Old Chinese 'egg'

More evidence for consonant clusters

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This paper attempts to reconstruct the onset of the word for 'egg' in Old Chinese (OC). Based solely on Middle Chinese (MC), *rˤonʔ would be the default OC reconstruction. However, philological evidence such as a phonetic relationship (also called *Xiéshēng* connections), annotations, and variant characters show the relationship between the word for 'egg' and words with the velar onset in MC. (Interestingly, most of them belong to the so-called Division-II rhyme in MC.) In addition, comparative data from Proto-Min (*lh-), Proto-Hmong-Mien (*qr-), and Proto-Tai (*qr-) indicate the possibility of reconstructing the consonant cluster *k.rˤ- for the onset of the word for 'egg'. In § 4, I shall provide some additional evidence from the excavated documents, such as oracle bone inscriptions 甲骨文, Chǔ bamboo slips 楚簡, and Qín bamboo slips 秦簡. In Chǔ bamboo slips, the characters having 絲 *luán* as a phonetic element represent the words having onset *k-, such as 關 *guān*, 卷 *juǎn*, and 宦 *huàn* (seen in *Ān Dà Jiǎn* 安大簡, which is also categorized as Chǔ bamboo slips 楚簡). Furthermore, the character 灤 *luán*, which has 絲 *luán* as an additional phonetic element, represents the word for 'egg' on Qín bamboo slips 秦簡. As noted above, the character 絲 *luán* can represent the words having onset *k-. This all constitutes evidence supporting the reconstruction of the word for 'egg' with the initial consonant cluster *k.rˤ- in OC, confirming the reconstruction of T'ung-ho Tung (1944) and Baxter & Sagart (2014).

Keywords: Old Chinese (OC), Proto-Min, excavated documents, Chǔ bamboo slips

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1. Introduction: Early studies

The two pronunciations for the word meaning 'egg' in Middle Chinese (MC) have been recorded as *lwaX* and *lwanX*.[1] The character for 'egg' *luǎn* 卵 does not necessarily bear a phonetic relationship (also called *Xiéshēng* connections) with other characters in Old Chinese (OC) classical texts.[2] In addition, it does not appear as a rhyme in the *Shijing* (*Book of odes*) or other OC poetry. Based on the MC, we only know that its initial came from a liquid, and its rhyme came originally from OC Gē rhyme group 歌部 and the Yuán rhyme group 元部. Therefore, previous studies reconstructed the word for 'egg' *luǎn* as *luanX.[3] Some early reconstructed forms are presented in Table 1.

Table 1. Previous studies: Comparison of reconstructed forms

Middle Chinese	Karlgren (1957)	T'ung-ho Tung (1944)	Fagao Zhou (1984)	Fang-kuei Li (1971)
lwanX	*lwân	*lwân (k-)	*lwan	*luanX

Recent studies have proposed some additional hypotheses, such as the rounded vowel hypothesis *-on, L-type hypothesis, and the hypothesis of pharyngealization *C^{ʕ}- for Type-A onsets. Following these perspectives, *l- is replaced with *r^{ʕ}-, and the *-uan with *-on; therefore, the reconstructed form *luanX could be rewritten as *r^{ʕ}onʔ.[4] Meanwhile, Baxter & Sagart (2014) reconstructed the consonant cluster *k.r^{ʕ}- for the word for 'egg'.

In §2, I summarize the reconstruction based on philological evidence. Subsequently in §3, I discuss the initial for the word for 'egg' based on comparative data. In §4, I investigate the characters representing 'egg', seen in the excavated documents such as Chǔ bamboo slips 楚簡 and Qín bamboo slips 秦簡.

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1. In this paper, the MC notation is based on Baxter & Sagart (2014). *Guǎngyùn* 廣韻, which is a rhyme book, provided two *fǎnqiè* 反切 spellings, as 盧管切 and 郎果切.

2. The *Jíyùn* 集韻, which is a rhyme book composed in 1037, has a character 愍 *lwánX* and *lwonX*. The latter might come from the Wén rhyme group 文部.

3. Fang-kuei Li (1971).

4. Schuessler (2007: 369) reconstructed it as *rônʔ (Type-A). Schuessler (2007) marks Type-A syllables with a symbolic circumflex accent. As for the rounded vowel hypothesis, see Akitani & Nohara (2019: 15–25).

2. Reconstruction based on philological evidence

As shown in Table 1, T'ung-ho Tung 董同龢 (1944: 203) proposed the possibility of reconstructing *k- for the onset. This is because the character *luǎn* 卵 seems to have relationships with characters and words having velar onsets, as shown in (1) and (2):

(1) a. 濡魚，卵醬實蓼
'A fish was stewed, with smart-weed and egg sauce.'
(*Lǐjì* 禮記, Neìzé 17 內則・卷第十七)

b. 卵讀為鯤也。鯤，魚子，或作 鸛。
'The character *luǎn* 卵 'egg' represents the word *kūn* 鯤. *Kūn* 鯤 is a 'fish egg'. It is also written as *kwaen* 鸛.'[5]
(Xuán Zhèng's 鄭玄 (127–200) annotation)

(2) a. 流沙之西，丹山之南，有鳳之丸
'There is a (Chinese) phoenix's *wán* 丸 meaning 'pellet, ball' in the west of Liusha and the south of Dashan.'
(*Lǚshì Chūnqiū* 呂氏春秋, Běnwèi 14 本味・卷十四)

b. 丸，古卵字也。
'The character *wán* 丸 is an old form of the character *luǎn* 卵.'
(Yôu Gāo's 高誘 (168–212) annotation)

As we can see, the character *luǎn* 卵 seems to be related to characters (鸛 *guān* and 丸 *wán*) and words (鯤 *kūn*) having the velar onsets in MC, which came from the velar and uvular onsets, as shown in Table 2.

