



A Phonological Analysis of Buddhist Borrowings of Chinese Language
佛教汉语借词音韵分析

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Abstract

Buddhist terms borrowed from Indic languages have been instrumental in the evolution of Mandarin Chinese phonology and morphology, and lexicon. Sutra translation resulted in the influx of a considerable number of Buddhist words into the Chinese language and the gradual Sinicization process absorbed them into the native Chinese lexicon. This study has been an attempt to analyse the phonology of these words. It has used transliterations, free translations, and phono-semantic matchings which account for 782 terms in total. The study has found out that the Buddhist vocabulary of Mandarin Chinese possesses unique phonological features in both segmental and supra-segmental levels. Nasals have been widely used in the all three categories while denti-alveolar and retroflex affricate sounds show a very low occurrence in the sample. Syllabic consonants /tsɿ/, /tsʰɿ/, /sɿ/, /tɕɿ/, tɕʰɿ/, ʂɿ/, and ɻɿ/ show a very low occurrence rate. Number of syllables in Buddhist terms is higher than that of the classical Chinese lexicon. It is evident that the early translators have attempted to preserve some of the Indic linguistic features in their work while adhering to Chinese phonology.

Keywords: Mandarin Chinese, Indic languages, Buddhist Borrowings, Sinicization, Phonological Features

Introduction

Buddhist terminology has played a vital role in the evolution of Mandarin Chinese for centuries. A considerable number of Buddhist vocabulary has been transferred into Chinese from Sanskrit, Pali, and many other Indic languages. Few centuries after the introduction of Buddhism to China, probably in 1st century AD, translation of Buddhist scriptures began in large scale by translator groups lead by Kumarajiva (鸠摩罗什), Anshigao (安世高), Xuanzang (玄奘) Zhu Fahu (竺法护) etc. Along with these

translations of major Buddhist scriptures and Buddhist literature such as the Jataka stories, a number of Buddhist words were infused into Chinese language. The influence of these terms has been instrumental in the characterization of lexicon, phonology, morphology, and syntax of Mandarin Chinese. There is clear evidence that Chinese language has undergone morphological and phonological changes under the influence of Buddhist vocabulary. The present study investigates the phonology of Buddhist terms of Chinese language.

Methodology

The study has adopted both qualitative and quantitative analysis methods. The study has selected 782 Buddhist borrowings from Akira Hirakawa's A Buddhist Chinese-Sanskrit Dictionary. The sample words have been categorized according to their translation method as transliterated words, free translations, and phono-semantic matchings. Phonological differences between Indic languages and Mandarin Chinese have been examined by comparison of the phonological inventories using Set Theory. Distribution of phonemes in each category, sound change patterns, supra-segmental features of Buddhist terms, and the Sinicization process have been the key areas of focus in the analysis.

Significance of the Study

A phonological approach to the Buddhist borrowings in Chinese has not been widely researched although Buddhist borrowings in Chinese language have been studied by many local Chinese scholars. Phonology of Buddhist terms in Chinese language is the only link between the phonologies of Indic languages and Chinese. The study of Chinese language and TCFL (Teaching Chinese as a Foreign Language) have received much attention since the dramatic increase in the number of students and professionals studying Chinese language in South Asia. Owing to the large number of affricate and fricative sounds in Mandarin Chinese, one of the key issues in TCFL in South Asia is the acquisition of Mandarin Chinese phonology. The identification of the phonological adaptation patterns in the Sinicization process of borrowings from Sanskrit can be of use in designing teaching strategies for teaching Mandarin phonology in TCFL in these regions. Secondly, this study could be

instrumental in designing Chinese-Sinhala and Sinhala-Chinese translation models especially in terms of transliterations.

Buddhist Borrowings in Chinese Language

Translation of Buddhist scriptures began in China in the official translation period of Eastern Jin (317-420 A.D.) and Sui (581—619 A.D.) Dynasties. Kumarajiva (344-413 A.D.), considered as one of the key early translators, and his translation teams laid the foundation to the development of Buddhist scripture translation in China. The Tang Dynasty is considered the "Golden Age" of Chinese Buddhism and a number of translators have translated hundreds of Buddhist scriptures during this period. Along with these translations, a generous amount of Buddhist borrowings flooded into Chinese language. These Buddhist borrowings have remained an inseparable part of Chinese lexicon and many have undergone complete or partial Sinicization.

