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Toward a Typology of the History of Loanword Prosody: A Comparison of Sinosphere Languages*

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1 Introduction

Many previous studies have examined loanword prosody in contemporary languages, revealing cross-linguistic differences, particularly regarding whether and how source languages influence prosodic alignment (Kubozono 2006; Hsieh and Kenstowicz 2008; Glewwe 2021, among many others). Furthermore, several comparative studies of contemporary languages have begun to lay the groundwork for a typology (Kang 2010; Davis et al. 2012). However, to the best of my knowledge, although extensive research exists on the historical development of loanword prosody within individual languages, no study has compared the history of loanword prosody across different languages.

Building on previous studies, this study aims to establish a foundation for exploring a typology of the historical development of loanword prosody by focusing on the following three perspectives:

(a) Influence of source languages:
Whether prosodic alignment in the borrowing language was affected by the source language during specific historical periods.

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(b) Degree of retention of source language influence in contemporary languages:
Whether, and to what extent, contemporary languages continue to reflect prosodic features inherited from the source language.

(c) Directions of change in irregular correspondences:
How irregular correspondences with the source language have evolved over time, for example, through analogical change or the emergence of new patterns.

Using these perspectives, this study examines the differences in source language influence and the historical development of irregular correspondences in three "Sinosphere" languages: Vietnamese, Korean, and Japanese. Since all three languages were significantly influenced by Middle Chinese (MC), this study investigates how MC tones influenced each language differently.

This study is organized as follows. Sections 2–4 analyze the prosody of Sino-Vietnamese, Sino-Korean, and Sino-Japanese words, respectively, from the perspectives outlined above. Section 5 summarizes the differences among these languages and discusses directions for future research.

2 Sino-Vietnamese Words

Mineya (1972: 160) notes that the tones of Sino-Vietnamese words exhibit regular correspondences with MC tonal categories. Table 1 illustrates the relationship between Sino-Vietnamese tones and MC tones. The data presented in Table 1 were compiled for this study based on Kawamoto (2011), since Mineya (1972) does not provide specific numerical data, and representative examples are provided in (1). Data on MC are based on the *Web Inzu* (Web 韻図), a database of MC rhyme dictionaries created by Shingo Suzuki. In addition, to simplify the discussion, data in Table 1 were restricted to words that have only one tone in MC.

In Table 1, the vertical axis lists the MC tones. The horizontal axis represents onset consonant types in MC, using traditional terms of Chinese phonology: *qīng* 清 represents voiceless unaspirated onsets, *cìqīng* 次清 voiceless aspirated onsets, *cìzhuó* 次濁 sonorants (liquids or nasals), and *zhuó* 濁 voiced obstruents.

	***qīng* 清**	***cìqīng* 次清**	***cìzhuó* 次濁**	***zhuó* 濁**	**Total**
***píng* 平 'level'**	/1/ '*ngang*' (90%)	/1/ '*ngang*' (91%)	/1/ '*ngang*' (94%)	/2/ '*huyền*' (87%)	83 % (3641/4378)
***qù* 去 'departing'**	/5/ '*sắc*' (80%)	/5/ '*sắc*' (78%)	/6/ '*nặng*' (70%)	/6/ '*nặng*' (67%)	
***shăng* 上 'rising'**	/3/ '*hỏi*' (73%)	/3/ '*hỏi*' (65%)	/4/ '*ngã*' (71%)	/6/ '*nặng*' (48%) (/4/ '*ngã*') (28%)	
***rù* 入 'entering'**	/5/ '*sắc*' (87%)	/5/ '*sắc*' (83%)	/6/ '*nặng*' (91%)	/6/ '*nặng*' (91%)	

Table 1. Correspondences between Sino-Vietnamese tones and MC tonal categories[1]

