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Universals of tone rules and diachronic change in Japanese

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Summary

The paper examines two competing theories on the historical development of Japanese tone (Kindaichi's theory or the standard theory and Ramsey's theory), in light of universals of tone rules. It is argued that many developments that must have occurred widely, according to the standard theory, are unnatural when compared to developments in other languages.

Rightward tone shift plays an important role in the standard theory, and the naturalness of rightward tone shift is beyond doubt. However, many other developments that form part of the standard theory are problematic, as they involve complicated changes for which no phonological motivation can be offered.

The alternative theory, and its reconstruction of the Middle Japanese tones, explains the wide geographical distribution of the Tokyo type tone systems, as this type is closest to proto-Japanese. Two relatively simple changes (assimilation of the tone of the particles in some dialects, followed by a tone reduction in all dialects) account for the different merger patterns in the modern Tokyo type dialects. Furthermore, the well-established fact that long vowels offer stronger support for contour tones than short vowels, explains the geographical distribution of the Nairin type versus the other types.

The radical tone reduction after the Middle Japanese period is the historical change in Japanese tone that was most far-reaching, and the polarizing effect of a HL interval explains why only H followed by L in Middle Japanese was preserved in the modern dialects. This phonological explanation may also account for the very similar tonal development known in Bantu linguistics as 'Reverse Meeussen's Rule', for which no phonological motivation has been proposed so far.

The leftward shift of H tone, which according to Ramsey's theory, took place in the Kyoto type dialects, has parallels in Bantu languages that went through a similar tone restriction as Japanese. Bantu languages tend to be rich in productive prefixes, so that word-initial H tones, when shifted, will be realized on the prefix. In a predominantly suffixing language like Japanese, leftward shift of word-initial H tone had a different result, namely the development of word-initial L tone.

Table of contents

1.1	Introduction
1.2	Background
2.1	Development of the modern Kyoto type tone system from the tone system of Middle Japanese (standard reconstruction)
2.2	The development of H tones in classes 2.4, 2.5, 3.6 and 3.7 during the shift from Kyoto type to Tokyo type tone
2.3	The development of the Gairin tone systems
3.1	The nature of the Middle Japanese tone system and the interpretation of the tone dots
3.2	The development from Middle Japanese (Ramsey's reconstruction) to the modern Tokyo type dialects: H tone reduction
3.3	The phonological background of the tone restriction: Polarization of a HL interval
3.4	The phonological background of the leftward tone shift: H tone anticipation
3.5	Development of L register in the Kyoto type dialects: Initial H tone shift in a predominantly suffixing language
3.6	The development of the Gairin tone system: H tone spreading after LH contours
3.7	The development of the Nairin tone system in central Japan: Vowel length as syllabic support for contour tones
3.8	The effect of the particle <i>no</i> : Synchronic loss of word-final H tone
3.9	The tone of compounds with long first elements and short second elements in Tokyo and Kyoto
4	Summary and conclusions
	References

1.1 Introduction

This paper argues that the historical developments in the Japanese tone system agree with universals of tone rules, if the reversed reconstruction of the Middle Japanese tone system, proposed by Ramsey in 1979 is adopted. Trying to include the standard reconstruction of the Middle Japanese tone system as a historical stage in Japanese on the other hand, is extremely complicated. It requires numerous unnatural tonal developments, which must have occurred multiple times, all over Japan.

Universals of tone rules are tonal developments that have been observed widely in tone languages, and that can therefore be regarded as natural. Documentation of tonal developments is scattered over many articles describing many different languages. There are, however, a number of papers which list and discuss such universals. The first is “Universals of tone rules” (Hyman and Schuh, 1974). The paper ‘Historical tonology’ (Hyman 1978) presents principles of historical tonology likewise believed to have universal application. “Universals of tone rules thirty years later” (Hyman, 2007), is the latest overview, which includes new insights in tonology that have developed since the nineteen seventies.

The insights gained from other tone languages help to decide which changes in the tone system of Japanese can be regarded as likely or unlikely. Japanese shares more similarities with the register tone systems found in many African languages, than with the contour tone systems of many Asian languages. Most examples of parallels between Japanese and other languages are therefore from African languages, especially those Bantu languages in which the proto tonal oppositions have been reduced. Such tone reduction has close parallels in Japanese, where the relatively unrestricted register tone system of Middle Japanese was so severely reduced, that the modern tone systems are often analyzed as pitch accent systems.

1.2 Background

The most striking difference among the present-day tone systems in Japan is between the Kyoto type tone system in central Japan, and the Tokyo type tone systems that surround it. In many tone classes, it is as if the pitches in the two types are exactly reversed. What is really behind this difference in pronunciation, is a difference in the location of the H tone (or ‘accent’). In central Japan, the H tones are located one syllable earlier in the word than in the surrounding dialects.¹ This means that in one of the two regions, the tones shifted. They shifted towards the beginning of the word in Kyoto or they shifted towards the end of the word in the surrounding Tokyo type dialects.

Although the different Tokyo type dialects generally agree with each other on the location of the tones, they are nevertheless divided into a number of sub-types. This is because in some of the Tokyo type dialects, word-final H tones are missing in certain tone classes. In nouns for instance, the Nairin dialects have the largest number of word-final H tones. By comparison, in the Churin dialects, word-final H tone in class 1.2 is missing. The Gairin dialects lack word-final H tone not only in class 1.2, but also in classes 2.2 and 3.2. Verb forms show similar differences.

Apart from the Kyoto type and the Tokyo type tone systems, there is a third type represented on southwest Kyushu, the so-called Kagoshima type. The Kagoshima tone system is a simplification of the Gairin type tone system that is also found on Kyushu. The link between H tone and a specific syllable in the word is lost in Kagoshima. Instead, there are two distinct word-melodies, which are mapped over the word or tonal phrase as a whole. Words that lack H tone in the Gairin dialects, have word-melody A in Kagoshima, and words that contain H tone in the Gairin dialects -it does not matter where in the word this H tone is located- have word-melody B in Kagoshima.

Apart from the modern dialects, there is information on tonal distinctions in earlier times, most importantly tone dot material from the Middle Japanese period (11th to 14th century). The tonal distinctions attested in these materials agree as to the number of distinctions that have to be reconstructed if the modern dialects of mainland Japan are compared, so it is likely that this tone system and the tone system of proto mainland Japanese were close.

Because a lot of this material stemmed from Kyoto, the tone dots were interpreted in such a way that the tone system of Middle Japanese resembled the modern tone system of Kyoto. The Tokyo type tone systems all over Japan are thought to have developed as a result of rightward tone shift. This theory was originally proposed by Kindaichi Haruhiko and is most explicitly formulated in Kindaichi’s articles of 1951 and 1954.

Kindaichi’s theory was challenged by S. R. Ramsey (1979, 1980, 1982), who argued for a reversed interpretation of the value of the Middle Japanese tone dots. Such a reversal results in a Middle Japanese tone system that resembles the Tokyo type tone systems. The Kyoto type location of the tones is seen by Ramsey as an innovation that occurred after the Middle Japanese period.

The geographical distribution of the tonal types supports Ramsey’s idea. Not only is Kyoto type tone limited to central Japan, in the middle of the area with Kyoto type tone, there is a mountainous and inaccessible area (Totsukawa) which has a Tokyo type tone system. The

¹ There is a special correspondence when the H tone is on the initial syllable in the Tokyo type dialects. In that case Kyoto has a phonological L tone on the initial syllable. For the sake of simplicity, I do not discuss developments in heavy, two-mora syllables. I will speak of syllables here, by which are meant short open syllables only, unless stated otherwise.

easiest explanation for the existence of such an area, is to assume that the Kyoto type tone system was an innovation, which failed to spread to this isolated area. But dialect geography - as informative as it is in determining the direction of linguistic change - is not the sole deciding factor. An essential question is, whether the standard reconstruction of the Middle Japanese tones forms a good starting point for the developments towards the modern dialects. Are the diachronic tonal changes that have to be reconstructed natural and convincing?

2.1 Development of the modern Kyoto type tone system from the tone system of Middle Japanese (standard reconstruction)

Table 1 below shows a comparison of the tone of nouns of 2 and 3 syllables in Middle Japanese in the standard reconstruction with the Kyoto type dialect of Kochi. The example words are followed by the enclitic nominative case particle *ga*. Each tone class is conventionally given a number indicating the number of moras in the word, and the tone class to which the word belongs.² The dialect of Kochi is selected because it is more archaic than the dialect of Kyoto itself, and therefore better suited for historical comparisons.

