be pursued further. Numerals are more problematic. Nakagawa notes examples where *futa* ‘two’ does admit rendaku and also stresses that his claim applies only to ‘bare’ numerals (what he terms *suuši no kibonkei* ‘basic form numerals’: e.g. *hito* ‘one’, *futa* ‘two’), not full (e.g. *hitocu*, *futacu*) or Sino-Japanese ones (e.g. *iči*, *ni*, *san*). These claims will be examined in more detail below.

Satō (1989: 257) notes that ‘接頭語（御、真、片、唐など）は連濁を起こしにくい [prefixes (e.g. *o-go-gyo-on-* ‘honorific’, *ma-* ‘right, directly’, *kata-* ‘one (of two)’, *kara-* ‘Cathay’,<sup>8</sup>

<sup>7</sup> Since most such compounds are double-headed, dampening here may also be viewed as a product of coordination.

<sup>8</sup> *Kara*, written 加羅 (also *Kaya* 加耶/伽倻 or *Mimana* 任那), was a 3<sup>rd</sup>–6<sup>th</sup> century CE kingdom in the southern Korean peninsula. Subsequently, in the second half of the first millennium, the meaning of *kara* was broadened to include Korea and China in general, and came to be written as 韓 (the character employed in modern Japanese for South Korea) or 唐 (the character used in modern Japanese for the Tang

etc.) dampen rendaku]’. He then goes on to list examples, such as *karakasa* ‘bamboo and oiled paper umbrella’ and *katakana* ‘*katakana* script’. Satō seems to be claiming that all prefixes dampen rendaku: I will have more to say on this below.

Itō (2008: 87) reiterates Nakagawa’s (1966) claim for honorifics and numerals, but also cites *kara* ‘Cathay’ as a compound-initial element where ‘連濁は起こらない [rendaku is blocked]’. It is not the case, however, that *kara* totally blocks rendaku, as pointed out by Otsu (1980), and shown also by such compounds as *karado* ‘hinged door’, *karabito* ‘Chinese, Korean, foreigner’ and *karaginū* ‘Heian period woman’s short coat’.

### 3. The data

The data employed below are extracted from the rendaku database (Irwin forthcoming). This database has as its data sources the two dictionaries Shinmura (2008) and Watanabe et al. (2008), and includes all compounds found in these dictionaries which have a possible rendaku site. Although the database contains over 34,000 such compounds, those violating either Motoori-Lyman’s Law or the Right Branch Condition, those whose rendaku site is from either the Sino-Japanese or foreign vocabulary stratum, and those which are coordinate compounds (both reduplicated and otherwise) have been excised. This results in a residue of 30,135 compounds,<sup>9</sup> whose breakdown by part of speech is shown in Fig. 1. Pure nouns are the most frequent, comprising 59% of the database, with deverbal nouns and verbs making up a further 29% and 10%, respectively. Both deadjectival nouns and adjectives are infrequent, each comprising a little over 1% of the database.

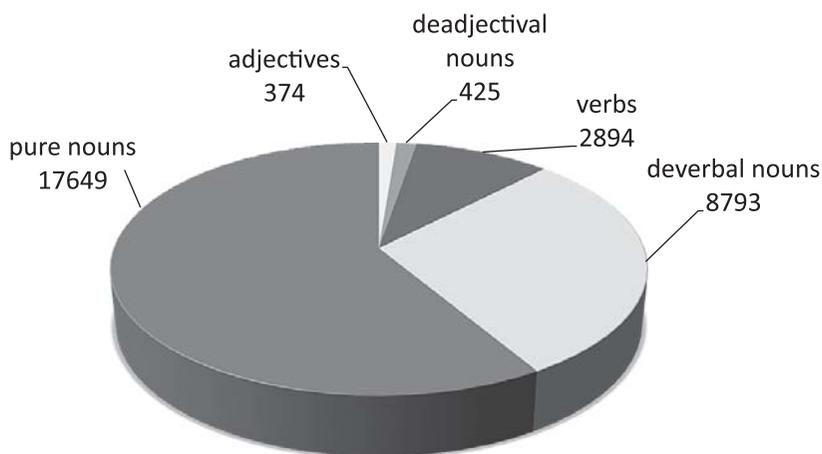


Fig. 1 Rendaku database breakdown by part of speech

Dynasty of China). Later still, from the first half of the second millennium, it came to be designate foreign things in general. The character employed by Satō, as well as in Table 1 below, is thus merely the most commonly found (唐), and the English gloss intentionally antiquated, fuzzy and not necessarily the most appropriate in all cases. See also Mabuchi (1999).