Table 2. Related words in (1) and (2)

	Mandarin		Middle Chinese		Old Chinese	Baxter & Sagart (2014)	Meaning
卵	*luǎn*	<	*lwanX*	<	*rˤonʔ	*k.rˤorʔ	'egg'
鯤	*kūn*	<	*kwon*	<	*kˤun	*[k]ˤu[n]	'fish egg'
鸛	*guān*	<	*kwaen*	<	*kˤron	*[k]ˤro[n]	'fish egg'
丸	*wán*	<	*hwan*	<	*ɢʷˤan	*ɢʷˤ[a]n	'ball'

In addition to these annotations, Qīng scholar Yùcái Duàn 段玉裁 (1735–1815) mentioned that the character 廾 (卅) *guàn* is an old form of the character 卵 *luǎn*, and it was read as *kwaenH* in MC; see the annotation of *Shuōwén jiězì zhù* 說文解字注 in (3) and (4):

5. *Kwaen* represents the sound of 關 *guān* in MC.

(3) 𠂤：古文卵。古患切。
'𠂤 *guàn* is an old form of the character 卵 *luǎn*. Its *fǎnqiè* spelling is *kuX-hwaenH*.' (*Shuōwén jiězì zhù* 說文解字注・Luǎn bù 卵部・13b 十三篇下)

(4) a. （患）...，𢘑：古文从關省。
'(The character 患 *huàn* 'calamity') ..., the character 𢘑 is an old form of the character 患 *huàn* 'calamity', and it is composed of a reduced form of the character 關 *guān*.'
(*Shuōwén jiězì* 說文解字・Xīn bù 心部・10b 十篇下)

b. 以關省為聲也。關从𢆶聲。𢆶从𠂤聲。𠂤者从說文卵。
'It has a reduced form of the character 關 *guān* as a phonetic. 關 *guān* is composed of a phonetic 𢆶. 𢆶 is composed of a phonetic 𠂤 *guàn*. It can be explained that 𠂤 *guàn* is the character 'egg'.'
(*Shuōwén jiězì zhù* 說文解字注・Xīn bù 心部・10b 十篇下)

As demonstrated in (4a) and (4b), the old form of the character 患 *huàn* (𢘑) originally contained a reduced form of the character 關 *guān*, and it has 𠂤 *guàn* as a phonetic. It appears that 患 *huàn*, 關 *guān*, 𠂤 *guàn*, and 卵 *luǎn* are likely to have had similar readings at the time. We also can find the character 𠂤 *guàn* in the *Hànjiǎn* 汗簡, which is a dictionary composed in the Song dynasty, as follows:

(5)  卵，力管切。
' is an old form of the character 卵 *luǎn*, and its *fǎnqiè* spelling is *lik-kwanX*.' (*Hànjiǎn* 汗簡・6 第六・73 七十三頁)

According to the *Hànjiǎn*, 𠂤 *guàn* is an old form of the character *luǎn* 卵 'egg' as Yùcái Duàn noted in his dictionary *Shuōwén jiězì zhù*.[6]

In addition, the *Shuōwén jiězì zhù* noted that the ancient word for 'egg' is pronounced *guǎn* 管 'tube'; see the annotation for the character 卵 *luǎn* in (6):

(6) (卵...)，糸部綰下云，讀若雞卵。蓋古卵讀如管也。
'The character 綰 *wǎn* is noted as being pronounced (or meaning) *kej-lwanX* 雞卵 meaning 'chicken egg'. I conclude that the ancient word for 'egg' sounded like *guǎn* 管 meaning 'tube'.'[7]
(*Shuōwén jiězì zhù* 說文解字注・Luǎn bù 卵部・13b 十三篇下)

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6. According to *Shuōwén* 說文, 𠂤 *guàn* is an old form of the character *kuàng* 礦 meaning 'mine, mineral'; however, 𠂤 *guàn* and 礦 *kuàng* do not have a phonological relationship, but rather a semantic one (might be a semantic loan). Xuán Zhèng noted that 𠂤 *guàn* is believed to be related to 礦 *kuàng*, because 礦 *kuàng* has not molded yet (just like 'egg'). In addition, as 礦 *kuàng* and 黃 *huáng* had *-ang, whereas 𠂤 *guàn* had a rounded vowel and a dental nasal coda like *-on, they cannot be related etymologically.

7. The notation of 綰 *wǎn* in the *Shuōwén jiězì* is as follows: "綰，惡也。絳也。从糸官聲。一曰綃也。讀若雞卵。('綰 *wǎn* means 'evil, dark red'. It is composed of a semantic element

As Baxter (1992: 265) noted, it is not clear whether *jī* 雞 is a part of the pronunciation. If it is, then 卵 *luǎn* must have been read as 雞卵 *kʷe-rʷonʔ (> *kej-lwanX*).

Based on these notations, it appears that 卵 *luǎn* originally had a velar initial in OC. Baxter (1992: 265) reconstructed it as *g-ronʔ. The related words and characters are summarized in Table 3.

