THE INTENSIVE CONTROVERSY ON CHINESE HISTORICAL PHONOLOGY: REFUTATION OF THE LIQUID MEDIAL FOR DIVISION-2 IN OLD CHINESE

Jingyi Gao

Beijing International Studies University

Abstract. The present paper reports the intensive controversy on Chinese historical phonology that broke out in 2002. After sorting through over 150 Chinese papers on the intensive controversy by the Sino-linguists’ side and the descriptivists’ side, the present study suggests that we should investigate a history of the new hypotheses, and discuss them in a logical order. The hypothesis of the liquid medial for division-2 in OC of the descriptivists’ side is refuted with philological arguments and a negative control of comparative evidence. The hypothesis of the vocalic medial for division-2 in OC of the Sino-linguists’ side is supported with Sino-Vietnamese and Sino-Uralic comparative evidence. Using etymological methods, the present study has identified nine (9) Sinitic and Uralic shared etymologies. Four (4) Shennong (Sino-Uralic) etymologies belong to a rhyme correspondence. Five (5) Shennong (Sino-Uralic) etymologies belong to another rhyme correspondence. These two (2) regular sound correspondences validate the etymological connections between Sinitic and Uralic.

Keywords: academic controversy, academic war, Chinese historical phonology, Old Chinese, division-2 (division-II, div. II), liquid medial, vocalic medial, Sino-Tibetan, Sino-Vietnamese, Sino-Uralic, regular sound correspondence

DOI: https://doi.org/10.3176/tr.2021.1.07

Received 3 November 2020, accepted 18 December 2020, printed and available online 10 March 2021

1. Introduction

The liquid medial for division-2 in Old Chinese (OC) (a.k.a. Archaic Chinese) reconstruction has been claimed since Yakhontov (1960, Jaxontov 1 1963 *-l-). This

1 Cyrillic alphabets are transliterated according to the chart in Comrie and Corbett (1993: xii–xiii).

© 2021 Author. This is an Open Access article distributed under the terms and conditions of the Creative Commons Attribution-NonCommercial 4.0 International License (http://creativecommons.org/licenses/by-nc/4.0/).

2 There are too many Chinese publications by different authors but with the same surnames. A referenced author name of a Chinese publication includes an initial of the author’s given name unless the surname already contains two morphemes.

3 There are also few Western scholars who have more methodological concerns and reject at least some general results of some scholars in this line, e.g. William G. Boltz (1979, 1993, 2002) and Christoph Harbsmeier (2016).

4 Both sides claim that their studies are 中國語言學 ‘China language science’ in Chinese, or ‘Chinese linguistics’ in their own English. In fact, the studies of the Sino-linguists’ side follow the two-thousand-year-old tradition of the language science developed in China with limited imports from the [Western] descriptive linguistics (e.g. the phonetic transcriptions). These studies should be called Sino-linguistics 中方語言學. The studies of the descriptivists’ side have worked on the results of Sino-linguistics but are applying Western linguistic methods as much as possible. These studies should be called linguistics on Chinese 西方語言學於漢語. They are comparable to Sino-medicine 中醫 and [Western] medicine in China 西醫 in 中國.

5 A rhyme is morphophonological. It can also be the -VCv part of a CVCv morpheme (where the small v stands for an unstressed vowel). A rime is phonological and phonetical. It must be the -VC part of a CVC syllable.

6 The gap between the two sides deepened since that Wáng L. (e.g. 1985: 23–25) did refute the consonant cluster claim of Karlgren (1923-ADCSJ), but did not refute the liquid medial claim of Yakhontov (1960). These two claims are not fundamentally identical. It was more problematic that Yakhontov (1960, Jaxontov 1963) did not mention Wáng L. (1957)’s solution for division-2 at all. It can be counted that the two sides have gone to separate studies since the 1950s.
Sino-linguists have sound academic arguments to reject the liquid medial; although their arguments remained unpublished until the intensive controversy on Chinese historical phonology between the two sides broke out in China.

On December 8th 2001, Tsu-lin Mei 梅祖麟 (born in 1933), a senior leader of the descriptivists’ side, professor emeritus at Cornell University, gave a keynote address presentation entitled “Chinese historical phonology with special Chinese characteristics 有中国特色的汉语历史音韵学” at a conference in Hong Kong. He claimed: (1) “[The OC reconstruction of Wáng Lì cannot be included in the mainstream.] 王力的上古音不能列入主流” (Méi Z. 2002: 224); (2) “[Should the Zhāng-Huáng school be counted as linguistics with special Chinese characteristics? Certainly not, it is not linguistics at all.] 章黄学派算不算有中国特色的语言学? 当然不是——因为它根本不是语言学” (Méi Z. 2002: 229). The first claim aimed at Wáng Lì and his Peking school of Chinese historical phonology. The second claim aimed at the Zhuang-Huang school of Chinese philology, to which the vast majority of Chinese traditional philologists belong. In April 2002, Mei’s presentation text was posted on the web forum of Peking University; it was hotly discussed. In the summer, Guō Xī-liáng 郭锡良 (born in 1930), a senior leader of the Sino-linguists’ side, professor emeritus at Peking University, started reacting with a presentation entitled “[A few problems in Chinese historical phonology] 历史音韵学研究中的几个问题” at three conferences in Nanchang, Urumqi and Shijiazhuang. His main themes are: (1) the methodology of Wáng Lì is sound; (2) refutation of consonant clusters in OC; (3) caveats to morphological changes in OC; (4) refutation of a few Sino-Tibetan comparisons.

