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Rendaku: A Sequential Voicing Phenomenon in Japanese

Background

Japanese is an overwhelmingly polyphonic language due to the fact that whereas the orthographic language itself is in large part borrowed and derived from the Sinitic language, the spoken and expressed language is closer to that of the Ryukyuan language family, evident through the fact of mutually unintelligible “dialects” of Japanese, such as *Okinawan* and *Amami*ⁱ. To further complicate the mess, in the 18th century, the Japanese language started a trend of importing vocabulary from Indo-European languages (a trend which is still being continued to this day), adding to the ambiguity woes of the language (to non-native speakers, at the least), despite borrowed words making up the bottom layer of the polyphony hierarchy in our case.

The polyphonic nature of Japanese can be largely observed in the interpretation of the orthographic language, especially in that of *kanji*, which are orthographic characters borrowed from the Sinitic language. Because the Japanese language borrowed the orthographic alphabets to accommodate a pre-existing—presuming Ryukyuan—language, there are accordingly two different readingsⁱⁱ for each character; the read-out system most resembling its Sinitic origin is called the *onyomi*, or “reading by sound”, whereas the read-out system which still preserves the spoken language used by the native Japanese peoples prior to the Sinitic borrowing is known as *kunyomi*, or “reading by meaning”.

Introduction

Rendaku is a phonological phenomenon unique to the languages of Japan which governs the voicing of obstruents in compound words and morphemes. Although the phonological process behind *Rendaku* is relatively simple in that a voiceless obstruent becomes voiced, the process itself is overloaded with exceptions owing to common thematic factors in linguistics such as historical changes within the language and simultaneous phonological changes which prevent its happening. This paper aims to examine the reasons and the premise in which *Rendaku* occurs and fails to occur

Why Does *Rendaku* Happen?

Although the underlying process is phonological in nature, *Rendaku*, being a process which governs compound word and morpheme formation, serves a lexical purpose in the sense that it defines how semantic tokens within a compound morpheme modify or accompany each other. Ichihara (2001) identifies that in most cases, compound words which have undergone *Rendaku* usually entails that one of the words are modifying the other, usually in a genitive manner. The tried and true example used by most linguists in illustrating this process is found in the *Nihon Kokugo Daijiten* (The Great Dictionary of the Japanese Language):

- 1a) [jama] n. “mountain” + [kawa] n. “river” > [jamagawa],ⁱⁱⁱ
Semantic implication: /yama no kawa/; n. “a river inside the mountain”

- 1b) [jama] n. “mountain” + [kawa] n. “river” > [jamakawa],
 Semantic implication: /yama to kawa/; “river and mountain”
 1c) [jama] n. “mountain” + [kad̥ʒi] n. “fire” > [jamakad̥ʒi]
 Semantic implication; /yama no kad̥ʒi/; n. “forest fire”

As shown in 1a, *Rendaku* occurs when the compound word in question implies the genitive particle “no”^{iv} but does not occur when the compound word in question implies the inclusive particle “to” as observed in 1b.

Hamano (2000) notes that although *Rendaku* will not occur in all instances of compound words implying the genitive particle—as seen in 1c and in words like [jamaʃita] “under the mountain” where if *Rendaku* had occurred would yield the pronunciation *[jamad̥ʒita]—*Rendaku* can never occur when the compound in question entails the inclusive particle “to”. Another lexical restriction of *Rendaku* is noted by Ichihara (2001) in that *Rendaku* cannot occur if the first morpheme of the compound is an object or a direct object of the second morpheme, unless the first morpheme can be applied adverbially to the second morpheme^v:

- 2a) [jane] n. “roof” + [ʃuki] v. “to thatch” > [janeʃuki] v. “to thatch a roof”
 2b) [kawara] n. “tile” + [ʃuki] v. “to thatch” > [kawaraʃuki] v. “to thatch (a roof) using tiles”
 As seen in 2a, *Rendaku* does not take place when the noun [jane] modifies the verb [ʃuki], but takes place when the noun [kawara] is actually the means in which the verb [ʃuki] meets its end, as seen in 2b.

As aforementioned, the nature of *Rendaku* is not purely lexical and it influences (and also influenced by) many phonological changes throughout the many languages of Japan. The presence of *Rendaku* is especially prominent in phonological cases related to *go-dan katsuyō*, a systematical conjugation of verbs unique to the languages of Japan, which will be duly discussed in the latter parts of this paper.

When Does *Rendaku* Happen?

The phonological process of *Rendaku* is akin to voicing assimilation and can be represented by the following linear rule:

[C] → [+voi] / { [CV(C)]_σ [_V(C)]_σ }

syllable-initial obstruent consonants become voiced if such a consonant is located on the second morpheme of a compound word.