(1) Examples of Sino-Vietnamese words showing regular correspondences

píng 平	*qīng* 清	*cao* 高 'high', *sơn* 山 'mountain', *giao* 交 'give'
	cìqīng 次清	*thu* 秋 'autumn', *thiên* 天 'sky', *khai* 開 'start'
	cìzhuó 次濁	*lam* 嵐 'storm', *môn* 門 'gate', *lưu* 流 'flow'
	zhuó 濁	*tài* 才 'talent', *bình* 平 'normal', *hoàn* 丸 'pellet'
qù 去	*qīng* 清	*ý* 意 'idea', *báo* 報 'inform', *tính* 性 'characteristic'
	cìqīng 次清	*thái* 態 'appearance', *khoái* 快 'pleasant', *phá* 破 'break'
	cìzhuó 次濁	*dụng* 用 'use', *nghệ* 藝 'artistic', *loạn* 乱 'disorder'
	zhuó 濁	*đậu* 豆 'bean', *điện* 電 'electric', *thụ* 授 'bestow'
shăng 上	*qīng* 清	*bản* 本 'document', *chủ* 主 'host', *chỉ* 指 'point'
	cìqīng 次清	*thảo* 草 'draft', *khảo* 考 'consider', *phổ* 普 'wide'
	cìzhuó 次濁	*mỹ* 美 'beautiful', *dũng* 勇 'brave', *hữu* 有 'exist'
	zhuó 濁	*động* 動 'move', *đạo* 道 'road', *tĩnh* 静 'quiet'
rù 入声	*qīng* 清	*kết* 結 'connect', *tiết* 節 'seasonal change', *quốc* 国 'national'
	cìqīng 次清	*xuất* 出 'spend', *khách* 客 'guest', *khúc* 曲 'movement'
	cìzhuó 次濁	*nhiệt* 熱 'hot', *nghiệp* 業 'job', *lạc* 落 'lose'
	zhuó 濁	*học* 学 'study', *tạp* 雑 'mix', *thuật* 述 'state'

Table 1 demonstrates the regular correspondences between Sino-Vietnamese tones and MC tonal categories, consistent with previous studies. These correspondences indicate that Sino-Vietnamese words retain a strong prosodic influence from MC. However, exceptions occur within each tonal category. Mineya (1972: 161) argues that these exceptions arose through sporadic changes rather than through analogical changes towards the most frequent tonal category.

Based on the three perspectives outlined in Section 1, the characteristics of Sino-Vietnamese tones can be summarized as follows:

(a) The tones of Sino-Vietnamese words are fundamentally based on MC tonal categories.

[1] Regarding Vietnamese tone, the following description is adopted:
/1/ '*ngang*': [3:], /2/ '*huyền*': [2:], /3/ '*hỏi*': [212], /4/ '*ngã*': [3ʔ5], /5/ '*sắc*': [2˗4], /6/ '*nặng*': [3˗ʔ].

(b) Most contemporary Sino-Vietnamese words continue to reflect MC tonal distinctions.
(c) Although exceptions exist, they appear to result from sporadic developments rather than systematic analogical change.

3 Sino-Korean Words

Ramsey (1978) and C. Ito (2008, 2014) note that the accentuation patterns of Sino-Korean words in Contemporary Korean show regular correspondences with those found in Middle Korean. Furthermore, the accentuation of Sino-Korean words in Middle Korean corresponds regularly to MC tones (e.g., H. Ito 1997; C. Ito 1999). Specifically, *píng* 平 corresponds to a Low tone; one subgroup of *qù* 去 and *shǎng* 上 corresponds to a High tone, while another subgroup corresponds to a Rising tone; and *rù* 入 corresponds to a High tone.

Table 2 presents the historical changes in disyllabic words from Middle Korean to Yanbian Korean, and (2) provides examples illustrating the regular correspondences between Middle Korean and Yanbian Korean. In Table 2 and (2), 'H' indicates High tone, 'L' Low tone, 'R' Rising tone, and 'X' a predictable tone value determined by the total number of syllables in the phrase. Shaded cells in Table 2 indicate regular correspondences.

MK/YK	HL	LH	LL	Totals	Total Rate
HX/RX	3614 (80%)	810 (18%)	118 (2%)	4542	65% (4641/7154)
LH	821 (48%)	876 (51%)	27 (1%)	1724	
LL	405 (46%)	332 (37%)	151 (17%)	888	

Table 2. Historical change in disyllabic words from Middle Korean (MK) to Yanbian Korean (YK) (Adapted from C. Ito 2008)

(2) Examples of regular correspondences between Middle Korean and Yanbian Korean (from C. Ito 2009)[2]
a. RX/HX > HL: *mán.kì* 晚期 'later years', *káng.tàng* 講堂 'auditorium', *cí.pàng* 地方 'region'
b. LH > LH: *cè.cáŋ* 財政 'finances', *sàm.sú* 潜水 'diving', *c^{h}à.kó* 車庫 'garage'
c. LL > LL: *ì.mìn* 移民 'emigrants', *kò.ùm* 高音 'high note', *ìn.mùn* 人文 'humanities'

As shown in Table 2, the total rate of regular correspondence is 65 percent. Nevertheless, numerous exceptions occur in certain accentual patterns, particularly LH and LL in Middle Korean. C. Ito (2008) argues that many of these exceptions result from analogical change toward the most frequent accentuation pattern, HL. This trend is particularly notable given that native words tend to change toward their most frequent accentuation pattern, LH.[3]

Based on the three perspectives introduced in Section 1, the characteristics of Sino-Korean word accentuation can be summarized as follows:

[2] An acute accent represents a High tone, and a grave accent represents a Low tone.
[3] In addition, C. Ito (2008, 2014) points out that a second factor determining accentuation is the segmental properties of onsets and codas.