Table 1: Development from Middle Japanese to Kochi

MJ tone classes		Middle Japanese		Kōchi	
2.1 <i>kaze-ga</i>	‘wind’	HH-H	>	HH-H	✓
2.2 <i>oto-ga</i>	‘sound’	HL-H	>	HL-L	✓
2.3 <i>ike-ga</i>	‘pond’	LL-H	>	HL-L	
2.4 <i>ito-ga</i>	‘thread’	LH-H	>	LH-H	✓
2.5 <i>mado-ga</i>	‘window’	LF-H	>	LH-L	✓
3.1 <i>katati-ga</i>	‘shape’	HHH-H	>	HHH-H	✓
3.2 <i>hutatu-ga</i>	‘two’	HHL-H	>	LHL-L	
3.4 <i>atama-ga</i>	‘head’	LLL-H	>	HHL-L	
3.5 <i>inoti-ga</i>	‘life’	LLH-H	>	HLL-L	
3.6 <i>usagi-ga</i>	‘rabbit’	LHH-H	>	LHH-H	✓
3.7 <i>kabuto-ga</i>	‘helmet’	LHL-H	>	LHL-L	✓

In many tone classes the resemblance is good, even perfect, and if there are differences with the modern dialects (particle tone for instance) the changes leading to the modern Kyoto type are natural. I have added checkmarks to these cases.

Four checkmarks are missing. In class 3.2 it is unclear why a phonological L tone (marked in bold) developed on the initial syllable in the modern dialect, but at least there is a H tone present in Middle Japanese on the second syllable, just as in Kochi.

² The second syllable of class 2.5 was sometimes marked with a slightly raised dot on the left side in Middle Japanese, which is given the value F in the standard reconstruction of the Middle Japanese tones. The irregularities in class 3.3 made Kindaichi remove this class from his list of proto-Japanese tone classes. I follow Kindaichi in excluding this class.

A more important problem are classes 2.3, 3.4 and 3.5. These classes are problematic because the phonological H tones (marked in bold) in the modern Kyoto type dialects are either not present in Middle Japanese, or are in the wrong place. This is a serious problem, because the Tokyo type dialects have these H tones too, all over Japan, in corresponding locations, namely one syllable later in the word than in the Kyoto dialects. Classes 2.3 and 3.4 especially, are large and regular tone classes, and unlikely developments in these classes cannot be brushed aside as minor exceptions.

H tones must have been present in these tone classes at the time when the tones started to shift to the right (according to the standard theory), and the Tokyo type tone systems developed. But they were not there yet in Middle Japanese. In the modern Kyoto type dialects they are there, but not yet in Middle Japanese.

One explanation would be to assume that Middle Japanese changed into something more modern, a tone system like present-day Kochi or Kyoto, which did include these H tones, and that this tone system then spread all over Japan replacing the earlier Middle Japanese system everywhere. Only after this change was completed, Tokyo type tone could develop by shifting all H tones to the right, everywhere except in central Japan. It is hard to believe, however, that two such massive changes could have occurred after the Middle Japanese period, and have spread to such an extent, leaving no traces of the earlier situation behind in the form of dialect islands, or irregularities within the dialects.

The idea is impossible also, because the development of a H tone in class 2.3 caused a merger with class 2.2 (I have indicated this merger in the Kochi dialect), and these classes have not merged in the Gairin Tokyo type dialects. In the Gairin dialects the H tone that was present in class 2.2 in Middle Japanese is lost (class 2.2 lacks H tone/is unaccented in the Gairin dialects), while there is a H tone present in class 2.3 that is still lacking in Middle Japanese. (See Table 4 or Table 10 for the Gairin reflexes.)

Because of these problems, Hattori Shiro (1951) concluded that the Middle Japanese tone system could not have been the ancestor of the Tokyo type dialects. It was only the ancestor of the Kyoto type dialects. Proto-Japanese must have been quite different, and must have incorporated elements of both the Kyoto and the Tokyo type tone systems. The reconstruction of the proto-Japanese tone system proposed by Hattori in this article, is still strongly based on the tone system of Middle Japanese, except that Hattori has added falling (F) tones in those locations where the Tokyo type dialects have H tones. The resulting tone system is highly complicated.

The majority view today is that, despite everything, the proto-system was like Middle Japanese. The idea is that the H tones in these tone classes developed independently, many times over, in dialects throughout Japan. This means it is no longer necessary to assume these H tones developed once, in one dialect, and that this dialect type spread to replace all earlier Middle Japanese-like systems in Japan, before the Tokyo type tone systems could develop. This solution is based on an idea proposed by Kawakami Shin in 1965.

Table 2: *L before H becomes lower and lower (Kawakami, 1965)*

2.3 <i>ike-ga</i> ‘pond’	LL-H >	ML-H >	HL-H >	HL-L
3.4 <i>atama-ga</i> ‘head’	LLL-H >	MML-H >	HHL-H >	HHL-L
4.5 <i>yorokobi-ga</i> ‘joy’	LLLL-H >	MMML-H >	HHHL-H >	HHHL-L
3.5 <i>inoti-ga</i> ‘life’	LLH-H >	MLH-H >	HLH-H >	HLL-L

Kawakami proposed that, in order to emphasize the transition from L to H, L before H became lower and lower. You can just as well say that the L tones before this super-L tone, became higher and higher. In the second column they have developed M tone, and in the third column H tone. In the last column the particle tone is adjusted, resulting in the present-day pitches in the Kyoto type dialects.

There is a problem, however: An unusual change can always happen once or twice, but these H tones are present in these classes in dialects literally **everywhere** in Japan. That means Kawakami's developments must have occurred all over Japan, independently, without skipping a single dialect. After these H tones had developed, they had to shift to the right all over Japan, except in central Japan, where they remained in the Kyoto type location. Outside of central Japan, though, the shift was so complete, that no trace of an earlier Kyoto type location of the tones has been preserved anywhere. Even when rightward shift can be considered natural, such a complete shift that left no exceptions must be seen as remarkable.

The changes proposed by Kawakami must have been even more pervasive, as no area in Japan lacks the H tones whose existence Kawakami sought to explain. Kawakami's proposal would have to agree closely with widely attested universals of tone rules for this solution to be convincing.

Universals concerning the behavior of H and L tone in vertical tone assimilations are as follows: A LH interval is subject to F0 *compression*. In other words, a LH interval has the tendency to minimize or level out to LM or MH while the opposite is true for a HL interval. A HL interval is subject to F0 polarization. H tone will often be significantly greater in height when followed by L tone, so much so, that these H tones can be raised to contrastive super-H tonemes (Hyman, 2007:3-4). Hyman (1993:92) moreover clearly states: "Only H changes its level (to super-H) while L remains L in all environments."

This means that Kawakami's proposal is in direct contradiction to established universals: L before H does not normally become super-L in a LH interval, so that H tones develop immediately before it. On the contrary, a LH sequence will normally level out to MH or LM. The idea that the unnatural tonal developments proposed by Kawakami could have fundamentally transformed the tone system throughout Japan, leaving not a single area untouched, has to be rejected.

Even if the problems in deriving the modern Kyoto type tone system from Middle Japanese are left aside, numerous problems remain. Deriving the Tokyo type tone systems from the modern Kyoto type tone system is far from easy either, as it involves changes that are far more complicated than just rightward shift of already existing H tones. H tones must, for instance, have developed independently all over Japan in word-initial position in tone classes 2.4, 2.5, 3.6 and 3.7 in the Tokyo type dialects.

2.2 The development of H tones in classes 2.4, 2.5, 3.6 and 3.7 during the shift from Kyoto type to Tokyo type tone

Tone classes 2.4, 2.5, 3.6 and 3.7 start with L tone in the modern Kyoto type dialects, but they start with H tone in the Tokyo type dialects. The developments proposed by Kindaichi (1954/1983:72) to account for this transformation are shown in Table 3. Kindaichi assumed that the Tokyo type dialects underwent multiple rightward tone shifts, which created word-initial sequences of L tones. According to Kindaichi, word-initial sequences of L tones, although common in Middle Japanese, were not allowed in Japanese at some point, and were dissolved by the development of H tones at the beginning of words that contained them. These putative

developments must have taken place in parallel fashion all over Japan, outside of the area with Kyoto type tone in central Japan.

There are resemblances with the mechanism proposed by Kawakami, as both involve the development of H tones in sequences of L tones. The mechanisms are, however, not the same, as a transition from L to H plays no role in Kindaichi's explanation for the development of these H tones.

Table 3: Development of H tones in change from Kyoto type to Tokyo type tone (Kindaichi, 1954/1983)

Kyoto type		Stage 1		Stage 2		Stage 3		Tokyo type
2.4 LH-H	>	LL-H	>	LL-L	>	HL-L		HL-L
2.5 LH-L		LH-L	>	LL-H	>	HL-H	>	HL-L
3.6 LHH	>	LLH	>	LLL	>	HLL		HLL
3.7 LHL		LHL	>	LLH	>	HLH	>	HLL

Kisseberth (2001), in an attempt to provide a cause for the development of these H tones, pointed out a possible parallel with stress accent languages, where there is a common constraint against lapses at the beginning of a word: A stress foot is often aligned with the left edge of a word. It is questionable, however, whether tone and stress can be equated in this way, as no such constraint is common in tone languages.