Table 3. Related words in the *Shuōwén jiězì*

	卵 *luǎn*	廾 *guàn*	患 *huàn*	關 *guān*	綰 *wǎn*	管 *guǎn*	雞卵 *jī luǎn*
Middle Chinese	*lwanX*	*kwaenH*	*hwaenH*	*kwaen*	*ʔwaenX*	*kwanX*	*kej-lwanX*
Initial	*l*	*k*	*h*	*k*	*ʔ*	*k*	*k-l*
Division	I	II	II	II	II	I	IV-I

These words and characters have velar or glottal stops for onsets. Moreover, what interests me is that most of them in Table 3 belong to the so-called Division-II rhyme 二等韻 in MC. It is believed that Division-II rhyme reflects OC *-rV-. The -r- in the medial position affects the quality of the main vowel, thus: *-ra > *-rae* [ræ] > *ae* [æ] (**r*-coloring). Specifically, it is completely plausible that these words and characters annotated by *luǎn* 卵 'egg' reflect *r- (> *l-*) in OC, and vice versa.

The question as to whether these annotations are relevant to reconstructing OC words has not been answered, since these notations might not be old enough to apply to the study of OC. However, as long as we refer to the philological data, the word for 'egg' must be reconstructed as *K.rʷonʔ ("K" represents the velar and the uvular stops). Additionally, as annotated by Yùcái Duàn 段玉裁, the characters *guàn* 廾 and *luǎn* 卵 seem to have been descended from the same origin (廾 *guàn* is the old form of the character 卵 *luǎn*). Since the character *guàn* 廾 (丱) had a falling tone (Qù shēng 去聲) in MC, it must be reconstructed as *kʷron-s (> *kʷruan-s > *kwaenH* > *guàn*). If they both came from the same origin, then the character *luǎn* 卵 must have also had an initial consonant cluster.

In the following section, we shall investigate a new reconstruction by applying comparative evidence and loan words.

糸 *sì* and a phonetic element 官 *guān*. It also means 'raw silk'. Read like *kej-lwanX* meaning 'chicken egg'.')" (*Shuōwén jiězì zhù* 說文解字・Sī bù 糸部・13a 十三篇上). Incidentally, this annotation indicates that the character 綰 *wǎn* may have had a uvular onset *q- in OC (might be in the Late Old Chinese).

3. Reconstruction methods in Chinese linguistics

3.1 Reconstruction based on comparative evidence and loan words

In the early twentieth century, Bernhard Karlgren initially reconstructed MC and OC. He reconstructed the former based on the philological evidence of the categories of the *Qie yun* 切韻, a rhyming dictionary composed in the Sui dynasty (581–618). In addition, he used data from Chinese dialects, Sino-Japanese, and Sino-Korean readings of characters.

Although most scholars have believed that modern Chinese dialects are descended from a unitary MC, it is assumed that Min dialects, which are dialects spoken in Fujian Province 福建, preserves many features descended from pre-MC (or OC). Some data from Min dialects are not attested in MC. However, in his reconstruction of OC, Karlgren did not make better use of the data from Min to reconstruct OC. In contrast, scholars such as Benedict (1987), Starostin (1989), and Pulleyblank (1973) have attempted to apply comparative methods to OC phonology. These studies were mainly based on Proto-Min, which had been reconstructed by Jerry Norman.

Norman (2005) proposed that Proto-Min *lh- came originally from *Cl- (perhaps *kl-?) based on correspondences between Chinese loans and Proto-Hmong-Mien (also called Miao-Yao) and Proto-Kra-Dai forms. Subsequently, Baxter & Sagart (2014) published a book-length study of OC phonology that emphasized the importance of applying the comparative method to the study of OC. Besides Proto-Min, they used early loanwords from Chinese to Hmong-Mien and Vietic languages. These loans show the possibility of reconstructing complex onsets for OC.

Since Chinese has been well documented, most scholars still believe that the comparative method is not always useful in the study of OC phonology. Effectively, there are some words for which scholars cannot rely on comparative methods. For example, based solely on the dialect data, the word meaning 'west' does not allow the reconstruction of any segment, except a dental fricative *s-. However, based on excavated documents such as oracle bone inscriptions in the Shang dynasty and bamboo slips dating back to the Warring States period (around 3 BC), it is believed to have a cluster *sn- in its onset.[8]

Some words lack traditional evidence, such as rhyme data, Xiéshēng connections, and phonetic loans, while others lack comparative evidence. In any case, we

8. See Unger (1990), Sagart (2004), and Nohara (2018). We might also be able to apply data from Tibeto-Burman languages.

need to make more and better use of philological evidence, such as classical documents, early excavated documents, and comparative data.

3.2 Proto-Min

I fortunately have interesting data from the Min dialects to help in reconstructing the word for 'egg'. As shown in Table 4, in Northern Min (Mǐnběi 閩北) and Shàojiàng dialects (邵將區), the words having *l-* in MC (*láimǔ* 來母) have fricative onsets such as dental [s], postalveolar [ʃ], or lateral fricatives [ɬ]:

Table 4. 'Egg' in Min dialects[a]

	Fúzhōu	**Xiàmén**	**Cháozhōu**	**Jiànyáng**	**Jiàn'ōu**	**Zhēnqián**	**Shàowǔ**	**Zhūkǒu**
'egg'	lauŋ^{6}	nŋ^{6}	nɯŋ^{4}	suŋ^{5}	sɔŋ^{6}	ɬuiŋ^{6}	son^{3}	ʃuan^{3}

a. Fúzhōu 福州, Xiàmén 廈門, Cháozhōu 潮州: Peking University (2003), Jiànyáng 建陽: Norman (1969), Jiàn'ōu 建甌: Peking University (2003), Zhēnqián 鎮前: Akitani (2008), Shàowǔ Hépíng 邵武和平: Norman (1982; 1995), Zhūkǒu 朱口: Akitani (2011). The data from Northern Min and Shàojiàng dialects are shown with gray background in Table 4.