Chinese Buddhist borrowings can be categorized from different aspects, the most popular method being according to their translation method. Zhu Ming categorizes them as transliterated words, new constructions, and phono-semantic translations. Due to lack of language knowledge and translation experience in the preliminary ages of Buddhist scripture translation, translators were compelled to transliterate Sanskrit words into Chinese (Zhu, 2014). Qiu Mingchun suggests that the early translators attempted to preserve the original flavour of Buddhist terminology in their Chinese counterparts by using transliteration as their method. Though most of the early script translators who adhered to transliteration were Indian monks, Xuanzang despite being a Chinese monk, was a strong supporter of

transliteration (Qiu, 2015). Xuanzang introduced the “Five Untranslatables” (五不翻) theory, in which five situations are introduced where the translator should limit themselves to transliteration. Most of the transliterated words are names of Buddha, Bodhisattvas, Arhats, great Indian teachers, Kings, Gods, and Taoists (Guo, 2016). Guo’s proposal is justified by several transliterated proper names in Chinese language, including Ananda “Ā nán” 阿难; “Ā nán tuó” 阿难陀, Shariputra “Shèlì fú” 舍利弗, Pí shī nú 毗湿奴, and Indra 因陀罗 Yīn tuó luó. However, some transliterated proper names have their semantic translation counterparts. For example, the word for Lord Ganesha is both translated as 韃尼萨 Jiān ní sà and as 象头神 “Xiàng tóu shén” meaning “god with an elephant head”. Having many transliteration forms of the same word is another characteristic of transliterated Buddhist borrowings in Chinese. Li Qinghuan and Yuan

Yu suggest that the diversity of transliterated words reflects the spread of Buddhist vocabulary in different places and the translation of the same word by different translators (Li and Yuan, 2009).

Transliterated words account for a majority of words in Buddhist borrowings in Chinese language. Liu Jiaqi points out that Buddhist borrowings are an integral part of Chinese language, but they have not been widely incorporated into the basic Chinese vocabulary for two main reasons. Firstly, most transliterated words in Buddhist vocabulary are proper nouns in Buddhism. Many new Buddhist concepts which are alien to Chinese culture did not have counterparts in Chinese language and even if semantically translated into Chinese, the possibility for incomplete expression of meaning and

misunderstanding were very high. Thus, the translators were compelled to use meaningless parallel Chinese phonemes to transcribe them. Secondly, owing to the “one word many forms” nature of these transliterations, they are not frequently used in Chinese language (Liu, 2018).

Some of the transliterations have become root words in Chinese with very high production ability. Mostly these are monosyllabic single character words which are called “构词语素” “constructive morphemes” in Chinese language. Zhang Ye and Xin Zhifeng point out that monosyllabic transliterations like “magic” 魔 /mó/, “monk” 僧 /sēng/, “Buddha” 佛 /fó/, “Brahma” 梵 /fàn/, etc. are constructive morphemes which form a large number of disyllabic words. These words have the highest degree of Sinicization. (Zhang Ye, Xin Zhifeng. 2016) These monosyllabic transliterations usually have a high word formation ability. For example, the root word 佛 /fó/ meaning Buddha has generated more than 60 words in Chinese language.

Ancient Chinese language mainly consisted of monosyllabic single character words. Many scholars argue that the introduction of Buddhist vocabulary was a major force behind disyllabification of Chinese words. You Juncheng argues that Buddhist vocabulary not only enriched the Chinese language lexicon, but also accelerated the disyllabification process of Chinese lexicon (You, 1993). Sanskrit words, especially Buddhist words consisted of consonant clusters and usually they were multisyllabic words. In the early translations of Buddhist scriptures very long transliterations can be found. For example, the word Maha Pragna Paramita was initially translated as 摩诃般若波罗蜜多 [mó hē bōrě bōluómì duō]. Later, many of these long

transliterations underwent a process called Jianhua 简化, which literally means “simplification”. Thus, [mó hē bōrě bōluómì duō] was later simplified as 般若波罗蜜多 [bōrě bōluómì duō] and finally as 波罗蜜 [bōluómì]. This is also one aspect of the Sini-cization which is discussed in a later section of this paper.

Phono-semantic matchings are on the second level in the list. Unlike the phono-semantic matchings of most alphabetic languages such as English, French, Hindi or Sinhala, Chinese phono-semantic words consist of one or two characters which are phonetically matched and another character of Chinese meaning. This happens because Chinese words are made of characters which by themselves can stand unaccompanied to give independent meanings. For example, the word 魔王 [mówáng] which means “magic king” consists of the transliterated 魔 [mó] which originated from San-skrit “mara” and the second character 王 [wáng] “king” is originally Chinese phonetically and semantically. These characters are called “形声词” Xíngshēng cí in Chinese language, which means “picto-phonetic characters”. According to Liang Xiaohong, although this kind of newly generated words are small in number, they have very quickly penetrated into the Chinese lexicon making a huge impact on Chinese language. The character 魔 [mó] coupled with other Chinese characters have generated words like 魔鬼 [móguǐ] demon, 魔子 [mózi] demon, 魔女 [mónǚ] she-devil, 魔民 [mó mín] demons, 魔事 [mó shì] devil, 魔病 [mó bìng] magic disease, 魔宫 [mó gōng] devil’s palace, 魔力 [mólì] magic power, 魔术 [móshù] dark arts, 妖魔 [yāomó] demon, 魔爪

[mózhǎo] devil’s claw, and 魔掌 [mózhǎng] evil force (Liang, 1986).