It also has to be kept in mind, that there is no constraint against sequences of L tones in Middle Japanese, or in the modern Japanese dialects. The mechanism proposed by Kindaichi is not active in any of the present-day Japanese dialects, and only needs to be invoked if one follows the standard theory, and has to rationalize the putative transformation of word-initial L tone in Kyoto into word-initial H tone in the Tokyo type dialects. In the present-day Akita dialect for instance, word-initial sequences of L tone are common, as only the H tone itself is H pitched, while all other syllables in the word are L pitched. One of the word melodies of the Kagoshima dialect starts with a string of L tones, and in Kyoto and Ibukijima, the tone of words of class 3.6 with a particle, such as 'rabbit' *usagi-ga*, is LLL-H, and longer words will contain even longer sequences of word-initial L (LLLL-H, LLLLL-H etc.), without there being a rule that dissolves them.

2.3 The development of the Gairin tone systems

The development of the Gairin dialects from Middle Japanese in the standard reconstruction is the most complicated of all. Table 4 shows the necessary intermediate stages.³

Four regions must have gone through all of these consecutive stages independently, namely northeast Kyushu, Izumo, Tohoku and Aichi/Shizuoka (former Mikawa province). First, the transition from H to L that was present in Middle Japanese in classes 2.2 and 3.2 disappeared (intermediate stage 1), and these classes became level H. Then, H tones that were not present in Middle Japanese developed in classes 2.3, 3.4 and 3.5 (stage 2). These H tones shifted to the right, to the Tokyo type location. During this process of rightward shift, word-initial sequences of L tones developed in classes 2.4, 2.5, 3.6 and 3.7, which were dissolved by the development

³ As the tone of the particles plays no role of significance in the historical developments in Kindaichi's theory, I have left the particles out after most trisyllabic nouns. They are added to class 3.4 in the last two columns however, to show the contrast with the merged classes 3.1 and 3.2, to which the particle attaches with H pitch.

of word-initial H tones (stages 3, 4 and 5). Finally, classes 2.5 and 3.7 were simplified in most Tokyo type dialects (stage 6).

Table 4: Development of Gairin tone system from standard Middle Japanese

Middle Japanese	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Stage 6
2.1 HH-H	HH-H	HH-H	HH-H	> LH-H	LH-H	LH-H
2.2 HL-H	> HH-H	HH-H	HH-H	> LH-H	LH-H	LH-H
2.3 LL-H	LL-H	> HL-L	HL-L	HL-L	> LH-L	LH-L
2.4 LH-H	LH-H	LH-H	> LL-H	> LL-L	> HL-L	HL-L
2.5 LF-H	LF-H	LH-L	LH-L	> LL-H	> HL-H	> HL-L
3.1 HHH	HHH	HHH	HHH	> LHH	LHH	LHH
3.2 HHL	> HHH	HHH	HHH	> LHH	LHH	LHH
3.4 LLL	LLL	> HHL	HHL	HHL	> LHH-L	LHH-L
3.5 LLH	LLH	> HLL	HLL	HLL	> LHL	LHL
3.6 LHH	LHH	LHH	> LLH	> LLL	> HLL	HLL
3.7 LHL	LHL	LHL	LHL	> LLH	> HLH	> HLL

The standard theory requires all these shifts to occur at different stages, which have to be perfectly timed, so as to avoid mergers between tone classes that are distinct in the modern dialects. As shown in section 2.1, Middle Japanese in the standard reconstruction does not form a good starting point for the development towards the modern Kyoto type tone systems. As is clear from Table 4, the derivation of the Tokyo type tone systems from the modern Kyoto type is exceedingly complex as well, and dialect geography argues against it. Does the reversed reconstruction of Middle Japanese proposed by Ramsey form a better starting point? Before addressing this question, I will discuss what the Middle Japanese tone system looks like when the tones are reversed.

3.1 The nature of the Middle Japanese tone system and the interpretation of the tone dots

Middle Japanese, the oldest variety of the language for which there is sufficient information on the tones, was a relatively unrestricted register tone language.⁴ In this period (late 11th to early 14th century), the tones of Japanese were marked by means of tone dots adopted from Late Middle Chinese, which formed the basis of the Japanese Kan-on character reading tradition. The basic opposition was between two level tones of a different register, for which the Chinese tone dots 上 and 平 were used.

This material shows that the tonal oppositions of Middle Japanese were far more numerous than those of any of the modern dialects: The pitch of almost every syllable was unpredictable and

⁴The fact that not all tonal shapes that are theoretically possible have been attested does not mean Middle Japanese is better analyzed as a pitch accent language. All tone languages are to some extent restricted, so if we were to use this as a criterion, no language would qualify as a tone language. No less than two word tones or registers (H and L), and two different types of ‘accent kernels’ (one indicating a rise in pitch and the other a drop) are needed to analyze Middle Japanese in terms of pitch-accent, and often as many phonological marks as there are syllables are required to force Middle Japanese into an accentual mold.

therefore phonemic. (*Almost every syllable, as there was a rule that prevented the occurrence of 上 tone after a 上平 sequence within the word stem.*) The contour tones were rare, and seem to have been the result of contractions.

If small classes that include contour tones are not counted, nouns of three syllables, were divided in no less than seven distinct tone classes: 3.1 *katati* 上上上, 3.2 *aduki* 上上平, 3.3 *tikara* 上平平, 3.4 *kagami* 平平平, 3.5 *kokoro* 平平上, 3.6 *suzume* 平上上, 3.7 *kabuto* 平上平. Because of the restriction mentioned above, the only tonal possibility that is missing is 上平上, but even this shape has been attested in some materials.⁵

In the standard reconstruction, the 平 tone dot is given the value L, and the 上 tone dot is given the value H. These values are suggested by the Chinese names of the tones, namely 平 ‘level’ and 上 ‘rising’. However, the complicated tone theories that proliferated in the Middle Japanese period (De Boer, 2010: 371-524), show that such direct reasoning from the names of the tones in China is far too simplistic. For one thing, these names go back to Early Middle Chinese, an older variety of the language with a different regional base (the southern dynastic capital of Jinling, instead of the Sui-Tang capital of Chang’an).

Looking at the tonal distinctions of Middle Japanese, even without making comparisons with the modern dialects, it is possible to say something about the most likely tonal value that should be given to the two most frequently used tone dots. We see that 上平上 is in general no longer allowed, although there are some rare attestations in some of the oldest materials. The final 上 tone assimilated to the preceding 上平 contour and became 平 (i. e. 上平上 > 上平平). The opposite assimilation 平上平 > 平上上 however, had not yet taken place at the Middle Japanese stage.

Rightward tone spreading is a natural phenomenon, and is especially common after rising or falling tone sequences: In a LHL environment, H tone is more likely to spread (i.e. LHL > LHH) than in a HHL environment (Austen, 1974, Hyman, 1978). The opposite assimilation (HLH > HLL) is also very common. However, there is a hierarchy in the occurrence of the two types: There is a language universal concerning horizontal tone assimilations, according to which H tone spreading occurs in many languages that do not have L tone spreading; but there are very few languages have L tone spreading without H tone spreading (Hyman, 2007: 7).⁶ In

⁵ In the Kanchi-in-bon of *Ruiju myōgi-shō*, the word *kasiko* ‘that place’ is attested with 上平上 markings as well as 上平平 markings. In the *Maeda-ke-bon* of *Nihon shoki* (1150), the word *tikara* ‘strength’ is marked 上平上 (Ishizuka 1977: 127), but in the Kanchi-in-bon as 上平平. In *Kokin waka-shū* (Akinaga, 1974:381) *mohara* ‘exclusively’ has both 上平上 and 上平平 markings. In the tonal spelling system discovered by Takayama (1981) in some parts of the *Nihon shoki*, there are two attestations of members of tone class 3.3. (*ahabi* ‘abalone’ and *Kasuga* (a place name) both with 上 tone on the final syllable. Part of the words with a 上平平 tone pattern in Middle Japanese may therefore go back to earlier 上平上, which would explain the irregularity of the reflexes of this class in the modern dialects.

⁶ The difference is thought to be related to the fact that tone spreading tends to occur first in tonal sequences that are widest apart in interval. As discussed in section 2.1, HL intervals tend to be larger than LH intervals. At a later stage of the language, this natural difference was phonologized, making a HL interval more salient. This led to the most important change in the history of the Japanese tone

other words: H tones and L tones do not behave in the same way, and LHL > LHH will usually occur earlier than HLH > HLL.⁷ The asymmetry in the timing of the following assimilations in Middle Japanese (上平上 > 上平平 but not yet 平上平 > *平上上) argues for an interpretation of 平 as H and 上 as L, which agrees with Ramsey's reconstruction.

3.2 The development from Middle Japanese (Ramsey's reconstruction) to the modern Tokyo type dialects: H tone reduction

While Middle Japanese still had a tone system with relatively few restrictions, the modern Japanese tone systems are severely restricted. Most dialects for instance, allow no more than one phonological H tone per word. These tone systems are so reduced that they can be analyzed as pitch accent systems, in which the single remaining H tone is regarded as the accent. The pitches of the other syllables or moras in the word or phrase are governed by automatic pitch assignment rules. As long as the location of the H tone in the word is known, the pitches of the other syllables and mora's are predictable. These syllables or moras can therefore be analyzed as having \emptyset tone, or (in the pitch-accent analysis) they can be seen as unaccented.