The following is the list of sounds that are affected by *Rendaku* and their voiced counterparts:

(. indicates a morpheme boundary)

- [h] → [b] / [p] [mae] adj. “front” + [ha] n. “tooth” > [mae.**b**a] n. “front tooth”
 [k] → [g] [mina] n. “everyone” + [koroʃi] n. “killing” > [mina.**g**oroʃi] n. “killing off”
 [s] → [z] [me] n. “eye” + [sameru] v. “to awake” > [me.**z**sameru] v. “to wake up”
 [ʃ] → [d̥ʒ] [neko] n. “cat” + [ʃita] n. “tongue” > [neko.**d̥ʒ**ita] n. “cat-tongued”
 [t] → [d] [uri] v. “the act of selling” + [taka] n. “price” → [uri.**d**aka] n. “sale price”

The phonological process of *Rendaku* is rather straightforward and is undisputed by most linguists who research the phenomenon; most of the dispute surrounding *Rendaku* concerns the lexical category in which the compound word that undergoes the process belongs to, which requires a brief memorandum on the history and the composition or the structure of Japanese language in order for us to fully understand what is at stake.

Vance (1982) points out that the Modern Japanese lexicon is composed of four strata: Yamato Japanese, words which originate from the native inhabitants of Japan; Sino-Japanese, or lexical morphemes borrowed from the Chinese languages; *gairaigo*, or words borrowed from other foreign languages, such as Portuguese and English; and finally mimetic expressions, which are usually phonological reduplications of an onomatopoeic two-syllable word.

Despite the existence of such categories, native speakers of the language often confuse such distinctions on the orthographical level and often fail to recognize the occurrence of *Rendaku*. This is due to the fact that both Yamato Japanese and Sino-Japanese can be represented through *kanji*, or the ideographic character set borrowed from Chinese. For example, the modern Japanese word for “source” as in “a source of power” exists in Yamato Japanese as [mi.na.mo.to] and also in Sino-Japanese as [gen], but are both orthographically represented with the same *kanji* “源”. Cases such as these usually result in a misinterpretation or misreading—especially in the case where a Sino-Japanese morpheme composes part of the compound—of such characters which have historically resulted in the addition or deletion of *Rendaku* in some cases^{vi}, as Unger (1988) points in his publication in the Journal of American Oriental Society.

Another issue which makes the occurrence of *Rendaku* hard to perceive has to do with the nature of how Sino-Japanese lexical morphemes were incorporated into the Japanese language. Whereas Yamato Japanese words which are orthographically represented by *kanji* always have only one reading, Japanese words of Chinese origin (or what is commonly referred to as *onyomi*) often possess two or three different readings owing to the fact that Japan borrowed sounds in different instances from different times and dynasties of China. To further elaborate this point, we take “京” the *kanji* for the word “capital” as in “capital city”, has three different Sino-Japanese readings “*kei*”, “*kyō*”, and “*kin*”. Tokugawa (1990) explains that the reading “*kyō*” was borrowed from the Wu dynasty^{vii} of China during the 5th and 6th centuries and is still visible today in Sino-Japanese compounds such as “*tōkyō*”; “*kei*” was borrowed from the Tang dynasty of China during the 6th and 9th centuries and is found in compounds such as “*keihin*” (a district outside of the city of *Tōkyō*); while “*kin*” was borrowed during the *Heian* and *Edo* eras^{viii} of Japanese history from contemporary Chinese dynasties of the time, and can be seen in the compound “*pekin*” (the city of *Beijing*, China).

One could easily argue that such issues are mainly to do with etymology and none with phonology, but there are many cases in Japanese where a Sino-Japanese reading of a *kanji* contains both a voiced and a voiceless version of what is essentially the same sound making it hard to determine whether *Rendaku* had taken place or not. For example, the *kanji* “珠” has two contrastive readings of [ʃu] and [dʒu], and appears in most cases as the second morpheme of compound words. Such is also the case in the word [ʃin. dʒu] “pearl”. Unless one knows the exact etymological history behind the character, (i.e. when the word [shin.dzu] and the reading [dʒu] for the *kanji* was incorporated into the language) it is almost impossible to determine

whether the compound reading [shin.dzu] originated from a *Rendaku* formation of [ʃin] + [ʃu], or whether it was a simple compound involving just the sounds [ʃin] + [dʒu]. Although we know now that the latter was the case for the *kanji* “株” from evidence gathered through historical records of the *Muromachi* era^x, many other Sino-Japanese readings and combinations still remain in the gray and have subsequently become subjects of great research in Japanese linguistics.