With the course of time, the Chinese translators gained a linguistic ability in Indic languages and they intended to make Buddhist scriptures and Buddhist borrowings closer to Chinese people by translating the meanings of Buddhist vocabulary into Chinese. This was an arduous process compared to transliterating as it was challenging to find Chinese counterparts for Buddhist concepts. Sutra transliterations were not welcome by the commoners who found bizarre meanings since the Chinese characters in them had been abstractly selected to match phonemes, not meanings. This is when Taoism and Confucianism came into assistance. When Buddhism was introduced into China, Taoism and Confucianism had already been well established in the land. The Taoist and Confucian terminology consisted of many words that were partially similar in meaning to Buddhist concepts. Guang Xing proposes that words such as 无为 [wúwéi] for nirvāṇa, 本无 [běn wú] for tathatā, and 真人 [zhēnrén] for Arahant in the early Buddhist scriptures justify the close relationship between Buddhism and Taoism. The works of Confucians like Kang Seng Hui and Mou Zi testify that they respected Buddhism and Zhi Qian’s translations contain obvious Taoist features (Xing, 2015).

Free translations of Buddhist vocabulary have infiltrated into the daily used language in China. Song Haiyan claims that many free translated Buddhist words have already become comprehensible to the commoner and contributed to the development of Chinese lexicon. 世界 [shìjiè] world、方便 [fāngbiàn] ingenuity、坚固 [jiāngù] steadiness、真实 [zhēnshí] authentic、地狱 [dìyù] hell、自然

[zìrán] nature、欢喜 [huānxǐ] happiness、秘密 [mìmi] secret are good examples of free translations (Song, 2018). These words are phonologically different from their original Indic forms. However, these words have been instrumental in the disyllabification of Chinese words. In this process, disyllabic and polysyllabic words were generated in large scale to meet the needs of the Buddhist scripture translation and monosyllabic words were made disyllabic (Wang, 2014).

Cheng Tao proposes that words such as 过去 [guòqù] ‘past’, 现在 [xiànzài] ‘present’, 未来 [wèilái] ‘future’ were originally from Buddhism and penetrated into Chinese. Later, they became frequently used words in Chinese, that their Buddhist flavour has faded completely (Chen, 2012). Words such as 世界 [shìjiè] loka, 方便 [fāngbiàn] upāya, 法 [fǎ] dharma, and 经 [jīng] sutra have already penetrated so deeply into modern Chinese that their original meanings are seldom known by commoners. In the case of 方便 [fāngbiàn] upāya, and 法 [fǎ] dharma, their modern connotations, respectively “convenience” and “law” have become dominant words in the Chinese language.

Sinicization

Not only Buddhism but Buddhist vocabulary too underwent a Sinicization process throughout the history of Chinese Buddhism. When discussing levels of Sinicization, transliterated words are the least Sinicized out of the three categories, followed by phono-semantic matchings and free translations respectively. Sinicization and phonological changes of Buddhist vocabulary are parallel processes in which the latter depends on the former. According to

Jiang Qiong, while some Buddhist terms underwent syllable simplification, some other terms have undergone syllable complication. The number of syllable simplifications are much higher than the complications. Jiang further points out that there are two major forms of Sinicization of the word form. The first is that the first part is shortened, followed by an ideographic word or morpheme to form a new word. In the second category, the source word is directly transliterated and another transliterated word or morpheme constitutes a new word (Jiang, 2015).