Not all words with *l-* in MC have fricative onsets in Northern Min, according to Rúlóng Lǐ (1983: 270), only 31 words have fricatives instead of [l]. Even basic words such as *lái* 來 'come' are pronounced with [l] in all Min dialects; see Table 5.

Table 5. 'To come' in the Min dialects

	Fúzhōu	**Xiàmén**	**Cháozhōu**	**Jiànyáng**	**Jiàn'ōu**	**Zhēnqián**	**Shàowǔ**	**Zhūkǒu**
'come'	li^{2}	lai^{2}	lai^{2}	le^{2}	lɛ^{5}	lœ^{2}	li^{2}	li^{2}

As presented in Tables 4 and 5, it appears that words having *l-* in MC must have at least two origins; in one group, the initial changed to l- in MC and Southern Min (Mǐnnán 閩南) and Eastern Min (Mǐndōng 閩東), but into fricatives in the other group in Northern Min dialects, Central Min (Mǐnzhōng 閩中), and Shàojiàng dialects. Mei & Norman (1971) described this development as shown in Figure 1:

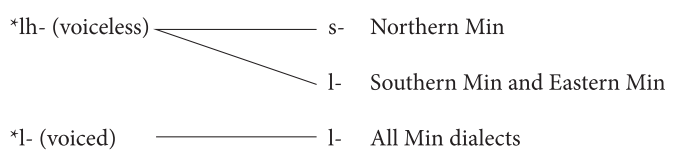

Figure 1. Development of *lh- and *l- (Mei & Norman 1971)

Since the word for 'egg' show a fricative [s] in Northern Min (see in Table 4), Norman (1973: 231–232) reconstructed Proto-Min 'egg' as *lhon^{toneB}.[9] Norman (2005: 1–5) also assumed that the contrast of *l- and *lh- might reflect different origins and indicated that *lh- comes from an earlier cluster consisting of a voiceless stop plus *l-. For example, the word *luó* 蘿 meaning 'basket' in Jiànyáng 建陽 is pronounced [sue^2], whereas it is believed to have had the consonant cluster *kl- in Proto-Kra-Dai[10] as presented in Table 6.

Table 6. Reflexes of *lh and *kl- in Hmong-Mien and Kra-Dai (Norman 2005)

	Fúzhōu	**Jiànyáng**	**P-HM**	**P-KD**
luó 蘿 'basket'	lai^2	sue^2		*kl-
luó 螺 'snail'	løy^2	sui^2	*klw-	
lí 笠 'bamboo hat'	liʔ^8	se^8		*kl-

Following Norman's description, Baxter & Sagart (2014: 91–92) replaced Norman's *lh- with *C.r- and argued that: "OC *C.r- was actually still *C.r in Proto-Mǐn, and that in Northern Mǐn, *r- developed a fricative variant, perhaps [z] or [ʐ], when a voiceless preinitial was present: after the preinitial was lost, this fricative devoiced to give the [s] initial."

As seen above, earlier studies such as the one by Mei & Norman (1971) have not used data showing a postalveolar fricative [ʃ] and a lateral fricative [ɬ]. ([ɬ] might be a variant of [s]). Including these data, Akitani (2011) reconstructed *ʃ- for Proto-Northern Min, Shàojiàng, which he also presumed came originally from Proto-Min *r-,[11] as in Table 7.

9. B represents the tonal category.

10. The Proto-Hmong-Mien and Proto-Kra-Dai data in Norman (2005) were derived from Fǔshì Wáng 王輔世 & Zōngwǔ Máo 毛宗武 (1995) and Mǐn Liáng 梁敏 & Jūnru Zhāng 張均 (1996).

11. Akitani (2011) also mentioned the possibility of reconstructing four liquid onsets for Proto-Min, *r-, *r̥-, *l-, and *l̥-. The voiceless liquids *r̥- and *l̥- are reconstructed based on tonal development. These words have the so-called Yīn tone 陰調 (upper-register tone, typically derived from a voiceless onset) in the Eastern Min dialects (Mǐndōng 閩東), for example: *lù* 露 'dew, disclose' and *lì* 利 'sharp, profit' are Yīn Qù tone 陰去 in the Eastern Min dialects. *Lù* 露 in Shàojiàng has [ʃ] with Yīn Qù tone 陰去. Therefore *lù* 露 is reconstructed as *r̥-, *lì* 利 as *l̥-. Also see Shen (2011).