A similar development from a relatively unrestricted register tone system to a system in which the number of /H/ tones is severely reduced, is known from a number of east African Bantu languages. The idea is that - as the number of /H/ tones per word is reduced - the remaining /H/ tones stand out more and more and become accent-like. So much so that their location in the word determines the pitches of the other syllables in the word or tonal phrase, in effect reducing all other tones to \emptyset tone. Just as in case of Japanese, a pitch accent analysis has often been applied to such tone systems, although an analysis in terms of restricted tone is now more common.

When the tone system of Middle Japanese is reconstructed in accordance with Ramsey's ideas, the result is a tone system that has a very regular correspondence with the modern Tokyo type tone systems. The correspondence is seen most clearly in a comparison of Middle Japanese and the archaic Tokyo type tone system of Nozaki on Noto Island as described by Kindaichi (1954/1983).⁸

system, namely development of the severely restricted tone systems of the modern dialects from the relatively unrestricted register tone system of Middle Japanese (see section 3.3).

⁷ As to vertical assimilations: Although downdrift (automatic downstep) could lower the second H in a HLH sequence to M (mid) pitch, this lowering would be sub-phonemic. Phonemic/non-automatic downstep could also lower the second H to M, but would normally involve dropping out of the intervening L.

⁸ Part of the vocabulary in this dialect has the H tone one syllable to the left of where it is expected in a Tokyo type dialect, so that it occurs in the Kyoto type location. These forms are conditioned: When the H tone fell on a syllable that contained a close vowel and a voiced consonant, it shifted away to the preceding syllable. Voiced consonants are well known to have a lowering effect on tone, and the close vowels *i* and *u* in Japanese avoid H tone in many dialects. I have argued that this change occurred relatively recently (De Boer, 2010: 175), as it must have postdated certain other tonal developments in the Noto dialects. I feel strengthened in my ideas on the timing and the direction of this change, by a publication by Uwano & Nitta (1985), who documented a similar development in the dialect of Kanazawa in Ishikawa prefecture. Among younger speakers, under identical conditions (syllables with a close vowel and a voiced consonant), H tone shifts to the left, but not yet among older speakers (people born before 1926). H tone shifting away from such syllables, is a phenomenon that is widespread in Ishikawa prefecture (Uwano, personal communication). As it is the younger generation in Kanazawa that shifts H tone away to the left, this leaves no doubt as to the direction of change. Such leftward H

Table 5: The simplification of the Middle Japanese tone system

		Middle Japanese		Nozaki
2.1 <i>kaze-ga</i>	‘wind’	/LL-L/	>	[LH-H] /ØØ-Ø/
2.2 <i>oto-ga</i>	‘sound’	/L H -L/	>	[L H -L] /ØH-Ø/
2.3 <i>ike-ga</i>	‘pond’	/H H -L/	>	[L H -L] /ØH-Ø/
2.4 <i>ito-ga</i>	‘thread’	/H L -L/	>	[H L -L] /HØ-Ø/
2.5 <i>mado-ga</i>	‘window’	/H R -L/	>	[H L -H] /HR-Ø/
3.1 <i>katati-ga</i>	‘shape’	/LLL-L/	>	[LHH-H] /ØØØ-Ø/
3.2 <i>tokage-ga</i>	‘lizard’	/LL H -L/	>	[L H H-L] /ØØH-Ø/
3.4 <i>kagami-ga</i>	‘mirror’	/H H H-L/	>	[L H H-L] /ØØH-Ø/
3.5 <i>kokoro-ga</i>	‘heart’	/H H L-L/	>	[L H L-L] /ØHØ-Ø/
3.6 <i>usagi-ga</i>	‘rabbit’	/H L L-L/	>	[H L L-L] /HØØ-Ø/
3.7 <i>kabuto-ga</i>	‘helmet’	/H L H-L/	>	[H L H-L] /HØH-Ø/

The tonal oppositions of Middle Japanese were reduced in a straightforward way: Whenever there was a H tone followed by a L tone in Middle Japanese, this H (marked in bold) was preserved in the modern dialects as the phonological H tone or ‘accent’ (likewise in bold). All other H tones were lost, and together with the L tones they reduced to Ø tone. When Ø tones follow after H, they are realized with L pitch, but when they precede H tone, they are raised in anticipation. (The phrase-initial syllable is exempt from this raising.)

In this way, a rich H versus L register tone system (like Middle Japanese) changed into a severely reduced H versus Ø tone system such as the tone systems of the modern Tokyo type dialects. Nozaki has the closest resemblance with the tone system of Middle Japanese as it has preserved the /R/ tone in class 2.5 and the two non-consecutive /H/ tones in class 3.7 that can also be found in Ramsey’s Middle Japanese.⁹ In the other Tokyo type dialects, the second H tone in class 3.7 and the /R/ tone in class 2.5 were later lost (HLH > HLL, HL-H > HL-L).¹⁰

The location of these double /H/ tones and the /R/ tone in Nozaki, and the tone classes in which they occur, agree with Middle Japanese in Ramsey’s reconstruction. This remarkable resemblance - which strengthens the case for Ramsey’s reconstruction of these tone classes - is not the only reason why the dialect of Nozaki is important: Most Kyoto type dialects have preserved the separate tone classes 2.5 and 3.7 that were also distinguished in Middle Japanese, but in most Tokyo type dialects they merged with other tone classes. If the Kyoto type tone system developed from the Tokyo type, as Ramsey argued, it is important to have some

tone shift induced by ‘depressor syllables’ therefore seems to be a relatively recent phenomenon in Ishikawa prefecture, an areal feature, that is spreading among dialects with different tone systems.

⁹ When tone classes 2.4 and 2.5 in Nozaki are compared, it can be seen that the particle after class 2.5 in Nozaki has H pitch while it has L pitch after class 2.4. As the particle is the same, there has to be something special about the final syllable of class 2.5. I think that this is the presence of a phonological /R/ tone, which is realized with L pitch on the word-final syllable, and the rise to H pitch shifted onto the enclitic case particle.

¹⁰ These are both natural tonal developments, and -as pointed out earlier in this paper- the fact that they occurred later than LHL > LHH agrees with universal rules of natural tonal behavior.

confirmation that these extra classes were indeed once distinguished in the Tokyo type dialects.¹¹

3.3 The phonological background of the tone restriction: Polarization of a HL interval

The reason why H before H was lost, while only H before L in Middle Japanese was preserved, is most likely related to the fact that a HL interval is subject to polarization. As mentioned earlier, a H tone will often be significantly greater in height when followed by L tone, and such pre-L H tones may be raised to contrastive super-H tonemes. (An example of a circumstance that can lead to phonologization of super-H, is when the following L is elided but the tone remains raised.)¹² The raising effect that a following L tone has, explains how the H tone reduction in Middle Japanese started out: Pre-L H tones became greater in height than other H tones, which were gradually lowered. In this way H before H was lost, but H before L was preserved. Taking Ramsey's Middle Japanese as the starting point, it is possible to posit a *regular and phonologically plausible* sound change as the cause behind the tone reduction that generated the modern Japanese restricted tone systems. The tone classes that were such a problem in the standard reconstruction, as they lack H tones that must have been there in the proto-system, pose no problem when the Middle Japanese tones are reversed:

Table 6: H before L becomes higher and higher (De Boer, 2010)

2.3 <i>ike-ga</i> 'pond'	HH-L	>	MH-L	>	LH-L	/ØH/
3.4 <i>atama-ga</i> 'head'	HHH-L	>	MMH-L	>	LLH-L	/ØØH/
4.5 <i>yorokobi-ga</i> 'joy'	HHHH-L	>	MMMHL-L	>	LLLH-L	/ØØØH/
3.5 <i>inoti-ga</i> 'life'	HHL-L	>	MHL-L	>	LHL-L	/ØHØ/

The developments in Table 6 are the exact opposite of the developments proposed by Kawakami, but as H tones and L tones do not behave in the same way, this development agrees with universal tone rules, while Kawakami's theory is in contradiction with it.

Only the last H tone, the one before L is preserved, and this H tone is in the Tokyo type location. These H tones are not new: They were already present in Middle Japanese in the same location. The only thing that has to be explained if Ramsey's Middle Japanese is taken as a starting point, is why they became so prominent, and the polarizing of a HL interval offers such an explanation.

In Bantu languages, sequences of H tones are also frequently modified by deletion (lowering) of one of the H's. The most common form of tone dissimilation is deletion of H immediately after H, a process commonly termed *Meeussen's Rule*. A less frequent H-dissimilation process is sometimes termed *Reverse Meeussen's Rule* (Odden, 2015:41). This process turns H into L before H, just as happened in the change from Middle Japanese to the modern Tokyo type dialects. This process arises, among others, in the Nguni languages of South Africa. I suggest

¹¹ See Okumura (1981) for a report on the existence of class 2.5 in the dialect of Izumo Taisha. See De Boer (2010: 110-112) for an explanation as to why these classes were much better preserved in the Kyoto type dialects than in the Tokyo type dialects.