Phonological Differences between Mandarin Chinese and Indic Languages

Mandarin Chinese consists of six stop sounds p^h , t^h , k^h , p , t , k , six affricate sounds \widehat{ts}^h , $\widehat{tʃ}^h$, $\widehat{(tʃ}^h)$, \widehat{ts} , $\widehat{tʃ}$, $\widehat{(tʃ)}$, five fricative sounds f , s , ξ , (ϵ) , x , three nasal sounds m , n , η and two liquid sounds l , l . Out of these, the four retroflex sounds $\widehat{tʃ}^h$, $\widehat{tʃ}$, ξ , l and the two dental-alveolar affricate sounds \widehat{ts}^h , \widehat{ts} are by far the most distant to Indic speakers. When compared to the Indic languages such as Sanskrit, Pali, Hindi, or Sinhala, Mandarin has a limited sound range. Figure 1 demonstrates the distribution of phonemes in Sanskrit and Mandarin Chinese assets. Phonemes $/m/$, $/f/$, $/n/$, $/l/$, $/x/$, $/s/$, $/\eta/$, $/kh/$, $/k/$, $/th/$, $/t/$, $/ph/$, $/p/$ are shared by both Sanskrit and Chinese. In fact, these are shared between all the Indic and Chinese languages.

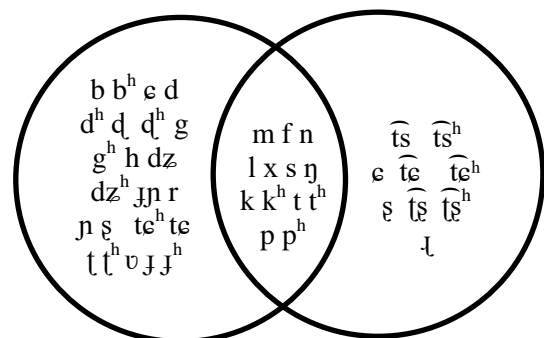


Figure 1 Comparison of Phonological inventories of Sanskrit and Mandarin

Aspirated voiced /b^h/, /d^h/, /d^h/, /c^h/, /j^h/, /g^h/ sounds are unique to Indic languages which are not available in Mandarin Chinese and most of their unaspirated counterparts are also absent. The labio-dental semivowel /v/ is also unavailable in Mandarin. Two of the semi-nasal sounds of Sanskrit /ɲ/ and /ŋ/ are also not found in the Mandarin phonological inventory.

A significant factor about Buddhist transliterations is that the translators have attempted to avoid using sounds that are unfamiliar to the Indic speakers in their transliterations such as the four retroflex sounds /ʈ^h/, /ʈ^h/, /ʂ/, /ʂ/ and affricate sounds /tʂ^h/, /tʂ^h/, /tʂ^h/, /tʂ^h/ are the least occurred sounds in Chinese Buddhist borrowings. The sounds zi/tsɿ/, ci/tsɿ/, /si/sɿ/, /zhi/tʂɿ/, /chi/tʂɿ/, /shi/ʂɿ/ and ri/ɿ/ which have their own vowel phoneme, /i/ rarely occur in their syllabic consonant form in Chinese Buddhist transliterations. The early translators were of Indian origin, and they wanted to preserve the Indic spirit of Buddhist terms as much as possible. Therefore, it could be concluded that they attempted to avoid using any alien sounds of the target language to bring the audience closer to the Indic culture.

Distribution of Sounds

This section discusses the distribution of sounds in the sample.

Free Translations (Total 1350 occurrences)					
	Labial	Denti-alveolar	Retroflex	Alveolo-palatal	Velar
Nasal	m 20(1.48%)	n 207 (15.3%)			ŋ 149(11.3%)
Stop	aspirated	p ^h 4 (0.29%)	t ^h 23 (1.7%)		k ^h 14(1.03%)
	unaspirated	p31(2.29%)	t 53 (3.9%)		k 183 (13.5%)
Affricate	aspirated	tʂ ^h 5 (0.37%)	tʂ ^h 27 (2%)	tʂ ^h 12 (0.81%)	tʂ ^h 15(1.11%)
	unaspirated	tʂ 16 (1.18%)	tʂ 49 (3.62%)	tʂ 71 (5.25%)	tʂ 71 (5.25%)
Fricative	f34(2.51%)	s 54(4%)	ʂ 88 (6.51%)	ʂ 71 (5.25%)	x 189 (14%)
Liquid		l36(2.66%)	l 11 (0.81%)		

Table 1: Distribution of Phonemes in Transliterated Buddhist terms

Nasal /n/ accounts for the highest number of occurrences out of all sounds. Denti-alveolar /tʂ^h/ accounts for the lowest number of sounds in the cluster. /k^h/, /ɿ/, and /tʂ/ also account for very low occurrences which is less than 1%. /l/, /x/, /m/, /tʂ/, /t/, and /t^h/ have a relatively higher frequency.