(a) The accentuation of Sino-Korean words is based on MC tones.
(b) Although many Sino-Korean words preserve influences from MC tones, a considerable number show exceptions.
(c) A substantial number of these exceptions can be attributed to analogical change toward the predominant HL pattern.

4 Sino-Japanese Words

Okumura (1963), Ueno (2011, 2021), and Kato (2018) note that by the Early Modern period, the accentuation of Sino-Japanese words generally exhibited regular correspondences with MC tones.[4] Based on calculations using data from Kato (2018: sec. 3.2), the rate of regular correspondences between Early Modern period accentuation and MC tones is 53 percent (224/421 words). Many exceptions can be accounted for by analogical change toward the most frequent pattern, namely the pattern with an accent on the initial syllable. This situation is similar to that observed for Sino-Korean word accentuation. In addition, some Sino-Japanese words retain MC influences even in Contemporary Japanese dialects (Okumura 1974; Kindaichi 1980, among others).

However, in the Modern period, many Sino-Japanese words appear to have undergone a shift toward a new direction (Obata 2024, 2025). In Contemporary Kyoto Japanese, mora count is considered the primary factor determining Sino-Japanese word accentuation (Ogawa 2006, 2010). Specifically, the accentual tendencies are summarized in (i) and (ii):[5]

(i) Register is determined by the mora count of the first character in two-character Sino-Japanese words:
  • If the first character is monomoraic, the register tends to be low.
  • If the first character is bimoraic, the register tends to be high.
(ii) Accent is determined by the mora count of the second character in two-character Sino-Japanese words:
  • If the second character is monomoraic, the word tends to be accented.
  • If the second character is bimoraic, the word tends to be unaccented.

Tables 3 and 4, adapted from Obata (2024) with corrections to the data, show accentual changes from the Early Modern to the Contemporary period, and (3) provides examples illustrating developments following the system of mora counts. In Tables 3 and 4 and in (3), '#X' denotes the

[4] In Old Japanese, Sino-Japanese words, especially *Kan'on* 漢音, reflected MC tones as follows: *Yīn-píng* 陰類平 (onset type is *qīng* 清 and *cìqīng* 次清) corresponds to the Falling tone; *Yáng-píng* 陽類平 (*cìzhuó* 次濁 and *zhuó* 濁) to the Low tone; *Yīn-shǎng* 陰類上 (*qīng* 清, *cìqīng* 次清 and *cìzhuó* 次濁) to the High tone; *Yáng -shǎng* 陽類上 (*zhuó* 濁) and *Qù* 去声 to the Rising tone; *Yīn-rù* 陰類入 (*qīng* 清, *cìqīng* 次清 and *cìzhuó* 次濁) to the High tone; and *Yáng-rù* 陽類入(*zhuó* 濁) to the Low tone.

Furthermore, Japanese accentuation in the Middle period underwent a 'word-initial pitch boost' (Kindaichi 1954; Uwano 2012), resulting in shifts such as LL > HL, LLH > HLL, and LLL > HHL. Sino-Japanese words also underwent similar changes, as shown below. In other words, certain accentuation patterns of Sino-Japanese words merged.

[5] However, an exception exists: when a word contains a geminated consonant ('*sokuon*') in the first character and the second character is monomoraic, the accentuation pattern tends to be low-register and unaccented.

mora count of the second character, 'X#' the mora count of the first character, and '#' marks the boundary between the two characters.[6]

	Early Modern Period		**Modern Period**		**Contemporary**	
	Accented	Unaccented	Accented	Unaccented	Accented	Unaccented
#1 mora	405 (76%)	128 (24%)	77 (64%)	44 (36%)	1955 (68%)	916 (32%)
#2 mora	1422 (78%)	390 (22%)	215 (47%)	245 (53%)	1581 (17%)	7463 (83%)

Table 3. Accent change from the Early Modern period to Contemporary Kyoto Japanese (Adapted from Obata 2024)

	Early Modern Period		**Modern Period**		**Contemporary**	
	High	Low	High	Low	High	Low
1# mora	426 (91%)	40 (9%)	89 (80%)	23 (20%)	966 (30%)	2210 (70%)
2# mora	1292 (67%)	630 (33%)	337 (70%)	143 (30%)	7090 (81%)	1649 (19%)