¹² This happened for instance in the Ghanaian Gur language Buli (Akanlig-Pare & Kenstowicz, 2002). A three-level H-M-L contrast emerged from a two-level H-L system by the polarization of the HL, followed by the loss of the L. I reconstruct an intermediate H-M-L stage in Japanese as well, which left traces in the dialect of Ibukijima (De Boer, 2010: 102, 190).

that *Reverse Meeussen's Rule* in these languages and in Middle Japanese, has a similar origin, namely, that it was triggered by the polarizing effect of a HL interval.

3.4 The phonological background of the leftward tone shift: H tone anticipation

In their overview of universals of tone rules Hyman & Schuh (1974) stated that leftward tone shift (such as Ramsey proposed as origin for the Kyoto type tone systems) was unnatural. The idea that leftward shift is unnatural played an important role in the rejection of Ramsey's theory. However, the universals in Hyman & Schuh were based on the relatively unrestricted tone systems of West Africa, where there is usually a binary system with two active tones, L and H (similar to Middle Japanese). Their universals did not include observations from certain Bantu languages of East Africa, where the number of H tones in the word has been restricted, and where they stand in opposition to Ø tone. The H tones in these languages stand out so much that they can be regarded as accents, and are frequently anticipated. Hyman 1978:264 already stated "The more accent-like a H tone is, the more likely tonal anticipation will occur". In such accentual tone systems leftward tone shift is not uncommon. The latest overview of universals of tone rules (Hyman, 2007) includes these insights.

Anticipatory (leftward) spreading of H tone and leftward H tone shift are closely related processes. The difference between the two is, whether the H is realized just on the mora to which it has been extended, or also on the original tone bearing unit and intervening moras.

In Bantu, leftward shift of H tone is most common in word-final tones, such as in Shanjo and Fwe (Bostoen 2009: 122). Other languages also shift other than word-final tones to the left. Examples are Kirundi, Kinyarwanda, Tonga, Lenje, Kinande and Totela. This process as seen in Kirundi and Kinyarwanda was reconstructed by Hyman (1978) as follows: 'to see' * *kùbónà* (LHL) > *kùbônà* (LFL) > *kúbônà* (HFL) > *kúβônà* (HLL) 'to see'.¹³

As H tone anticipation is most common in restricted tone systems, it is likely that the leftward tone shift in Kyoto took place at a stage of the language in which the proto tonal oppositions had already been reduced. This tone system would have been very similar to the tone system of Nozaki, where the number of H tones was reduced, but classes 2.5 and 3.7 are still preserved. In Table 7, I show the result of a leftward H tone shift in those tone classes where H tone was not word-initial before the shift.

Table 7: From archaic Tokyo type to Kyoto type: leftward shift of the /H/ tone

		Nozaki		Kochi
2.2 <i>mura-ga</i>	'village'	[LH-L]	/ØH-Ø/	> [HL-L] /HØ-Ø/
2.3 <i>yama-ga</i>	'mountain'	[LH-L]	/ØH-Ø/	> [HL-L] /HØ-Ø/
3.2 <i>aduki-ga</i>	'aduki bean'	[LHH-L]	/ØØH-Ø/	> [HHL-L] /ØHØ-Ø/
3.4 <i>kagami-ga</i>	'mirror'	[LHH-L]	/ØØH-Ø/	> [HHL-L] /ØHØ-Ø/
3.5 <i>kokoro-ga</i>	'heart'	[LHL-L]	/ØHØ-Ø/	> [HLL-L] /HØØ-Ø/

¹³ Acute accent marks H pitch, grave accent marks L pitch, and circumflex accent marks F pitch.

3.5 Development of L register in the Kyoto type dialects: Initial H tone shift in a predominantly suffixing language

The most fundamental difference between the Tokyo type tone systems and the Kyoto type tone systems is the fact that in addition to H tone and Ø tone, there also is a phonological L tone in the Kyoto type dialects. This phonological L tone only occurs word-initially and corresponds to word-initial H tone in the Tokyo type dialects.

What happened, when initial H tone shifted to the left in Kyoto? A comparison with Bantu shows that word-initial H tone can be shifted off the word and realized on a prefix in languages that shift H tone to the left. In Tonga and Lenje for instance (Bostoen, 2009), and in Kinande (Kenstowicz, 2009; Jones, 2014) and Totela (Crane 2010, 2011), initial H tone on the citation form of nouns and verbs, is realized on the prefix. In the western Botatwe Bantu language of Totela for instance the object prefix *mu* has H tone when it precedes verb roots with word-initial H tone, while it has L tone before verb roots with Ø tone. The H tone on the initial mora of the verb root is shifted off the word, and realized on the prefix:

Table 8: H tone shifting off the word in Totela

Tone of prefix before verb roots with Ø tone

[òkù-mù-zìkà] /oku-mu-zìika/ ‘to bury him’

[òkù-mù-ùkùsà] /oku-mu-ukusa/ ‘to shake him’

Tone of prefix before verb roots with H tone

[òkù-mù-bìkà] /oku-mu-bíika/ ‘to hide him’

[òkù-mù-hùpùlà] /oku-mu-húpula/ ‘to think of him’

In Japanese, prefixes are very rare, while suffixes abound. It is therefore possible to find an example of H tone shifting off the word onto a suffix, but not an example of H tone shifting onto a prefix. An example of H tone shifting onto a suffix is seen for instance in the Gairin dialect of Izumo Taisha (Hirako, 2015). The H tone on the second syllable of class 2.3 in this dialect shifts to the right, if the second syllable contains a close vowel: LH-L > LL-H. Words of similar segmental shape of class 2.1 have the same pitch, so it may seem as though the H tone is lost. When the tonal phrase is extended however, it is clear that the H tone is not lost, but realized on the enclitic particle. The sentence ‘There is a dog’ for instance, is *inù-gá òrù LL-H LL* (‘dog’ belongs to class 2.3). The sentence ‘There is a cow’ however, is *ùshì gá órù LL-H HL* (‘cow’ belongs to class 2.1). The first H tone in a tonal phrase is usually the one that is realized, and in the sentence ‘there is a dog’ the H tone falls on *ga*, cancelling the H tone on the first syllable of *oru*, while in the sentence ‘there is a cow’ there is no H tone on *ga*, so that the H tone on *oru* is realized.

In a language with suffixes rather than prefixes, word-initial H tone is surely the most unlikely tone to shift to the left. It is therefore not surprising that there are a number of semi-Kyoto type dialects, which shifted non-initial H to the left, while initial H was not affected. This led to mergers of tone classes in which the H tone shifted from the second to the first syllable, with

tone classes where the H tone was already located on the first syllable. These dialects occur in the periphery of the area with Kyoto type tone, bordering on the areas with Tokyo type tone.¹⁴

In the absence of prefixes, in those Kyoto type dialects where leftward shift of initial H tone did occur, it resulted in the development of phonological L tone in word-initial position. Before the leftward shift, the Ø tone on the second syllable was realized with L pitch because it followed after H. This L pitch was not phonemic; it was conditioned by the presence of the preceding phonological H tone. When the tones shifted to the left, the H tone shifted off the word, and the L pitch on the second syllable ended up in word-initial position. From that moment on this L was no longer conditioned, and became phonemic.

Table 9: H tone shifting off the word in the Kyoto type dialects

		Nozaki			Kochi	
2.4	<i>umi-ga</i>	‘sea’	[HL-L]	/HØ-Ø/	>	[LH-H] /LØ-Ø/
2.5	<i>saru-ga</i>	‘monkey’	[HL-H]	/HR-Ø/	>	[LH-L] /LH-Ø/
3.6	<i>suzume-ga</i>	‘sparrow’	[HLL-L]	/HØØ-Ø/	>	[LHH-H] /LØØ-Ø/
3.7	<i>kabuto-ga</i>	‘helmet’	[HLH-L]	/HØH-Ø/	>	[LHL-L] /LHØ-Ø/

The L pitch as such was present, even before the shift, but due to the shift its status changed. It is no longer possible to analyze this L as Ø tone that happens to be realized with L pitch because it follows H tone. The leftward shift transformed it into a genuine L toneme. This also explains why the occurrence of L tone in modern Kyoto is limited to the initial syllable, a situation that is very different from Middle Japanese.

Although the amount of exceptions to initial H tone shift indicates that there is considerable resistance to such a development, in predominantly suffixing languages, it nevertheless seems to be something that can occur as part of a more general leftward shift of H tone.

3.6 The development of the Gairin tone system: H tone spreading after LH contours

As has been mentioned in section 1.2, the different Tokyo type dialects usually agree with each other on the location of the H tone if there is a H tone in the word. The Tokyo type dialects are nevertheless divided into a number of sub-types, based on the fact that in some dialects word-final H tones are missing in certain tone classes. A comparison of the Churin dialect of Hiroshima with the Gairin dialect of Oita, shows that word-final H tone is lacking in classes 2.2 and 3.2 in Oita.

¹⁴ According to Ikuta 1951 and Uwano 1981, this tonal type can be found in Sakamoto, Nakatani, Matsuyama, Ohaka, Ōmi, Maibara, Torahime, Fujihashi, Fukura, Suegane, Yoshida and Nishi-Tosa (De Boer, 2010: 161-165). I know of no examples of the opposite (i.e. initial H shifting while noninitial H is unaffected). In the Korean Kyengsang dialects, which went through a leftward accent shift, most irregularities are likewise found in words that had accent on the initial syllable before the shift (Ramsey, 1978:81).