Transliterations (Total 1006 occurrences)					
	Labial	Denti-alveolar	Retroflex	Alveolo-palatal	Velar
Nasal	m 81(8.05%)	n 154(15.3%)			ŋ 16(1.59%)
Stop	aspirated	p ^h 57(5.66%)	t ^h 71(7.05%)		k ^h 3(0.29%)
	unaspirated	p52(5.16%)	t 75(7.45%)		k23(2.28%)
Affricate	aspirated	tʂ ^h 2(0.19%)	tʂ ^h 15(1.49%)	tʂ ^h 15(1.49%)	tʂ ^h 15(1.49%)
	unaspirated	tʂ 4 (0.39%)	tʂ 14 (1.39%)	tʂ 74(7.35%)	tʂ 74(7.35%)
Fricative	f23(2.28%)	s 38 (3.77%)	ʂ 41 (4.07%)	ʂ 14 (1.39%)	x 95(9.44%)
Liquid		l134(13.32%)	l 5 (0.49)		

Table 2 : Distribution of Phonemes in Transliterated Buddhist terms

Similar to the transliterations, in the free translated vocabulary list, the highest number of occurrences is recorded by /n/ with a percentage of 15.3% followed by /x/, /k/ and /ŋ/ respectively. In contrast to the transliteration, /ph/ shows a very low percentage of 0/29%. /ʂ/, /tʂ/ and /tʂ/ phonemes show a relatively higher frequency of occurrence.

Phono-semantic matchings (Total 426 occurrences)					
	Labial	Denti-alveolar	Retroflex	Alveolo-palatal	Velar
Nasal	m 13(3.05%)	n 64(15.02%)			ŋ 33(7.74%)
Stop	aspirated	p ^h 13(3.05%)	t ^h 13 (3.05%)		k ^h 1(0.23%)
	unaspirated	p 9 (2.11%)	t 26(6.1%)		k 43(10.09%)
Affricate	aspirated	tʂ ^h 1 (0.23%)	tʂ ^h 12 (2.81%)	tʂ ^h 12 (2.81%)	tʂ ^h 3(0.70%)
	unaspirated	tʂ 4(0.93%)	tʂ 7 (1.64%)	tʂ 28(6.57%)	tʂ 28(6.57%)
Fricative	f 42(9.85%)	s 16(3.75%)	ʂ 17(3.99%)	ʂ 11(2.58%)	x 45(10.56%)
Liquid		l 23(5.39%)	l 2(0.46%)		

Table 3: Distribution of Phonemes in Phono-Semantic Buddhist terms

Similar to both above categories, /n/ marks a percentage of 15.02% accounting for the highest. The fricative sounds /x/ and /f/ account for higher values in the table. /tʂ^h/, /ɿ/, and /tʂ/ account for the lowest in frequency. Velar stop sound /g/ has also shown a relatively higher percentage of 10.09%.

From the above data, some important conclusions can be drawn. Characters with nasals have been widely used in transliterations. Stop sounds also have a relatively higher rate of occurrence in transliterated terms, apart from /kh/ which accounts for a very low number of occurrences in all three categories. Fricative sound /x/ also shows a relatively high occurrence rate in all three categories of words. Affricate sounds, except for /tʃ/, liquid sound /l/ show a very low percentage in all three categories. /k/ has shown a low occurrence rate in transliterated words, but a very high rate in both free translations and phono-semantic matchings. This proves the hypothesis that the Buddhist translators have attempted to avoid non-Indic phonemes such as dental-alveolar, retroflex, and alveolar palatal affricate sounds in their translation of Buddhist terms into Chinese. A surprising finding reveals that characters with aspirated /kh/ as /k/ is used to a lesser degree in Sanskrit. For example, the word *Asangkya* /ʌsʌŋkhjə/ has been translated as 阿僧祇 /ā:səŋtʃʒ:/, whereas it could have been translated as /səŋkʰ:/ or /səŋkʰh/ with corresponding characters. Similarly, /k/ has also been avoided in many cases such as *siksa*: which is translated as 式叉 /ʃʒ:tʃhā:/.

Patterns of Sound Substitution

Buddhist Terms have undergone major phonological changes when absorbed by Chinese language. Due to the unavailability of sound ranges such as pre-nasalized sounds, trill sounds and voiced aspirated sounds such as b^h , d^h , $ḍ^h$, $ḍʒ^h$, g^h which are dominant sounds in Sanskrit, substitution of sounds has been a difficult process. However, eight key patterns of sound substitution can be observed in Indic Chinese translations:

1. Indic 'la, ra, lə and ɭə' are substituted by 'l'. eg. Mandala 曼拿罗 /mænna:luó/, Mudrā 母陀罗 /muthuoluo/, Vihāra 毗诃罗 /pihəluo/, Mantra 满怛罗 /manta:luo/, Māra 磨罗 /mo:luo/, Rādhā 罗陀 /luothuo/, Rāhu 罗侯 /luoxou/, Rāma 罗摩 /luomo:/, Lalanā 罗罗拿 /luoluna:/, Yashodarā 耶戍达罗 /jeɕutaluo/, Sarva Bala 萨婆婆罗 /saphopholuo/, Sakala 西伽罗 /eiceialuo/, Dharma 达哩摩多 /talimotuo/, Dharmapāla 达摩波罗 /tamopoluo/, Thushāra 都沙罗 /toʊ ʃaluo/, Pathra 钵多罗 /po:tʊoluo/, As ura 阿叔罗 /a:ʃuluo/, Arhat 阿罗汉 /a:luoxan/, Dharani 陀罗尼 /thuoluo/ni/, Arjuna 额罗那 /əluna/, Pāramithā 波罗密 /bo:luomi:/, Indra 因陀罗 /jintʊoluo/, Brahmin 波罗门 /bo:luomən/, Sutra 修多罗 /eioʊtuoluo/, Dharani 陀罗尼 /thuoluo/ni/, Uthpala 优钵罗 /joʊpoluo/, Srāvaka 舍罗婆迦 /ʃəlʊopotēia/, Sāgara 沙竭罗 /ʃa:jieluo/, Chandra 旃达罗 /tʃanda:luo/
2. 'θə' is substituted by 'dʊə': Samantha 三曼多 /sanmantʊə/, Pretha 必哩多 /bilitʊə/, Siddhartha 悉达多 /ei:tatʊə/, Guptha 掘多 /teʊetʊə/, Dhutha 杜多 /tu:tʊə/, Revatha 梨婆多 /li:phitʊə/, Dharmathā 达哩摩多 /ta:li:mi:tʊə/, Bhutha 部多 /buʊtʊə/, Thathā 多他 /dʊətha/, Thathāgatha 怛他揭多 /ta:tha:teietʊə/
3. 'k' sound is often substituted by 'j'. eg. Giri 姑利 /teili/, Sri Guna 尸梨伽那 /ʃɭliteiana/, Pudgala 富特伽耶 /fʊ:thəeiaje/, Guptha 掘多 /teʊetʊə/, Mugalan 目犍连 /mʊteianliæn/, Mahanāga 摩呵那伽 /mohəna:teia/, Ganga 殑迦 /teʰiŋteia/, Samgha 僧伽 /səŋteia/, Ghantā 伽陀 /teiathuo/, Yogi 瑜珈士 /jʊteiaʃɭ/, Magadha 摩揭陀国 /mo:teietʊokʊə/, Gatha 偈陀 /tei:thuo/, Āganthuka 阿健多 /a:teiantʊə/

Bhagavat 薄伽梵 /paoteianfan/、Garuda 迦楼罗 /teialoʊlo/、Sāgara 沙竭罗 /ʂa:jielʊo/

4. Sound ‘v’ is usually substituted by ‘b’ or ‘p’. eg. Seetha Vana 尸多婆那 /ʂɪtʊopona/、Vishnu 毗湿奴 /piʂɪniʊ/、毘忸 /piniʊ/、Deva 提婆 /thiphʊ/、Ghāndarva 捷閼婆 /teʰianthapʊ/、Mānava 摩那婆 /mona:phʊ/、Jetavana 移多婆那 /ji:tʊophona/、Lichchavi 梨车毘 /litʂʰəphi/、Revatha 梨婆多 /liphotʊ/、Pāndava 槃荼婆 /phanʂʰaphʊ/、Visesa 毘尸迦 /phiʂɪteia/、Vinaya 毘尼耶 /pinije/、Vipula 毘佛略 /phifolyʊ/、Vihāra 毗诃罗 /pihəlʊo/、Veda 皮陀 /phi:thʊo/、Sarva Bala 萨婆婆罗 /saphophʊo/、Upavāsa 邬波婆裘 /wuphophʊa:/、Veda 鞞阇 /piŋthʊo/、Vinā 批那 /phina/、Nirvāna 涅槃那 /niephanna/、Srāvaka 舍罗婆迦 /ʂɪlʊophoteia/

5. ‘ḍ’ is often replaced by ‘t’: Buddha 佛陀 /fo:thʊo/、Nanda 难陀 /nanthʊo/、Chandāli 旃陀罗家女 /tʂanthʊolʊoteianyʊ/、Muchilinda 林陀 /linthʊo/、Mudrā 母陀罗 /mʊthʊolʊo/、Veda 皮陀 /phithʊo/、Veda 鞞阇 /piŋthʊo/、Indra 因陀罗 /jinthʊolʊo/、Dāna 陀那 /thʊona/、Dharani 陀罗尼 /thʊolʊoni/、Dāna 檀那 /thanna/、Magadha 摩揭陀国 /mo:teiethʊokʊo/、Nidāna 尼陀那 /nithʊona/