<sup>9</sup> These remaining 30,135 compounds have not yet been error-checked. The large size of the database means, however, that it is highly unlikely any errors that do exist will alter the statistics below to the extent where the tentative conclusions presented in §4 are put into question.

Fig. 2 shows the rendaku rates for each of these five parts of speech. As discussed in §1, verbs are conspicuous in evincing a vastly lower rendaku rate: a mere .185 as against an average of .695. If verbs are then excised from the statistics, we are left with an average rendaku rate (henceforth ARR) of .749, across a spread ranging from adjectives at .639 to deadjectival nouns at .815.

Table 1 shows the rendaku rates for 17 initial elements extracted from the database which appear to have a dampening effect on rendaku. These include not only *ma*, *kata*, *kara* and the bare numerals mentioned in earlier studies (see §2),<sup>10</sup> but also *hacu*, *moro*, *šira* and *mai*. These are sorted in ascending order according to rendaku rate, while a gloss and the number of occurrences as a compound-initial element (*n*) are also given for each. Those elements which appear in fewer than ten compounds, and are thus of less statistical significance, are listed separately in shaded rows in the lower half of the Table.

From Table 1, it is readily apparent that Nakagawa's claim that bare numerals dampen or block rendaku bears up: *hito* 'one', *yo(N)* 'four', *nana* 'seven', *kokono* 'nine' and *momo* 'hundred' never admit rendaku, while the only bare numeral occurring more than 10 times with a rendaku rate exceeding .300 is *ši* 'thousand'. Compare this with the following rendaku rates found for full numerals:<sup>11</sup> *hitocu* 'one' .615, *micu* 'three' .933, *yocu* 'four' .969, *yacu* 'eight' .700.

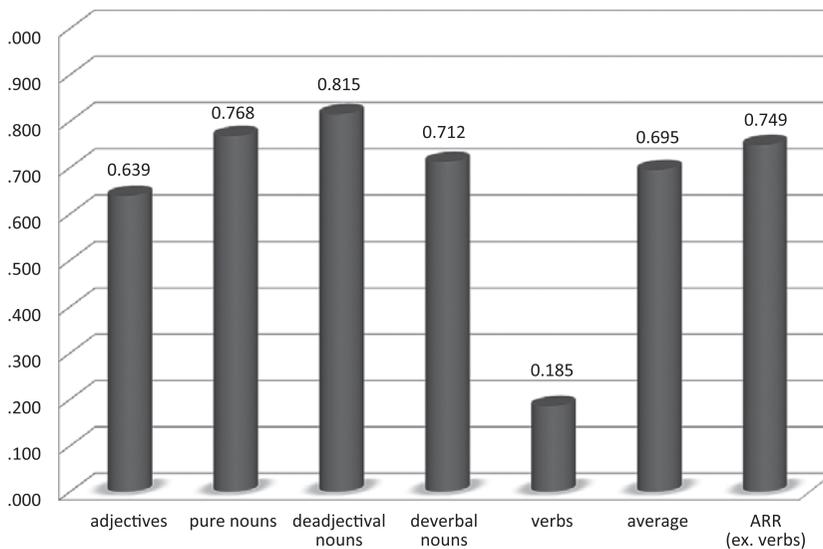


Fig. 2 Rendaku rates by part of speech

<sup>10</sup> Not included are the three bare numerals *mu* 'six', *too* 'ten' or *yorozu* 'ten thousand', which do not occur in the database.

<sup>11</sup> Examples are only cited for those full numerals which appear ten times or more in the database. Although no Sino-Japanese numeral appears ten times or more as an initial element in the database, these too show rendaku rates conforming closely to the ARR.

Table 1 Rendaku rates of dampening elements

element	gloss	<i>n</i>	rendaku rate
<i>bito</i> 一	one	64	.000
<i>ma</i> 真	right, directly <sup>12</sup>	18	.056
<i>mi</i> 三	three	25	.060
<i>šira</i> 白	white	50	.220
<i>futa</i> 二	two	17	.294
<i>kara</i> 唐	Cathay	47	.319
<i>moro</i> 諸	many, both, two	15	.333
<i>kata</i> 片	one (often of two)	57	.360
<i>hacu</i> 初	first, initial	47	.436
<i>ši</i> 千	thousand	13	.462
<i>ya</i> 八	eight	9	.111
<i>momo</i> 百	hundred	9	.000
<i>nana</i> 七	seven	7	.000
<i>mai</i> 毎	every	4	.000
<i>yo / yoN</i> 四	four	4	.000
<i>kokono</i> 九	nine	3	.000
<i>icu</i> 五	five	2	.500

#### 4. Dampening triggers: Exclusions and conclusions

If we remove from Table 1 (a) numerals and (b) elements appearing in the database less than ten times, there remain the six elements *ma*, *šira*, *kara*, *moro*, *kata* and *hacu*. Some examples of each appearing as the initial element in a compound where rendaku is blocked are illustrated in (2). In this final section, I will seek an explanation for these elements' dampening effect and attempt to draw some conclusions.