Table 10: Different merger patterns of the tone classes in the Gairin Tokyo type dialects

MJ tone classes	Hiroshima Chūrin noun + <i>ga</i>	Ōita Gairin noun + <i>ga</i>
2.1 <i>kaze-ga</i> ‘wind’	LH-H	LH-H
2.2 <i>oto-ga</i> ‘sound’	LH-L	LH-H
2.3 <i>ike-ga</i> ‘pond’	LH-L	LH-L
3.1 <i>katati-ga</i> ‘shape’	LHH-H	LHH-H
3.2 <i>hutatu-ga</i> ‘two’	LHH-L	LHH-H
3.4 <i>atama-ga</i> ‘head’	LHH-L	LHH-L

In Ramsey’s reconstruction, the tone of the monosyllabic case particles was L in Middle Japanese. When the H tone restriction (in which only H before L is preserved) occurs in such a dialect, the result is that all word-final H tones of Middle Japanese nouns are preserved. (This is shown in Table 5.)

Within the word stem (apart from some rare attestations), L did not occur after a LH contour in Middle Japanese. This restriction agrees with the universal tendency mentioned in section 3.1, that in a LHL environment, H tone is more likely to spread to the following L tone than in a HHL environment. In other words, LH (rising) tone contours have a stronger tendency to spread to the right than level H tone contours.

The same tendency for H tone spreading to occur after a LH contour, lies at the root of the development of the Gairin type tone system. In some Middle Japanese dialects, the H tone spreading was extended across the word boundary, and in these dialects the tone of the monosyllabic case particles became H after words ending in R and LH tone.¹⁵ Just as LHL shifted to LHH within the word stem, but HHL did not shift to HHH, across the word boundary 2.2 LH-L shifted to LH-H, but 2.3 HH-L did not shift to HH-H.

The tone classes to which the particle attached with H tone in these materials are exactly those classes that lack word-final H tone in the Gairin dialects. The word-final H tones in these classes were lost at the time of the tone reduction, because they were not followed by particles with L tone in this type of Middle Japanese. As a result, classes 2.2 and 3.2 have Ø tone and merge with classes 2.1 and 3.1. (This is shown in Table 11.) The Middle Japanese materials in which the tone spreading has been attested most likely stem from the area with Gairin type tone around Hamamatsu (the area of former Mikawa province).

¹⁵ Such assimilations are attested in *Kokin (waka-shū) knten-shō* (1305) and the *Daiji-in-bon* of *Shiza kōshiki*. According to Kindaichi (1964:141–142) the *Daiji-in-bon* is most likely a late 14th century copy of a 13th century original. (*Shiza kōshiki* was originally composed in 1226.)

Table 11: Origin of the Gairin merger pattern

MJ tone classes		Kokin knten-shō (1305)		Gairin tone system
		noun + <i>ga</i>		noun + <i>ga</i>
2.1	<i>kaze-ga</i> ‘wind’	LL-L	>	LH-H
2.2	<i>oto-ga</i> ‘sound’	LH-H	>	LH-H
2.3	<i>ike-ga</i> ‘pond’	HH-L	>	LH-L
3.1	<i>katati-ga</i> ‘shape’	LLL-L	>	LHH-H
3.2	<i>hutatu-ga</i> ‘two’	LLH-H	>	LHH-H
3.4	<i>atama-ga</i> ‘head’	HHH-L	>	LHH-L

Both the occurrence of the H tone spreading (after LH) and the later tone reduction (triggered by the polarizing effect of a HL interval) agree with universals of tone rules. It is therefore possible that these developments happened independently in the four areas with Gairin type tone.

This is in stark contrast with the developments proposed in the standard theory (shown in Table 4). According to the standard theory, in the Gairin dialects 2.2 HL-H and 3.2 HHL-H became HH-H and HHH-H (plateauing). Based on common tonal developments observed in other languages however, a development 2.2 HL-H > HL-L, 3.2 HHL-H > HHL-L (L tone spreading), or HL-H > HL-M, 3.2 HHL-H > HHL-M (downdrift) would have been just as likely. The fact that these alternative developments did not occur in any of the four separate areas with Gairin type tone, is strange. On top of this, the changes required in the standard theory to explain the development of H tones in classes 2.3 LL-H > HL-H and 3.4 LLL-H > HHL-H in the Gairin dialects are clearly unnatural, yet they must have occurred multiple times independently (and not only in the Gairin areas, but all over Japan).

3.7 The development of the Nairin tone system in central Japan: Vowel length as syllabic support for contour tones

The Nairin dialects generally agree with the Churin dialects, but a small difference in the monosyllabic tone classes sets them apart. This concerns tone class 1.2, which had R tone in Ramsey’s reconstruction. In the Nairin dialects this class has H tone (merged with class 1.3), while in the Churin (and Gairin) dialects it has Ø tone (merged with class 1.1).

A low tone after a LH sequence has the tendency to become H. After R tone (a LH contour on one syllable), this tendency is even stronger. This has to do with the difficulty of maintaining a contour tone on a single syllable if this syllable is not lengthened.

Very many languages exhibit a one-tone-per-mora restriction, so that contour tones can only appear on long vowels. In most Japanese dialects, monosyllables are short, and it is therefore not surprising that in these dialects, the rise to high pitch was shifted onto the enclitic case particle, resulting in Ø tone in the modern dialects after the tone reduction: 1.2 ‘name’ *na-ga* R-L > R-H > L-H (Ø-Ø).

In central Japan however, monosyllables are automatically lengthened. On Shikoku this vowel length disappears if monosyllabic nouns are followed by a particle, but on Honshu the vowel length persists in this environment. It is in this area on Honshu where the Nairin tone system is found, where it occurs around and in the middle (e.g. Totsukawa) of the area with Kyoto type tone.

In these dialects the R contour was based on a lengthened vowel, making it easier to realize the contour tone on the noun, and preserve L pitch on the attached particle: R:-L. Because the drop

to L pitch after the noun was preserved, this was later simplified to H:-L, when the tone reduction occurred, resulting in a merger with class 1.3. The link between the presence of automatic vowel length and the Nairin merger pattern is only there when the Middle Japanese tone system is reconstructed in agreement with Ramsey's theory. The standard theory offers no explanation for the geographical distribution of the Nairin tone system.

Table 12: Origin of the Nairin merger pattern

		Nairin		Chūrin and Gairin	
		MJ	Modern	MJ	Modern
1.1	<i>ko:-ga</i> 'child'	L:-L	> Ø-Ø	L-L	> Ø-Ø
1.2	<i>na:-ga</i> 'name'	R:-L	> H-Ø	R-H	> Ø-Ø
1.3a	<i>te:-ga</i> 'hand'	H:-L	> H-Ø	H-L	> H-Ø

3.8 The effect of the particle *no*: Synchronic loss of word-final H tone

The idea that the tone of the particles at the Middle Japanese stage can explain the diachronic loss of word-final H tones in classes 1.2, 2.2, 3.2 in certain dialects, is confirmed by a very similar phenomenon seen when the particle *no* attaches to words with word-final H tone in the Tokyo type dialects.

Table 13: Word-final H tone loss before the particle *no* in Tokyo type dialects

MJ tone classes		Hiroshima Noun + ga	Hiroshima Noun + no
2.1	<i>kaze</i> 'wind'	LH-H	LH-H
2.2	<i>oto</i> 'sound'	LH-L	→ LH-H
2.3	<i>ike</i> 'pond'	LH-L	→ LH-H
3.1	<i>katati</i> 'shape'	LHH-H	LHH-H
3.2	<i>hutatu</i> 'two'	LHH-L	→ LHH-H
3.4	<i>atama</i> 'head'	LHH-L	→ LHH-H

In the Tokyo type dialects, tone classes that have word-final H tone with other case particles, lose the H tone before *no*. It is possible to explain this effect through a comparison with the tone of *no* in Middle Japanese.

Table 14: Reason why word-final H tone is lost before *no*

MJ tone classes		MJ tones noun + <i>no</i>		Hiroshima noun + <i>no</i>
2.1	<i>kaze</i> 'wind'	LL-L	>	LH-H
2.2	<i>oto</i> 'sound'	LH-H	>	LH-H
2.3	<i>ike</i> 'pond'	HH-H	>	LH-H
3.1	<i>katati</i> 'shape'	LLL-L	>	LHH-H
3.2	<i>hutatu</i> 'two'	LLH-H	>	LHH-H
3.4	<i>atama</i> 'head'	HHH-H	>	LHH-H
3.5	<i>inoti</i> 'life'	HHL-L	>	LHL-L

No in Middle Japanese attached L after L and H after H. It continued the tone of the final syllable of the preceding noun. When *no* attached, word-final H tone was not followed by L tone, and so this H tone was lost in the modern dialects. H tones that were not word-final were not cancelled, as in tone class 3.5. There is a direct link between Middle Japanese and the modern Tokyo type dialects, which explains the H tone loss before *no*.