6. The syllable ‘ma’ is substituted often with ‘mo’: Samādhi 三摩提修 /sanmothieiu/、Kāma 哥摩 /kəmo:/、Mallikā 摩利 /moli/、Māyā 摩邪 /moeie/、Mahānāga 摩呵那伽 /mohənateia/、Mahā Prajāpathi 摩呵波闍拔提 /mohəphotʊphothi/、Mahāmāyā 摩贺摩耶 /mohəmoje/、Yama 炎摩 /jənmo:/、Māgha 磨迦月 /moteiajue/、Māra 磨罗 /molʊo/、Rāma 罗摩 /lʊomo:/、Dharmathā 达哩摩多 /talimotʊo/、Dharmapāla 达摩波罗 /ta:mo:po:lʊo/、Magadha 摩揭

陀国 /mo: teiethʊokʊo/、Mahendra 摩显陀 /mociantʊo/

7. ‘p’ substitutes ‘b’ eg. Ānāpānasathi 安般 /anpan/、Uposatha 布沙他 /pʊʂa:tha:/、Pretha 必哩多 /pilitʊo/、Pāpa 播波 /bobo/、Pātali 波吒梨 /botʂali/、Stupa 窣堵波 /sʊtʊpo/、Padma 跋纳摩 /ponamo/、Dharmapāla 达摩波罗 /tamopolʊo/、Upavāsa 邬波婆裘 /wʊpophʊa:/、Pātra 钵多罗 /potlʊolʊo/、Kalpa 劫波 /teiepo/、Paramithā 波罗密 /polʊomi/、Upāsaka 优波娑迦 /jʊpʊsʊoteia/、Uthpala 优钵罗 /jʊpʊolʊo/、Stupa 窣堵波 /sʊtʊpo/

8. Vowel sound ‘a’ is substituted by ‘ʊo’ or ‘o’. eg. Samantha 三曼多 /sanmantʊo/、Arhat 罗汉 /lʊohan/、Sal 娑罗树 /sʊolʊoʂu/、Sādhu 娑度 /sʊotʊ/、Kanthaka 建多歌 /teiəntʊokə/、Pretha 必哩多 /bilitʊo/、Siddhārtha 悉达 /ei:tatʊo/、Shāntha 扇多 /ʂantʊo/、Kolitha 拘利多 /teʊlitʊo/、Guptha 掘多 /teʊetʊo/、Ānanda 阿难陀 /nanthʊo/、Chandāli 旃陀罗家女 /tʂanthʊolʊoteianyʊ/、Rāhula 曷罗怙罗 /xəlʊoxʊlʊo/、Mandala 曼拿罗 /mænna:luó/、Dutha 杜多 /tu:tʊo/、Muchilinda 林陀 /linthʊo/、Jetavana 移多婆那 /ji:tʊophona/、Revatha 梨婆多 /liphotʊo/、Mudrā 母陀罗 /mʊthʊolʊo/、Vihāra 毗诃罗 /pihəlʊo/、Mantra 满怛罗 /mantal ʊo/、Māra 磨罗 /molʊo/、Skandha 私建陀 /sɪtʰeiantʊo/、Rādhā 罗陀 /lʊotʊo/、Lalanā 罗罗拿 /lʊolʊona/、Yashodarā 耶戍达罗 /jeeʊtalʊo/、Sarva Bala 萨婆婆罗 /sapopolʊo/、Sakala 西伽罗 /xiteialʊo/、Dharmathā 达哩摩多 /talimotʊo/、Dharmapāla 达摩波罗 /tamopolʊo/、Bhutha 部多 /putʊo/、Thushāra 都沙罗 /toʊʂalʊo/、Pretha 钵多罗 /po:tʊolʊo/、Asura 阿叔罗 /a:ʂulʊo/、Ārya 阿罗耶 /alʊoje/、Dharani 陀罗尼 /thʊolʊoni/、

Gāthā 伽陀/teiathɔo/, Indra 因陀罗/jintɔolɔo/,
 Vaira 和夷罗/həjilɔo/, Brahmin 波罗门/bo:lɔomən/,
 Dāna 陀那/thɔona/, Sutra 修多罗 eiɔtɔolɔo/,
 Uthpala 优钵罗/joɔpolɔo/, Srāvaka 舍罗婆迦
 /ʃɛlɔophoteia/, Magadha 摩揭陀国/mo:teiethɔokɔo/,
 Yakshini 罗刹女/lɔotʃhanyu/, Gāthā 偈陀/tei:thɔo/,
 Āganthuka 阿健多/a:teiantɔo/, Nidāna 尼陀那
 /nithɔona/, Thathāgatha 怛他揭多/tathateietɔo/,
 Buddha 佛陀/fo:thɔo/, Garuda 迦楼罗/teialoɔlɔo/,
 Sāgara 沙竭罗 /ʃa:jielɔo/, Chandra 旃达罗
 /tʃanda:lɔo/, Arbuda 額部陀/əpɔtɔo/