Table 7. Development of 'egg' and 'come' in Northern Min and Shàojiàng dialects

***luǎn* 卵 'egg'**	**P-Min**						
Northern Min	*r-	>	*ʒ-	>	*ʃ-	>	s-
Shàojiàng	*r-	>	*ʒ-	>	*ʃ-	>	ʃ-
***lái* 來 'come'**	**P-Min**						
All Min dialects	*l			>			l-

These studies revealed that there have been at least two liquids in Proto-Min: *r- (Norman's *lh-) and *l-, the former came from *C.r-, and the latter from *r- in OC.[12] Similarly, we assume that the initial of the word for 'egg' must have come from *r-; moreover, this *r- might have come originally from the consonant cluster *C.r- such as *k.rˢ-. See Table 8 for the development of *k.rˢ-.[13]

Table 8. Development of *k.rˢ- ('egg')

	Non-Min Chinese	**Northern Min, Central Min, Shàojiàng**	**Eastern Min, Southern Min**
Old Chinese	*k.rˢ-	*k.rˢ-	*k.rˢ-
loss of *k-	*rˢ-	*rˢ-	*rˢ-
lenition (fricative)	–	*z, *ʑ, *ʒ-	–
devoicing	–	*ʃ-	–
*r- > *l-*	l-	–	l-
result	l-	s, ʃ-, ɬ-	l-

In the following section, we consider data from other languages.

12. However, the word 'come' 來 could not have the singleton onset *rˢ-; based on the Xiéshēng connections with *mài* 麥 'wheat', it must have had the clusters like *mə.rˢək. We have to leave the question open for now.

13. As Baxter & Sagart (2014: 91) mentioned, lenition (fricative) might occur earlier, before the loss of *k-; however, we assume that the existence of two liquids *r- and *l- in Proto-Min caused lenition (fricative) in Northern Min, the loss of *k- comes first in Table 8. Also see Akitani (2011: 123).

3.3 Proto-Hmong-Mien

It is assumed that early loan words in other languages, such as Hmong-Mien and Kra-Dai languages, provide additional evidence for reconstructing OC.[14] Mei & Norman (1971) and Norman (2005) indicated that Proto-Min *lh- (*r-) seems to correspond to consonant clusters in Proto-Hmong-Mien and Proto-Kra-Dai. However, they did not compare the word for 'egg'; see Table 6. Meanwhile, Baxter & Sagart (2014) used the data from Proto-Hmong-Mien and reconstructed it as *k.rˤorʔ.[15] The Proto-Hmong-Mien data in Baxter & Sagart (2014) were derived from Ratliff (2010), who reconstructed the Proto-Mien word for 'egg' as *kləuC and reconstructed Proto-Hmong as *qæwC, since Proto-Mien *kl- usually corresponds to Proto-Hmong *ql- ({*kl-: *ql-}), Ratliff (2010) regarded it as exceptional. Conversely, Ostapirat (2014: 352) reconstructed Proto-Hmong-Mien 'egg' as *qr- rather than *kl-,[16] as shown in Table 9.

Table 9. Proto-Hmong-Mien reconstructed by Ostapirat (2014: 352)[a]

		Miao (Hmong)			Yao (Mien)			P-HM
	Tone	**Dn**	**Zd**	**Yh**	**Sj**	**Lx**	**Zm**	
'road'	B	ke	kæ	ki	klu	kjau	tsu	*kr-
'egg'	C	qe	hæ	ki	klu	kjau	tsu	*qr-

a. Dn: Dananshan, Zd: Zongdi, Yh: Yanghao, Sj: Sanjiang, Lx: Luoxiang, Zm: Zaomin

Based on data from Proto-Hmong-Mien, the word for 'egg' in Chinese must have had a cluster. The problem is that tone categories of the word for 'egg' in Chinese and Hmong-Mien do not correspond to one another.

In addition to the reconstruction, Ostapirat (2014: 357) investigated the borrowing direction of loanwords. It has been believed that Chinese is a donor language, while other languages conversely are borrower languages. Ostapirat (2014: 357), however, pointed out that the words 'dog', 'to cross over', 'wide', and 'cucumber,' in Chinese were borrowed from Hmong-Mien languages as presented in Table 10.

14. Baxter & Sagart (2014: 34–37).

15. Baxter & Sagart (2014: 163) used Proto-Min *lh- to reconstruct *k.rˤ- as well.

16. As for the onset *kl- (Ratliff 2010), it was replaced with *kr-; see Ostapirat (2014: 352). Ostapirat (2014) reconstructed *kl- for the set of words that show -l- in most dialects, such as the 'dog' word.

Table 10. Loans from Hmong-Mien

	Graph	Tone	P-HM	OC		MC		Mandarin
'cucumber'	瓜	A	*klʸa	*kʷˤra	>	*kwae*	>	guā
'to cross over'	過	C	*klʸai	*kʷˤaj-s	>	*kwaH*	>	guò
'wide'	廣	B	*klʸaŋ	*kʷˤaŋʔ	>	*kwangX*	>	guǎng
'dog'	狗	B	*klu	*Cə-kˤroʔ	>	*kuwX*	>	gǒu

Based on the comparative data, Ostapirat (2014) reconstructed velarized *-lʸ- in these words, positing that the onsets *klʸ- in P-HM changed to *kʷ- in OC through lenition. According to this sound change (*klʸ- > *kʷ-), it is highly probable that these words were borrowed from Hmong-Mien into Chinese languages. As for the word for 'dog', there are two words in Chinese, *gǒu* 狗 and *quán* 犬. The former is related to the word for 'dog' in Hmong-Mien, whereas the latter is related to the word for 'dog' in the Tibeto-Burman languages.[17] Similarly, the word for 'egg' might have been borrowed from other languages such as Proto-Hmong-Mien.[18]