Such contentions have brought forth ideas that *Rendaku* may only happen when affected compounds involve a morpheme of Yamato Japanese origin (Itō and Mester, 1998), and compounds of all other strata (Sino-Japanese, *gairaigo*) only observe the process if they are words that are commonly used or have been in long circulation. (Ōtsu, 1980) This view has some merit in that a research conducted by Vance in 1996 showed that 87% of compound words involving did observe *Rendaku* while only 10% of what Vance calls Sino-Japanese “binoms” did, but as this is not a subject of phonology but rather that of language change and etymology, we shall instead move on and further explore phonological conditions and phenomena which block the happening of *Rendaku*.

When Does *Rendaku* Not Happen?

Setting aside semantic and lexical reasons, the non-occurrence of *Rendaku* in compound words is also heavily influenced by phonological changes that were introduced at various points throughout the history of Japan.

The most famous and the most compelling phonological change which blocks the happening of *Rendaku* was first observed by Kamo no Mabuchi, the fabled 18th century author of the “Tales of Genji”, who noted that “*Rendaku* is rarely seen in compound formations where the onset of the second syllable already contains a voiced consonant.”^x (Akinaga, 1990)

Kamo no Mabuchi’s discovery can be outlined by the following Modern Japanese examples:

(. indicates a morpheme boundary)

3a) [jari] n. “to do (inflected)” + [sugi] v. “to surpass” > [jari.sugi] n. “the act of overdoing”^{xi}

3b) [neko] n. “cat” + [suki] v. “to like” (inflected) > [neko.zuki] n. “cat lover”

3c) [jari] + [sugi] > *[yari.zugi]

3d) [waru] adj. “bad” + [gaki] n. “kid” > [waru.gaki] n. “ruffian, ragamuffin”

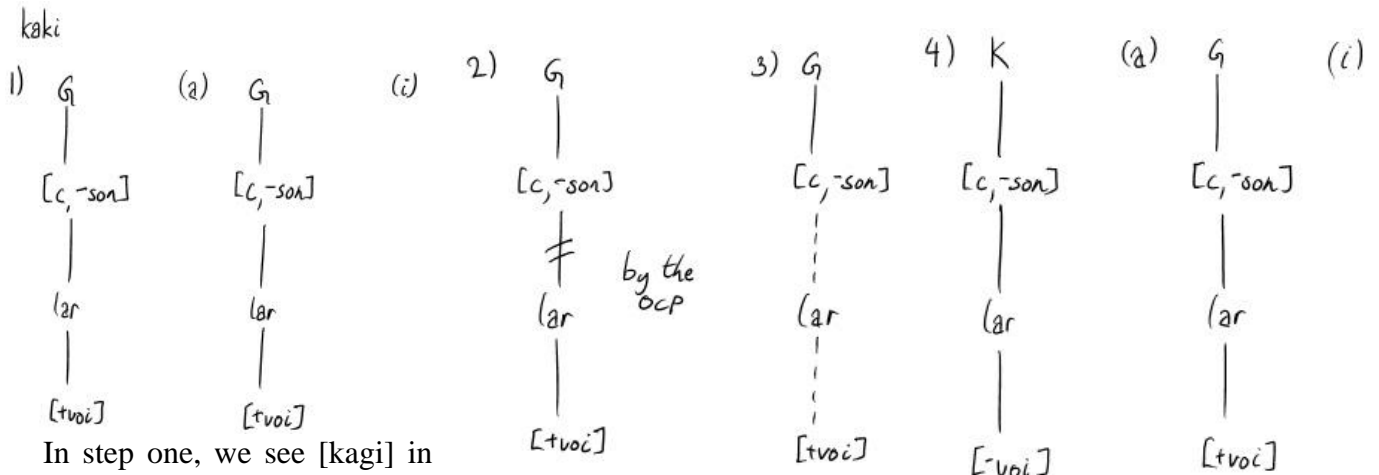
Compound words which contain a second morpheme with a voiced consonant already present does not undergo *Rendaku* as seen with /yarisugi/ in 3a, as opposed to cases where all the consonants are voiced, whereas in 3b /suki/ becomes voiced into /zuki/. (Example 3c demonstrates a grammatically unacceptable derivation, whereas 3d shows vacuous rule application)

Kamo no Mabuchi’s *Rendaku* exception was re-discovered by Benjamin Smith Lyman in 1894, who expanded Kamo no Mabuchi’s exception to “allow” it to apply to compound words where the second morpheme contains more than two syllables, by modifying (or rewording) it to say that *Rendaku* is not elicited if any consonant in the second morpheme contains a voiced consonant. Modern linguists have attributed this change to an example of the Obligatory Contour

Principle, as did Ichihara (1998) who wrote that *Rendaku* observed the OCP in that the second morpheme of the compound would ensure that one of its consonants either dissimilate into a [-voi] in the case that *Rendaku* rendered both consonants voiceless, or *Rendaku* would not happen at all, assuming only consonants were specified for voicing in such environments.