The H tone cancelling before *no* does not occur in all Tokyo type dialects, but it is represented in all three sub-types (Nairin, Churin and Gairin), and even in one Kagoshima type dialect in Nagasaki prefecture, this tone copying behavior of *no* has been preserved (Kindaichi 1954a/1983:31).

No also cancels H tone in the Kyoto type dialects, and in the same tone classes, but here the H tone that is cancelled falls on the penultimate syllable:

Table 15: Los of H tone before *no* on the penultimate syllable in *Kōchi*

MJ tone classes		Kōchi		noun + <i>no</i>
2.1 <i>kaze</i>	‘wind’	HH-H		HH-H
2.2 <i>oto</i>	‘sound’	HL-L	→	HH-H
2.3 <i>ike</i>	‘pond’	HL-L	→	HH-H
3.1 <i>katati</i>	‘shape’	HHH-H		HHH-H
3.4 <i>atama</i>	‘head’	HHL-L	→	HHH-H
3.5 <i>inoti</i>	‘life’	HLL-L		HLL-L

This H tone loss cannot be linked to the behavior of *no* in Middle Japanese, which continued the tone of the word-final syllable. That is, unless in the Kyoto type dialects too, the cancelled H tone was once located on the final syllable of the word, as Ramsey’s theory proposes.

In the Gairin type dialect of Tsuruoka (Haraguchi, 2001), the behavior of the particle *no* likewise reveals which words originally had the H tone on the word-final syllable, in a way that is very similar to what can be observed in the Kyoto type dialects. In Tsuruoka, part of the merged class 2.4/5, of which the regular reflex in the Tokyo type dialects is H tone on the initial syllable, has shifted H tone to the right, to the second syllable, if the second syllable contains an open vowel. These words now have identical pitch as words of class 2.3, in which the word-final H tone is original. However, when *no* attaches, the following difference emerges:

In class 2.3, the word-final H tone is cancelled, but in class 2.4/5, where the H tone was not originally in word-final position, the H tone is not cancelled. In Tsugaru, as in the Kyoto type dialects, the tone of the particle *no* reveals which words originally had the H tone on the final syllable, and which did not. When a change occurs in a language, it often leaves behind structural evidence in the form of such irregularities. Another example of this is seen in the tone of compound nouns in Tokyo and Kyoto.

3.9 The tone of compounds with long first elements and short second elements in Tokyo and Kyoto

The tone rules for noun compounding in Japanese are relatively productive if the second element of the compound contains three or more syllables. When the first and the second element have less than three syllables the compound tone rules are notoriously irregular. The reflexes are far more regular when the first element is three or more syllables in length. In that case the tone of the second element decides the tone of the compound as a whole and the tone of compounds in the Nairin and Churin Tokyo type dialects, and the Kyoto type dialects resemble each other strongly. Table 16 shows the reflexes of nouns of two syllables, occurring as second element in a compound. Although they have very different pitches in isolation, when they occur as second element in a compound they have the same tone, which strongly resembles Ramsey's reconstruction of the tones of Middle Japanese.

Table 16: *The tone of compounds in Tokyo and Kyoto agrees closely with Ramsey's Middle Japanese*

Modern Kyoto		Middle Japanese	Modern Tokyo	
Isolation	Compound	(Ramsey)	Compound	Isolation
[HH-H]	[---LL]	2.1 /LL/	[---LL]	[LH-H]
[HL-L]	[---LL]	2.2 /LH/	[---LL]	[LH-L]
[HL-L]	[---HH]	2.3 /HH/	[---HH]	[LH-L]
[LH-H]	[---HL]	2.4 /HL/	[---HL]	[HL-L]
[LH-L]	[---HL]	2.5 /HR/	[---HL]	[HL-L]

We can be sure that this resemblance is more than a coincidence, or the result of a postlexical process, because in such compounds, the distinction between classes 2.2 and 2.3 (which is lost in these dialects when the nouns occur in isolation), is still preserved. The presence or absence of H tone, as well as its location in the word in both Tokyo and Kyoto can be traced back to the tone system of Middle Japanese.

In Kyoto, the tone of these compounds was not affected by the leftward tone shift. The pre-shift tones were lexicalized, revealing the earlier resemblance of this tone system with the Tokyo type tone system and Ramsey's Middle Japanese.¹⁶ It is hard to interpret the evidence from

¹⁶ The register distinction in Kyoto compounds is not equally archaic. In Middle Japanese, noun compounds adopted the register (initial tone) of the first member of the compound. Modern Kyoto has a similar rule (the 'register preservation rule'). The modern rule was nevertheless not inherited from Middle Japanese, but re-developed independently: As result of the tone reduction, the register distinction of Middle Japanese was initially lost in Kyoto, as is still the case in the Tokyo type dialects. Later, when the register distinction redeveloped in Kyoto as result of the leftward shift, this distinction was also imposed on noun compounds. The division in register of the compounds is based on the *modern* register of the first element. The division of the tone classes over the registers in Modern Kyoto is different from Middle Japanese. (The modern division is: H register 2.1, 2.2, 2.3 versus L register 2.4, 2.5, while the division in Middle Japanese was initial 平 2.1, 2.2 versus initial 上 2.3, 2.4, 2.5.) This means that the rule that determines the register of compounds in modern Kyoto derives from the modern Kyoto tone system, and has not preserved archaic traits that must stem from Middle Japanese.

noun compounding as anything other than proof that before the tone systems of Tokyo and Kyoto split, their tones agreed with Ramsey's Middle Japanese. But compound tone is significant in more respects:

Compound tone in Kyoto and the Nairin and Churin Tokyo type dialects is very similar, and so is the merger pattern of tone classes in these dialects, while both these things are very different in the Gairin type dialects, where the tone of the first element has a decisive influence on the tone of the compound. Does it not imply that the difference between Tokyo type and Kyoto type tone represents a rather late and shallow split, compared to the far more fundamental split between the Gairin type dialects and the rest?

If the differences between the Gairin dialects and the rest represent a deeper and older split in the Japanese language, then it is highly significant that a Tokyo type location of the tones predominates in both branches. The Gairin branch has this location exclusively, and in the Nairin/Churin/Kyoto branch it predominates. In my opinion this means that a Tokyo type location of the tones formed part of their common ancestor dialect. Kyoto type tone must be an innovation that spread in central Japan, as indicated by internal reconstruction and dialect geography.

4 Summary and conclusions

The aim of this paper has been first and foremost to examine two competing theories on the historical development of Japanese tone, in light of universals of tone rules. Towards the end however, I have made two excursions into internal reconstruction, when discussing the tone of compound nouns, and the tone of the particle *no*.

I have argued that many developments that must have occurred widely, according to the standard theory, are unnatural when compared to developments in other languages. This may have been unexpected, as rightward tone shift plays an important role in the standard theory, and the naturalness of rightward tone shift is beyond doubt.

The fact that leftward tone shift is far less common, and has for a long time been denounced as unnatural, has been cited by a number of scholars as a reason to reject the alternative theory proposed by Ramsey (1979). The rightward tone shift however, is not the problematic part of the standard theory, and in fact only forms a minor part of it. It is the many other developments that have to be taken for granted, along with the rightward shift, that are problematic. Prime examples are the H tones that disappear or pop up in numerous tone classes and locations in the word, as independent parallel developments all over Japan, despite the fact that no phonological motivation for these complicated changes can be offered.

Even if we disregard the unnaturalness of the developments, it is still hard to understand how in the large area where Kyoto type tone is thought to have changed into Tokyo type tone (everywhere except the center of Japan) no traces of the earlier Kyoto type tone system have been preserved. The changes left no part of the vocabulary untouched, there are no dialect islands with Kyoto type tone anywhere, and there are no remnants of Kyoto type tone preserved within these dialects in the form of irregularities. The transformation was so complete and without exception, that there is, in fact, not a shred of evidence for the idea that a Kyoto type tone system ever existed outside of the area where it is found today.

Rightward tone shift as such can be widely observed in Japanese dialects, but each time it is clear that at the starting point of the shift, the tones were already in the Tokyo type location in the word. Moreover, these rightward shifts are easily detectable precisely because they left so many traces behind: Only part of the dialects was affected, and in the affected dialects, very often, only part of the vocabulary shifted the tones. In other cases, there are certain clues that indicate that the tones were formerly in a different location. (The tone of the particle *no* in the dialect of Tsuruoka is an example of this.)

The alternative theory, and its reconstruction of the Middle Japanese tones, explains the wide geographical distribution of the Tokyo type tone systems, as this type is closest to proto-Japanese. Two relatively simple changes (assimilation of the tone of the particles in some dialects, followed by tone reduction in all dialects) - both with a sound basis in phonology - account for the different merger patterns in the modern Tokyo type dialects. The well-established fact, that long vowels offer stronger support for contour tones than short vowels, furthermore serves to explain the geographical distribution of the Nairin type versus the other types.

The distribution of the Gairin type in four widely separated areas remains remarkable, but the changes leading to the Gairin merger pattern are natural and could have occurred multiple times independently in the different areas. Something very similar to what must have happened diachronically in the Gairin dialects, can even be observed synchronically in many other Japanese dialects, when the particle *no* is attached to nouns with word-final H tone.