17. See Akitani et al. (2022: 264–280). Proto-Tibeto-Burman 'dog' *kʷəy (Matisoff 2003: 448) is thought to be related to *kʷʰˤenʔ 犬 in OC. Proto-Hmong-Mien 'dog' *klu is thought to be related to *Cə-kˤroʔ 狗 in OC. However, the relationship between 犬 and 狗 are quite complicated. For example, *Erya* 爾雅 annotated that 狗 means [an animal] still without its fur (*Shi xu* 釋畜：未成毫，狗; see Sagart 1999: 190), and also that 狗 is a word for 'pup' of bears and tigers (*Shi shou* 釋獸：熊虎醜，其子狗; See Li Wang (1982: 182–183)). Meanwhile, Weihui Wang (2007; 2018) revealed that there was no difference between 犬 and 狗, and concluded that the word 犬 gradually began to be replaced with 狗 in the Warring States period. As for the word for 'pup' for bears and tigers, I have no clear explanation so far. Further studies are needed.

18. Baxter & Sagart (2014: 324) pointed out that there is a vulgar word 'egg', also used for 'testicles' in southern Chinese dialects: Cantonese /tʃʰœn^{1}/ 'egg' and Hakka /tʃʰun^{1}/ 'eggs of birds, reptiles; roe of fish'. They assumed that /tʃʰœn^{1}/ and /tʃʰun^{1}/ are derived from OC *tʰu[n], and it is related to Proto-Tibeto-Burman *twij 'egg'. This shows that there had been two words for 'egg' in OC, the same as the word for 'dog'. Besides, the words for 'heel' in TB languages share the root with 'egg': ke-a:r-tui (foot-chicken-egg) in Lushai, and kʰe^{3}-tu:i^{2} (chicken-egg) in Tiddim. See Marrison (1967: 121), Benedict (1972: 45), and Bhaskararao (1996: 58). Similarly, OC 'egg' 卵 might have shared the root with 踝 'ankle'. If so, 卵 might not be a loan from Hmong-Mien or Kra-Dai languages. Moreover, the coda in 'egg' must have been *-r rather than *-n. However, since the word 'ankle' is not shown in the excavated documents, at present I cannot fully explain it.

3.4 Proto-Tai

As with Chinese and Proto-Hmong-Mien, the tones for 'egg' in OC and Proto-Tai do not correspond to one another.[19] The MC Shǎngshēng tone 上聲 ('rising tone') normally corresponds to the Proto-Tai C tone. As for the vowels, they do not seem to be related to each other. However, we know that loanwords are not always borrowed from the same place and at the same time. In the case of the word for 'egg', if it is a loanword, it must have been borrowed in the early stage. According to Pittayaporn (2009), the word for 'egg' seems to have the cluster *qr- in Proto-Tai just as in Proto-Hmong-Mien, as shown in Table 11.

Table 11. The word for 'egg' in Proto-Tai

	PT	Siamese	Sapa	Bao Yen	Cao Bang	Lungchow	Shangsi	Yay	Saek
'egg'	*qraj^{B}	kʰaj^{2}	saj^{B1}	kʰaj^{B1}	saj^{B1}	kʰjaj^{B1}	laj^{B1}	caj^{B1}	–

Based on these data from Min dialects (§3.2), Proto-Hmong-Mien (§3.3), and Proto-Tai (§3.4), the words for 'egg' in these languages seem to be etymologically related.

As mentioned above, the word for 'egg' in MC has two sounds: *lwaX* and *lwanX*. The words 'egg' in Hmong-Mien and Tai seem to be related to the former *lwaX* (< *k.rˤoj < *k.rˤor).

Both the philological data (§2) and the comparative data (§3) indicate that the word for 'egg' in OC might have had the consonant cluster *k.rˤ-. In §4, examples from excavated documents are presented.

4. The characters for 'egg' in the excavated documents

4.1 Oracle bone inscriptions

As Yùcái Duàn 段玉裁 (1735–1815) noted in his *Shuōwén jiězì zhù*, the character 𠂤 *guàn* is an old form of the character 卵 *luǎn* 'egg', and 𠂤 *guàn* and 卵 *luǎn* might have been descended from the same character (§2).

Unfortunately, a character representing the word for 'egg' does not seem to appear among the oracle bone inscriptions. However, the character  seen in the oracle bone inscriptions might contain a character 卵 *luǎn* (the left part ). Pale-

19. But the tone of *guàn* 𠂤 (卝) actually corresponds to Tone C in Proto-Hmong-Mien and Proto-Tai. As mentioned above, Yùcái Duàn regarded the character *guàn* 𠂤 as the old form of the character *luǎn* 卵.

ographers have deciphered this character as the word *zhuó* 剁 meaning 'to castrate,' as presented in (7):

(7) 庚辰卜，王，朕  (剁)羌不死。
'Cracking on the Gēng Chén day, the king tested: If I castrate Qiāng people, they will not die.' (*Jiǎgǔwén héjí* 甲骨文合集 no. 525)

In this sentence, the character represents the verb 'to castrate'; castration was a serious penalty in ancient China. According to this study, the left part has been believed to represent 'testicles' (perhaps a pictograph, with a knife represented on the right side), which scholars have regarded as related to the character 卵 *luǎn*. It seems natural that the words 'egg' and 'testicles' have relationships in a semantic sense;[20] see the semantic diagram in Figure 2 described by Matisoff (2008: 1).