Phonology of free translated Buddhist terms of Chinese is similar to the native Chinese phonology. The number of syllabic consonants is higher than that of the transliterated Buddhist terms. The contrast between the phonology of Indic languages and Mandarin Chinese is clearly reflected in the phono-semantic matchings.

Suprasegmentally Features

A syllable of Chinese language consists of three components, namely the initial (consonant), final (vowel), and the tone. According to Třísková there are 12 different syllable constituents in Chinese language. V (啊), CV (马), VV (爱), VC (安), GV (呀), GVV (外), GVC (盐), CVV (买), CVC (满), CGV (昧), CGVV (快), and CGVC (面) (Třísková, 2011). As none of these structures contain consonant clusters, they can be contrasted with the Sanskrit syllable structures which contain heavy consonant clusters. The term Sutra /su:trə/ consists of CVCCV structure. Its Chinese transliteration 修多罗 /eəu tʰo: lʰo/ consists of the CVCVCV syllable structure.

The most distinctive syllabic feature of Buddhist terms in Mandarin Chinese is the simplification process. For instance, the simplification of 佛驮 /fotɔo/ as 佛/fo/, Arahant 阿罗汉/alɔoxan/ as 罗汉 /lɔoxan/, Anapanasati 安那般那念/annapannaniæn/ as 安般/anpan/, Ananda 阿难陀/ananthɔo/ as 阿难 /anan/, Bodhisattva 菩提萨埵/phɔthisatɔo/ as 菩萨 /phɔsa/, Stupa 窣堵波/sɔtɔpo/ 塔, and Pātra 钵多罗 /potɔolɔo/ as 钵 /po/.

Although the early Indic translators due to their lack of the phonological rules of classical Chinese and unavailability of corresponding terms in Chinese, translated terms in sutras using the sound method, latter translators simplified these long words or re-translated them with available Chinese terms.

The three dental sibilant sounds z, c, s and four retroflex sounds zh, ch, sh, and r account for a special phonological occurrence in Mandarin Chinese which are called 'syllabic consonants' as explained in a previous section. Although transliterated borrowings from other languages such as 三明治 /sænmiəŋtʃz:/ for sandwiches, and 迪斯科/ti:sz:kʰs:/ for disco, 镭射 /léiʃè:/ laser words contain retroflex sounds, while in many of the Buddhist transliterations there are no retroflex endings without a vowel. Chinese Buddhist transliterations often end with a vowel or vowel cluster. The number of nasals in the sample account for the highest out of all phonemes. Nasalization is a distinctive feature of Indic languages including Sanskrit, Devanagari, and Magadhan which are the major contributors to Chinese loanwords. Nasalization and pre-nasalization are common features of most Indic script languages such as Sinhalese, Tamil, Bengali and Telugu. It could be assumed that the nasalization and pre-nasalization

factors have affected in the nasalization of Chinese language sounds. As in the contribution of Indic borrowings in the disyllabification of Chinese lexicon, the abundance of pre-nasalized sounds and nasals in Indic languages would have affected the na-salization process in Chinese phonology.

The number of syllables of Buddhist loan words in Chinese is generally much higher than in classical Chinese. As mentioned in section 2, the classical Chinese lexicon was monosyllabic and single in character. The Buddhist vocabulary, especially transliterations range from 1 to 15 syllables in general and in some cases, it even exceeds this number. For example, the term 般若波罗蜜多/ěāupō:zǐ:pō:luó:mì:tuō:/ meaning pragna-paramita is considered as a single word in the Chinese language which contains seven syllables. the number of syllables in free translations is much lower than the transliterations. Completely or partially Sinicized free translations usually consist of two syllables.

Conclusion

Buddhist terms in Chinese language have evolved hand in hand with the development of Chinese language and the two have had a mutual effect on each other for centuries. Coexistence of Buddhism, Confucianism, and Taoism was a strong reason behind the fusion of Buddhist vocabulary with the native Chinese vocabulary, often adopting linguistic features from each other. Buddhist vocabulary has had a phonological influence on Chinese language on segmental and supra-segmental levels. The analysis has shown that the Buddhist translations possess unique phonological features which are neither completely Chinese nor Indic.

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