It will be clear that Ramsey's theory explains much more than just the striking geographical distribution pattern of Tokyo type versus Kyoto type tone, for which it is most well-known.

The Middle Japanese tone system in Ramsey's reconstruction performs perfectly as the proto-tone system of the mainland Japanese dialects. There is no need to reconstruct a proto-system that is very different from Middle Japanese, such as proposed by Hattori and others. In this respect, the alternative theory stays very close to Kindaichi's ideas.

The leftward shift of H tone in the Kyoto type dialects has parallels in Bantu languages that went through a similar tone restriction as Japanese. I have not found exact parallels for the development of word-initial L tone in Kyoto, as result of the leftward shift of word-initial H tone. Bantu languages tend to be rich in productive prefixes, so that word-initial H tones, when shifted, will be realized on the prefix. It is not unlikely though, that in a predominantly suffixing language like Japanese, leftward shift of word-initial H tone would work out differently. In this way, Japanese, in turn, may offer insights helpful in the future analysis of other tone languages. The comparison of the tone system of Japanese with the tone systems of other languages therefore, is not a one-way street.

The radical tone reduction after the Middle Japanese period is the historical change in Japanese tone that was most far-reaching, and the polarizing effect of a HL interval explains why only H followed by L in Middle Japanese was preserved in the modern dialects. I propose that this phonological explanation may also account for the very similar tonal development known in Bantu linguistics as 'Reverse Meeussen's Rule', for which (to my knowledge) no phonological motivation has been proposed so far.

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References

- Akanlig-Pare George & Kenstowicz Michael. 2002. "Tone in Buli." *Studies in African Linguistics*, 32: 55-96.
- Akinaga, Kazue. 1972. *Kokin waka-shū shōten-bon no kenkyū, Kenkyū-hen*. Tokyo: Azekura shobō.
- 1974. *Kokin waka-shū shōten-bon no kenkyū Sakuin-hen*. Tokyo: Azekura shobō.
- Austen, Cheryl L. 1974. "Anatomy of the tonal system of a Bantu language." *Papers from the 5th Conference on African linguistics: Studies in African linguistics*, 5: 21-33.
- De Boer, Elisabeth M. 2008a. "The Middle Chinese tones through Japanese eyes." *Chinese linguistics in Leipzig (CLÉ 2)* (R. Djamouri and R. Sybesma, eds.), 71-86. Paris: EHESS-CRLAO.
- 2008b. "The origin of alternations in initial pitch in the verbal paradigms of the central Japanese (Kyoto type) accent systems." *Evidence and Counter-evidence. Festschrift Frederik Kortlandt*. SSGL: 33, 35-50. Amsterdam-New York: Rodopi.
- 2010. *The historical development of Japanese tone. Part I: From proto-Japanese to the modern dialects. Part II: The introduction and adaptation of the Middle Chinese tones in Japan*. Veröffentlichungen des Ostasien-Instituts der Ruhr-Universität Bochum: 59. Wiesbaden: Harrassowitz Verlag.
- Bostoen, Koen. 2009. "Shanjo and Fwe as part of Bantu Botatwe: A diachronic phonological approach." *Selected Proceedings of the 39th Annual Conference on African Linguistics* (O. Akinloye and L. Moshi eds.), 110-130, Somerville, MA: Cascadilla Proceedings Project.
- Crane, Thera. 2010. "High-Tone Anticipation in Totela: An Unexpected System." TIE4, Stockholm, 11-9-2010. Conference handout.
<http://linguistics.berkeley.edu/~thera/papers/CraneTIE4Handout.pdf>
- 2011. *Beyond time: Temporal and extra-temporal functions of tense and aspect marking in Totela, a Bantu language of Zambia*. Berkeley, CA: University of California dissertation.
- Haraguchi, Shosuke. 2001. "The accent of Tsuruoka Japanese reconsidered." *Issues in Japanese phonology and morphology* (J. Van de Weijer and T. Nishihara eds.), 47-65. De Gruyter: Berlin.
- Hattori, Shiro. 1951. "Genshi Nihon-go no akusento." *Koku-go akusento ronsō* (K. Terakawa et al. eds.), 45-65, Tokyo: Hōsei daigaku shuppan-kyoku.
- Hirako Tatsuya. 2015. *Nihongo akusento-shi no sai-kentō: Bunken shiryō to hōgen kensa ni motozuite*. Kyoto University dissertation.
- Hyman, Larry and Schuh, Russel. 1974. "Universals of tone rules: Evidence from West Africa." *Linguistic Inquiry*, 5: 81-115.

Hyman, Larry. 1978. "Historical tonology." *Tone, a linguistic survey*, 257-269. New York: Academic Press.

- 1993. "Register tones and tonal geometry." *The phonology of tone. The representation of tonal register. Linguistic models 17* (H. Van der Hulst and K. Snider, eds.), 75-108, Berlin-New York: Mouton de Gruyter.

- 2007. "Universals of tone rules: 30 years later." *Tones and tunes: Studies in word and sentence prosody* (C. Gussenhoven and T. Riad eds.), 1-34. Berlin-New York: Mouton de Gruyter.

Ikuta, Sanae. 1951. "Kinki-akusento-ken henkyō-chiku no sho-akusento" *Koku-go akusento ronsō* (K. Terakawa et al. eds.), 255-346, Tokyo: Hōsei daigaku shuppan-kyoku.

Ishizuka, Harumichi. 1977. "Maeda-bon Nihon shoki Insei-ki-ten (honbun henpo)." *Hokkaidō-daigaku bungaku-bu kiyō*, 26-1: 69-136.

Jones, Patrick. 2014. *Tonal interaction in Kinande: Cyclicity, opacity, and morphosyntactic structure*. MIT dissertation.

Kawakami, Shin. 1965. "Heian-akusento to Bumō-ki no akusento" *Kokugo-kokubun* 34-2 (reprinted in Kawakami, 1995. 414-433).

- 1995. *Nihon-go akusento ronshū*. Tokyo: Kyūko Shoin.

Kenstowicz Michael. 2009. "On the origin of tonal classes in Kinande noun stems." *Studies in African Linguistics*, 37-2: 115-151.

Kindaichi, Haruhiko. 1951. "Nihon shisei kogi." *Kokugo akusento ronsō* (K. Terakawa et al. eds.), 629-708, Tokyo: Hōsei daigaku shuppan-kyoku.

- 1954. "Tōzai ryō-akusento no chigai ga dekiru made." *Bungaku*, 22-8: 63-84 (Reprinted in Kindaichi, 1983, 49-81).

- 1954a "Tsushima, Iki no akusento no chii." (Kyū-gakkai rengō-hen) *Tsushima no shizen to bunka*, (Reprinted in Kindaichi, 1983, 27-48).

- 1964. *Shiza kōshiki no kenkyū*. Tokyo: Sansei-dō.

- 1983. *Nihon no hōgen, akusento hensen to sono jissō*, Tokyo: Kyōiku Shuppan,

Kisseberth, Charles. 2001. Comment on "The history of Kyōto accent." by Y. Nakai. *Cross-linguistic studies of tonal phenomena: Tonogenesis, Japanese accentology, and other topics*. Institute for the study of languages and cultures of Asia and Africa (ILCAA), (K. Shigeki ed.), 145-151.

Odden, David. 2015. "Bantu Phonology." *Oxford Handbooks Online*. Oxford: Oxford University Press.

<http://www.oxfordhandbooks.com/view/10.1093/oxfordhb/9780199935345.001.0001/oxfordhb-9780199935345-e-59?print=pdf>

Okumura, Mitsuo. 1981. "Koku-go akusento no hito-mondai: Izumo-hōgen no akusento wo chūshin ni." *Fujiwara Yoichi sensei koki kinen ronshū, Hōgen-gaku ronsō 2, Hōgen-kenkyū no shatei*, 165-176, Tokyo: Sansei-dō.

Ramsey, Samuel. R. 1978. *Accent and Morphology in Korean dialects: A Descriptive and Historical Study*. Seoul: The society of Korean linguistics.

- 1979. "The Old Kyōto dialect and the historical development of Japanese accent." *Harvard Journal of Asiatic Studies*, 39: 157-175.
- 1980. "Nihongo akusento no rekishiteki henka." *Gengo*, 9-2: 64-76.
- 1982. "Language change in Japan and the Odyssey of a Teisetsu." *Journal of Japanese studies*, 8-1: 97-131.

Takayama, Michiaki. 1981. "Gen'on seichō kara mita Nihon shoki on-gana hyōki shiron." *Kyushu daigaku Go-bun-kenkyū*, 51: 12-20.

Yamana, Kunio. 1951. "Totsukawa onchō." *Onsei no kenkyū*, 7: 191-201.

Uwano Zendo. 1981. Article accompanying the dialect map in: *Language atlas of the Pacific area* (S.A. Wurm and S. Hattori eds.), Canberra: Australian Academy of the Humanities in collaboration with the Japan Academy.

Uwano Zendo and Nitta Tetsuo. 1985. "Kanazawa akusento ni okeru sedai-betsu henka." *Kokugo kenkyu*, 49: 1-38.