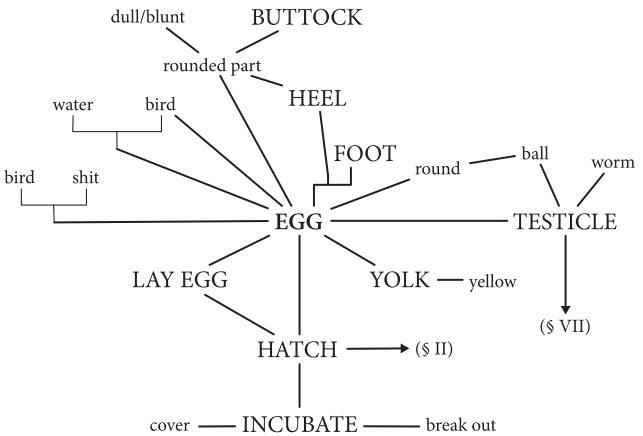

Figure 2. Semantic diagram: 'egg' (Matisoff 2008: 1)

From the diagram, the word for 'egg' can be semantically connected to the notions of 'testicle', 'hatch', 'round', and so on. Therefore, I assume that the left part is an ancestral form of the character 卵, and was commonly associated with both 'testicles' and 'egg', as shown in (12).

20. In Tuoluo Bai 妥洛白語, the word [sen^{5}] has a meaning 'testicles', whereas in other Bai languages, it means 'egg'. See Wang (2006: 187). As mentioned in Footnote 18, the word for 'egg' seen in Cantonese and Hakka is also used for 'testicles'.

4.2 Bamboo slips

In neither oracle bone nor bronze inscriptions, we do not find the character *luǎn* 卵 'egg' itself, whereas a few characters of 卵 *luǎn* are found on bamboo slips dating back to the Warring States periods (around 3 BC), as in (8), (9), (10), and (11):

(8)  二卵缶[21]
'A name of bronze ware.'

(9) 卵盞[22]
'A name of bronze ware.'

(10)  又(有)鼡(燕)監(銜)卵[23]
'A swallow holds an egg in its mouth.'

(11) 鮮卵白色[24]
'A fresh white egg.'

The characters in (8), (9), (10), and (11) represent the word 'egg'. 二卵缶 *Èr luǎn fǒu* and 卵盞 *Luǎnzhǎn* in (8) and (9) are kinds of bronze wares, so named because they were shaped like an 'egg'. The character 卵 *luǎn*, especially the shape in (11) , is likely to have etymological relationships to the character seen in oracle bone inscriptions, as shown in (7).

Conversely, in (12), the character 卵 *luǎn* represents the word 'testicle':

(12)  癮，先上卵[25]
'As for the Tuí (a disease of the testicles), first, raise the testicles…'

As you can see, the character 卵 *luǎn* can represent either 'egg' or 'testicles,' as shown in Figure 2.

4.3 卝 *guàn* and 卵 *luǎn*

Yùcái Duàn 段玉裁 noted that the character 卝 (丱) *guàn* seems to have an etymological relationship with the character 卵 *luǎn*. In the bamboo slips, we can find the character 卝 *guàn*, as in (13):

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21. *Bāoshān Chǔjiǎn* 包山楚簡 no. 265.

22. *Wàngshān Chǔjiǎn* 望山楚簡 M2. No. 46, 53.

23. *Shànghǎi Museum bamboo slips* 上博楚簡, Zǐgāo 子羔 no. 11.

24. *Shuìhǔdì Qínjiǎn* 睡虎地秦簡, Rìshū Jiǎ 日書甲 no. 74. 2.

25. *Mǎwángduī bóshū* 馬王堆帛書, Wǔshíèr bìngfāng 五十二病方 no. 234.

(13)  閎(間)丱(關)恳(謀)司(治)[26]
'Keep working hard and govern a country well.'

Since the character in (13) represents the word 關 *guān*, where 間關 *jiān guān* means 'keep working hard,' the character must be 丱 *guàn*. Both 關 *guān* and 丱 *guàn* have a velar stop *kˢr- (Division-II rhyme in MC) and a rounded vowel in the rhyme *-on in OC, as shown in Table 12.

Table 12. 關 *Guān* and 丱 *guàn* reconstructed form

	Old Chinese		Middle Chinese		Mandarin
關	*kˢron	>	*kwaen*	>	guān
丱	*kˢrons	>	*kwaenH*	>	guàn

As can be seen, the character in (13) is slightly different from the shape of the characters 卵 *luǎn* seen in (8)–(10), as in Table 13.[27]

Table 13. The characters for 'egg' in Chǔ bamboo slips compared

Example (8)	Example (9)	Example (10)	Example (13)
			
卵	卵	卵	丱 (丱)

Specifically, it shows that the Chǔ people 楚人 might have distinguished these two characters 卵 *luǎn* and 丱 *guàn* in their writing system at the time. Thus, based solely on these data, I cannot conclude that the characters 卵 *luǎn* and 丱 *guàn* are etymologically related. Further studies are needed to confirm this.[28]

As for the word 關 *guān*, we can find another phonetic loan in *Ān Dà Jiǎn* (*ADJ*),[29] as in (14):

(14)  (關)=雎鳩
'Guan-guān go the ospreys'[30]

26. *Shànghǎi Museum bamboo slips* 上博楚簡, Yìshī 逸詩 no. 3, 4.