- (2) *ma* + *fuyu* > *mafuyu*  
 'right, directly' 'winter' 'midwinter'
- šira* + *bata* > *širabata*  
 'white' 'flag' 'white flag, flag of surrender'

<sup>12</sup> It is necessary to keep separate the two main polysemes found for *ma* when it appears in rendaku compounds – Satō's (1989) formulation cited in §2 is too crude. The first of these may be grossly glossed as 'right, directly' (see (2) below for examples). The second definition may be glossed as 'the archetype of a certain species or type' and is mostly applied to flora and fauna (e.g. *madai* 'red sea bream', *magurwa* ~ *makurwa* 'white mulberry', *madako* 'common octopus'), though not always (*magokoro* 'sincerity, devotion', *magana* 'early Japanese writing system'). The former definition dampens rendaku and it is the statistics for this definition, and this definition only, which are shown in Table 1. The latter definition exhibits a rendaku rate of .548 (*n* = 21), thus conforming more closely to the ARR. A third minor definition found for *ma* is as an obsolete euphemistic-honorific prefix. Examples are few (*matama* 'jewel', *makuši* 'comb', *matoko* 'bed') and found only in pre-modern texts. As with other honorifics (§2), in such compounds rendaku never occurs. Finally, there exist four database entries where the definition of *ma* is unclear – these have been excluded from all statistics.

<i>kara</i>	+	<i>ki</i>	>	<i>karaki</i>
‘Cathay’		‘tree, wood’		‘imported tropical hardwood’
<i>moro</i>	+	<i>ba</i>	>	<i>moroba no</i>
‘many, both, two’		‘blade, edge’		‘double-edged’
<i>kata</i>	+	<i>toki</i>	>	<i>katatoki</i>
‘one (often of two)’		‘time’		‘single instant’
<i>hacu</i>	+	<i>koi</i>	>	<i>hacukoi</i>
‘first, initial’		‘love’		‘first love’

Traditional Japanese grammar makes a distinction between compounds (*fukugōgo* 複合語) and derivatives (*baseigo* 派生語), the former being composed of ‘stem+stem’, the latter of ‘affix+stem’. Could it be that rendaku dampening is restricted to prefix+stem derivatives? That forms such as those in (2) should not, in fact, be considered compounds? The problem in proving such a trigger exists, however, lies in distinguishing a prefix from a compound-initial element. What makes a common initial element such as *šira* ( $n = 50$ ) or *kata* ( $n = 57$ ), more prefix-like than other common initial elements which do not dampen rendaku, such as *abura* 油・脂 ‘fat’ (.682,  $n = 41$ ) or *onna* 女 ‘woman’ (.886,  $n = 35$ )?

Fortunately, the situation can be resolved by following Hōjō (1973), a well-known list of Japanese prefixes. All the six elements *ma*, *šira*, *kara*, *moro*, *kata*, *hacu* appear on Hōjō’s list and thus can indeed be considered prefixes. Unfortunately, many other prefixes, including those shown in Table 2 (again, limited to those occurring in ten compounds or more), also appear in Hōjō. Since these all show rendaku rates close to the ARR (indeed, in many cases higher), it cannot be contended that dampening is triggered by, or restricted to, derivatives rather than compounds. Satō’s (1989) claim (§2) is infelicitous.

Table 2 Rendaku rates of selected common prefixes

element	gloss	<i>n</i>	rendaku rate
<i>ma</i> 間	interval	16	1.000
<i>ko</i> 小	small	141	.856
<i>te</i> 手	hand	143	.836
<i>ryoo</i> 両	both	16	.813
<i>o</i> 小	small	31	.806
<i>han</i> 半	half	27	.630
<i>oo</i> 大	large	139	.602

Other possible dampening triggers can be envisaged. A more or less exhaustive list would contain the following:

- **Phonology and suprasegmentals.** There is nothing in the phonology, phonotactics or accentual patterns of *ma-*, *šira-*, *kara-*, *moro-*, *kata-*, *hacu-* which sets them apart from those prefixes in Table 2, and others. The same may be said for their moraic and syllabic length.
- **Bound vs. free prefixes.** A bound prefix may only occur as a prefix, whilst a free prefix may also occur as an independent word. The six prefixes in (2) are evenly split in this respect:

three are bound (*šira-*, *kata-*, *moro-*), while three are free (*kara*, *ma*, *hacu*). Since among the prefixes in Table 2, we find both bound (*oo-*, *ryoo-*, *ko-*, *o-*) and free prefixes (*ma*, *te*), boundness does not appear to be a trigger for dampening.