The process of OCP in *Rendaku* can be better illustrated through the following example, which shows the derivation of the Kyōtō dialect compound /aikagi/ (“matching key”)

[ai] v. “to match” (inflected) + [kagi] n. “key” > [aikagi] n. “matching key”



In step one, we see [kagi] in its voiced form *[gagi] after *Rendaku* has taken place; in step two we see the [+voi] attribute of the first syllable becoming delinked to observe OCP under syllable adjacency. Step three shows the application of universal redundancy rules [] → laryngeal and C → [-voi], with a [-voi] node being attached to the consonant as a result; finally in step four we see the phonetic representation [kagi].

Another minor, yet fascinating, block against *Rendaku* is its bleeding rule order when in clash with various rules of *onbin* (phonaesthetics) governing adjectives. Although there is evidence that *onbin* applied differently in different dialects, one of the *onbin* rules which came into effect in the Kyoto dialect was the deletion of intervocalic [k] in inflected adjectives (Unger, 2004), which resulted in the following:

- 4a) [taka] adj. “tall” + [ki] *renyo* adjectival inflection > [taka.ki] > [taka.i] adj. “tall”
 4b) [širo] adj. “white” + [ki] *renyo* adjectival inflection > [širo.ki] > [širo.i] “white”^{xii}

In such cases, *onbin* rules take precedence over *Rendaku* and deletes the consonant before it can be voiced or devoiced and produce grammatically incorrect forms *[taka.gi] and *[širo.gi]. A more familiar version of this *onbin*-inspired change can be seen in Early Middle Japanese:

[o] indeterminate article + [hayo] adj. “early” + [ku] *shuushi* adjectival inflection > [o.hayo.ʉ]
 “good morning” lit. “you are early”

Conclusion

Despite the numerous and concurrent research regarding the subject matter, the exact premises

and causes of *Rendaku* still remain uncertain. Although linguists have been able to make accurate predictions in determining the conditions in which *Rendaku* does not take place—such as Lyman’s Law, and the non-occurrence of *Rendaku* in compound patterns where the inclusive particle *to* is implied—the nature of the Japanese language as one that has had heavy influences from a variety of foreign makes it difficult to narrow such conditions down to black and white.

A factor that is especially hindering the progress of solving the mystery of *Rendaku* is that the native languages of Japan lacked an orthographic system prior to borrowing and developing the *kanal/kanji* system from China (Kunihiro, 1983), which is ironic, since most of the lexical words that undergo *Rendaku* either contain a Native Japanese morpheme or are made up entirely of Native Japanese morphemes.

NOTES

ⁱ From *Encyclopedia of Linguistics: “The Languages of the Japanese Archipelago”*; Sanseido, 1996

ⁱⁱ. From 1998 re-publication of the *Nihon Daibunten*

ⁱⁱⁱ All derivations are taken from the Tōkyō dialect of Modern Japanese unless specified; derivations may vary depending on dialects and the time period from which each example is taken.

^{iv} Japanese linguists collectively refer to words which “imply the genitive particle *no*” as “*no-kankei*” words (“words which concern the particle *no*”) and those that “imply the inclusive particle *to*” as “*to-kankei*” words (“words which concern the particle *to*”)

^v Translation from original text: “複合語前項が後項の目的格になるときは連濁しにくい、前項が副詞格の時は連濁する”

^{vi} This is in reference to the Sino-Japanese pronunciation of “折” [ʃakɯ] which Unger believes to have come to existence as a result of misreading.

^{vii} Sounds borrowed from the Wu dynasty are collectively known as *go-on*; those from the Tang dynasty as *kan-on*; and those from the later dynasties as *tō-on*

^{viii} 794 AD – 1185 AD; 1603 – 1868 AD

^{ix} 1336 AD – 1576 AD

^x Translation from original text: “複合語後項の第2拍が濁音のときは連濁しにくい。”

^{xi} The word /*yarisugi*/ in Japanese is actually known as a *keiyō-dōshi* (adjectival noun) but I shall qualify it as a noun here for simplicity’s sake.

^{xii} Curiously enough, the adjective forms of /*široi*/ and /*takai*/ which have not undergone *onbin* still exist as rare forms in Modern Japanese: compound words such as /*hokori.takaki*/ and /*široki.hana*/ are still in circulation among the poetic societies in Japan

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