Table 4. Register change from the Early Modern period to Contemporary Kyoto Japanese (Adapted from Obata 2024)

(3) Examples of changes in Sino-Japanese words from the Early Modern period toward the Contemporary period based on mora count[7]
1# mora, High Register > Low Register: *fu#kitu* 不吉 'unlucky', *bi#ree* 美麗 'beautiful'
#2 mora, Accented > Unaccented: *yoo#syoo* 幼少 'childhood', *koku#oo* 国王 'king'

In the Early Modern period, the accentuation of Sino-Japanese words generally displayed a high register and an accented pattern, regardless of their mora count. In the Modern period, however, Sino-Japanese words began to exhibit a correlation with the mora count. In particular, the patterns in which a monomoraic first character tends to have a low register and a bimoraic second character tends to be unaccented were not found in the Early Modern period. The shift toward accentuation dependent on mora count, therefore, represents the development of a new system, rather than an analogical change.

The characteristics of Sino-Japanese word accentuation can be summarized as follows:

(a) The accentuation of Sino-Japanese words was originally influenced by MC tones.
(b) While some Sino-Japanese words in Contemporary Japanese retain MC influence, many have shifted to a new default accentual system.
(c) This shift marks a transition from an accentuation system grounded in MC tones to one based on mora count.

[6] Obata (2024) uses *Bumoki* 補忘記, *Myomoku-sho* 名目鈔, and *Heikyoku Fuhon* 平曲譜本 as the materials for accentuation in the Early Modern period; SP-recorded *rakugo* in the Meiji era for the Modern period; and Nakai (2002) for Contemporary Kyoto Japanese.

[7] In (3), the accentuation of the Early Modern period is based on *Heikyoku Fuhon* 平曲譜本, and that of Contemporary Kyoto Japanese is based on Nakai (2002).

5 Conclusion

This study examined the adaptation patterns of MC loanwords in three Sinosphere languages and investigated how their prosody has evolved. The results are summarized in Table 5.

	Vietnamese	Korean	Japanese
(a) Influence of source languages	Influenced	Influenced	Influenced
(b) Degree of retention of source language	Retaining	Largely retaining	Low retention
(c) Directions of change in irregular correspondences	Sporadic	Analogical change	New patterns

Table 5. Comparison of Sino-Vietnamese, Sino-Korean, and Sino-Japanese

As shown in Table 5, the prosody of loanwords in all three languages is influenced by MC tones with regard to (a). However, differences emerge with respect to (b) and (c). Vietnamese generally retains the influence of MC, with only sporadic exceptions, whereas Korean and Japanese show varying degrees of departure from the source. In addition, the directions of prosodic change differ between Korean and Japanese. Korean shows analogical change, while Japanese exhibits the development of new accentual patterns.

The reasons for these differences, especially those related to (b) and (c), remain unclear, and this study cannot provide a definitive explanation. Nevertheless, several speculative factors may account for the variation: word-prosodic typology and sociolinguistic context.

From a typological perspective, Vietnamese is classified as a tone language, while Korean and Japanese are classified as pitch-accent languages.[8] MC is also classified as a tone language. This typological similarity may help explain why Contemporary Vietnamese retains more of the prosodic influence of MC.

Sociolinguistic factors may also contribute to differences in loanword prosody among the languages. For example, geographical distance and differences in the acceptance of Chinese culture could have contributed to variations in the degree of influence. Although Japan is separated from China by sea, Korea and Vietnam share land borders with China. In addition, as an example of the acceptance of Chinese culture, Vietnam and Korea retained the '*kējǔ*' 科挙, the official selection system in Imperial China, until the modern period, whereas Japan did not adopt it. While it is necessary to be cautious in directly attributing linguistic differences to cultural factors, these geographical and cultural conditions may account for these differences.

[8] Hyman (2006, 2009) argues that there is no single prototype of 'pitch accent'. This study follows his view but still uses the term 'pitch accent', as the status of Korean word prosody remains ambiguous within Hyman's framework.

The causes of these differences are likely multifaceted. Further research is needed to examine how these typological and sociolinguistic factors interact by analyzing additional languages[9] and broader historical contexts.

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[9] To the best of my knowledge, many contemporary languages tend to retain influence from their source languages; for example, English and German have borrowed words from Latin, and these languages appear to preserve the influence of Latin stress. Although there are exceptions, these seems to be sporadic or the result of analogical changes.

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