27. Since the characters in (11) and (12) are not from Chǔ state, I did not add them in Table 13.

28. We do not have enough data to confirm this. To begin with, the data from the Chǔ bamboo slips are not old enough to discuss the etymology of the characters.

29. *Ānhuī dàxué cáng Zhànguó zhújiǎn* 安徽大學藏戰國竹簡, Zhōunán 周南, Guānjū 關雎 no. 1.

30. James Legge's translation.

The character  in (14) has 絲 *luán* as a phonetic element and represents the word 關 *guān*.

Note that the phonetic element 絲 *luán* can represent a word with a velar onset in Chǔ bamboo slips. For example, in *ADJ*, characters having 絲 *luán* as a phonetic represent the words having the consonant cluster *kr$^{(ʕ)}$- in OC: 關 *guān*, 卷 *juǎn*, and 貫 (宦) *guàn*.[31]

In addition, we can find another remarkable example in the Qín bamboo slips 秦簡, as in (15):

(15)  麛 鸞 (卯)鷇[32]

'Fawns, eggs, and fledglings'

The character (鸞) is composed of 絲 *luán* and 卯 *luǎn*, and represents the word for 'egg'. Since these documents are official, they must reflect the language of the Qín state 秦地 at that time.[33] The characters 卯 *luǎn* and 絲 *luán* have the same sounds in MC, except for tonal category. The character 絲 *luán* is thought to be the additional phonetic element, and thus must represent the sound of the word for 'egg' as shown in Table 14 (K: velar or uvular stops).

Table 14. 絲 *luán*: Reconstructed form

	Old Chinese		Middle Chinese		Mandarin
絲	*K.rˁon	>	*lwan*	>	luán
卯	*k.rˁonʔ	>	*lwanX*	>	luǎn

As mentioned above, the phonetic 絲 *luán* can represent the word having the velar onsets as 關 *guān* in (14); hence, these phonetic loans revealed that the word for 'egg' must have had the velar onset at the time.

31. Guānjū 關雎(*ADJ*: no. 1), Juǎnér 卷耳 (*ADJ*: no. 6), Shuòshǔ 碩鼠 (*ADJ*: no. 80). See Nohara (2022: 97–114).

32. *Shuìhǔdì Qínjiǎn* 睡虎地秦簡, Tiānlǜ 田律 'Statutes on agriculture' no. 4.

33. However, some excavated documents unearthed in the Qín states 秦地 do not always represent the language of the Qín state. For example, in the *Day book* (a kind of divinatory book), the *Rìshū* 日書, we can find some features related to the language of the Chǔ state 楚地 (Húnán Province 湖南 and Húběi Province 湖北).

5. Conclusion

This paper tried to reconstruct the onset of the word for 'egg' in OC. In the early days of Chinese historical phonology, the Qīng scholar Yùcái Duàn 段玉裁 noted that the character 卵 *luǎn* seems to be related to certain other characters and words, such as 丱 *kwaenH*, 患 *hwaenH*, 關 *kwaen*, 綰 *ʔwaenX*, and 管 *kwanX*. Interestingly, the first four words and characters belong to the Division-II rhyme in MC, reflecting *-r- in OC. Therefore, it is plausible that these words and characters attest the word for 'egg' as having an *r- in OC. However, this philological evidence is not old enough to reconstruct the OC form. In §3, I examine the comparative data in Min dialects. In addition, data from Proto-Hmong-Mien and Proto-Tai show that the word for 'egg' originated from the consonant cluster *Cr- in an early stage.

Although the philological evidence and the comparative data from Min, Proto-Hmong-Mien, and Proto-Tai indicate that the word for 'egg' has the consonant cluster *k.rˤ- in OC, even in the oracle bone inscriptions and the bronze inscriptions, we do not find a character meaning 'egg'. Eventually, in the bamboo slips dating back to the Warring States period, we do find a few characters like 卵 *luǎn* meaning 'egg', but there is, unfortunately, no direct evidence to reconstruct the onset *k-. Nevertheless, I conclude that it is better to reconstruct it as *k.rˤonʔ. As in (14), the character 爨 *luán* can represent the word having velar onsets in *ADJ*. In the Qín bamboo slips, the character  (灤), which has 爨 *luán* as the additional phonetic element, represents the word for 'egg'. These phonetic loans revealed that the word for 'egg' originally contained the preinitial *k-, although it would be lost by early MC.

In addition, the word for 'egg' is believed to be etymologically related to characters meaning 'round'. We need further study of related words such as *wán* 丸, *yuán* 圓 meaning 'round', *guǒ* 果 'result', *juǎn* 卷 'roll', and *huà* 踝 'ankle'.[34] What interests me is that these words have the velar and uvular onsets in OC.

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34. Based on the meaning of the words *wán* 丸, *yuán* 圓 'round,' and *luǎn* 卵 'egg', they seem to share the same root; the words *wán* 丸 and *yuán* 圓, however, have unrounded vowels *-a- and *-e- in OC. Conversely, the word 'ankle' *huà* 踝 had the rounded vowel at the time; therefore, *luǎn* 卵 might have shared the same root with *huà* 踝. Also see Footnote 18.

Abbreviations

ADJ *Ān Dà Jiǎn* 安大簡
MC Middle Chinese
OC Old Chinese
P-HM Proto-Hmong-Mien
P-KD Proto-Kra-Dai
P-Min Proto-Min
TB Tibeto-Burman

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