- **Apophony.** There exist a small group of nouns with variation in their final vowel: a free form and a bound form. Although no longer productive, the most common variation is between final free *-e* and final bound *-a*. The prefix *šira-* is apophonic, appearing in its bound form rather than its free form, *širo*.<sup>13</sup> However, since other apophonic nouns appearing in their bound form, such as *ama-* 雨 ‘rain’ (.917), *ko-* 木 ‘tree, wood’ (.706), *funa-* 船 ‘boat’ (.721) or *saka-* 酒 ‘alcohol, sake’ (.700), exhibit rates of rendaku close to or higher than the ARR, apophony cannot be considered a trigger for dampening.
- **Q-generation.** Some prefixes in (2) allow optional variants with the mora obstruent *Q* (e.g. *mafuyu* ‘midwinter’ ~ *maqpira* ‘absolutely not, (lit. totally flat)’, *katate* ‘one hand, each hand’ ~ *kataQpaši* ‘one after the other’), while others do not (see Irwin 2009b for more on *Q*-generation in general). However, such *Q*-variation can also be found among Table 2 prefixes (e.g. *ooQpira* ‘unreserved, uninhibited’). *Q*-generation too cannot be a trigger for rendaku dampening.
- **Productivity.** Since there is no agreed objective measure for productivity, the author asked a small number of native Japanese speakers, all university staff, to rank the prefixes in (2) on a scale of 1-5 for productivity (5 = most productive). Averaged out and rounded to the nearest whole number, the results were: *ma-* 4, *hacu-* 3, *kata-* 2, *moro-* 2, *šira-* 1, *kara-* 1. While not every Japanese speaker will agree with these average scores, most would probably agree that, with the exception of *ma-*, the majority are comparatively unproductive. However, some Table 2 prefixes (*han-* 3, *ma-* 2, *o-* 1) scored poorly in the same survey and must also be deemed unproductive. Productivity cannot be a trigger for rendaku dampening.
- **Numerics.** Three prefixes in (2), *kata-*, *hacu-* and *moro-*, although not numerals, are numerically related. However, the Table 2 prefixes *ryoo-* and *han-* are also numerically related, the former in particular evincing a rendaku rate higher than the ARR. It should be noted, though, that both these prefixes are Sino-Japanese.

We have already seen in §2 that honorifics block rendaku, while the phenomenon is severely dampened, and in the case of *hito-* ‘one’ blocked, by bare numerals. We have also seen that while the elements in (2) are all prefixes, prefixhood is not in itself a contributory factor towards dampening or blocking (Table 2). Only one factor of the six possible triggers outlined above has any bearing on rendaku dampening: the last, numerics. While Nakagawa’s (1966) claim that bare numerals strongly dampen rendaku is borne out by data furnished by the rendaku database (§3), it requires some slight broadening in its scope:

- (3) with the exception of full numerals, native Japanese numerically-related initial elements strongly dampen, or may even block, rendaku

Note that the revised formulation given in (3) includes the rubric ‘native Japanese’: recall that Sino-Japanese numerals (*iči*, *ni*, *san*, etc.) and the Sino-Japanese numerically-related prefixes in Table 2, *ryoo-* and *han-*, have no apparent dampening effect. Why other prefixes such as *ma-*,

<sup>13</sup> Both this free form *širo* and its antonym *kuro* ‘black’ show rendaku rates much closer to the ARR: .574 (*n* = 54) and .639 (*n* = 70), respectively.

*šira-* and *kara-* should dampen rendaku is a question whose answer can only be brought to light by further research.

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## 連濁抑制と接頭辞

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### 要旨

「オ、ゴ、ミ」等の敬語接辞が連濁を妨害することが数十年前から定説となっているが、連濁を妨害・抑制する複合語の第一要素は敬語接辞に限られていないことも、長年の研究を通して知られるようになった。そして、低数詞ヒト・フタの第一要素が連濁を抑制するのに対し、オオ（大）やコ・オ（小）等の第一要素が連濁に影響を及ぼさないことも、先行研究で取り上げられている。ところが、カタ（片）、ハツ（初）やシラ（白）等のように連濁を抑制すると見られる第一要素はまだ取り上げられていないままである。連濁抑制起因は様々考えられるが、連濁データベースの使用を通して、連濁を抑制する諸要素を吟味した結果、起因は数に関連する語であると結論づけられる。

**キーワード：**日本語、連濁、形態音韻論、複合語、接頭辞