In June 2002, Mei’s presentation was published as a journal paper (Méi Z. 2002) in the Journal of Chinese Linguistics / 中国语言学报 ‘China Linguistics Journal’ based in Berkeley (moved to Hong Kong in 2008). In September 2002, Guō’s presentation was published as a journal paper (Guō X. 2002) in the journal ‘Research on Ancient Chinese Language’ based in Changsha. These two formal publications marked the official start of the intensive controversy. Since then, the two sides have critically argued about each other’s academic results, methodological problems and publication errors; over 150 Chinese papers have been published on the controversy, directly or indirectly (see Appendix 2. It includes replies to Méi Z. 2002 or Guō X. 2002, replies to replies, refutations and pro or con comments, thematic papers on methodology and academic history containing mainly one’s own side. Papers with only errata without methodological arguments are not counted).

The intensive controversy is actually caused by the fact that the two sides have ignored each other’s academic results for many decades. The Sino-linguists’ side did not refute each new hypothesis of the descriptivists’ side in time thus had to refute them together. Sino-linguists were mobilized to write papers to refute the claims of the descriptivists’ side. It is not an effective strategy. We should investigate a history of the hypotheses of the descriptivists’ side, and discuss the hypotheses in a logical order.

Major different opinions of OC reconstruction authors are given in Table 1. We may see that a shared characteristic feature of the descriptivists’ side (Pulleyblank
Jingyi Gao

104


We find that the hypothesis of liquid medial reconstruction in OC is one of the most fundamental hypotheses which should be refuted. Besides academic translations, explanations and table demonstrations of previously published counterarguments from the Chinese papers, we add a negative control to refute this hypothesis. We demonstrate Sino-Vietnamese and Sino-Uralic comparative evidence to support the hypothesis of vocalic medial reconstruction in OC.

Table 1. Major different opinions of OC reconstruction authors (● – yes, ○ – no)

<table>
<thead>
<tr>
<th></th>
<th>*mainly CVC</th>
<th>*Ce- initials</th>
<th>*liquid medial for r.g. 咸</th>
<th>*-2vowel initials for tone-2</th>
<th>*liquid medial for division-2</th>
<th>*the six vowels</th>
<th>*the six medial vowels for some -n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Karlgreno 1934, 1954, 1957</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Wáng L. 1957, 1980a, 1985</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Lī F. 1971</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Guō X. 1986, 2010</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Starostin 1989</td>
<td>○</td>
<td>●</td>
<td>○</td>
<td>○(●–2vowel)</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Hé J. 1991</td>
<td>○</td>
<td>●(●–2vowel)</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Baxter 1992</td>
<td>○</td>
<td>●</td>
<td>●</td>
<td>○(●–2vowel)</td>
<td>●</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baxter &amp; Sagart 2014</td>
<td>○</td>
<td>●</td>
<td>●</td>
<td>○(●–2vowel)</td>
<td>●</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

r.g. = rhyme group; (1) r.g. 歌 and only few of r.g. 微; (2) Disclaimed prior to 1987-DEZC; (3) *Ce- is possible in pre-Old Chinese; (4) *Ce- is in the source language of some OC etyma.

Scientific experiments are always performed with controls to obtain reliable results. A positive control is a control group in an experiment that uses a treatment that is known to produce results. A negative control is a control group in an experiment that uses a treatment that is not expected to produce results.
The intensive controversy on Chinese historical phonology

Previous versions of this paper have encountered many anonymous referees. Four of them (marked as Referee A/B/C/D) are specialists in OC. Their critical comments are answered in the present version. We thank Referee A for the helpful comments and suggestions.

Before the first peer review procedure, Section 3.5 and Section 4 involving the Sino-Uralic comparisons were deleted according to valuable suggestions of a board member of a journal. We do also think so that it is enough to accomplish a paper with the first sections without the reinforcement from the Sino-Uralic side. However, the referees have questioned the originality of those versions: “This paper reviews data and opinion related to the *-r- theory taken from a range of past work which, while largely published in mainland China, is nonetheless readily accessible to specialists the world over” (Referee C). Our concern is: The data and opinions published in mainland China have, so far, not been answered nor reported internationally. If you do not answer them and refuse to report them in English, you make a vicious circle that is not academic. In the present version, we have enlarged the first sections and added the last sections back.

2. Materials and methods

The present paper is a philological and etymological study. The Sinitic, Tibeto-Burman and Uralic etymologies (etyma) are studied and compared.

Sinitic etyma are guided by Chinese etyma (DOMs) that are historically attested glyphs. Their historical glosses are cited from the first two Chinese classical dictionaries (121-SW; 543-YP). Their historical phonological features are cited from the work 1161-YJ with reference to 1008-GY. A transcription of the phonetic values in 1161-YJ is given according to Appendix 1 in Gao (2020b). Their other attested equivalents including contemporary forms and glosses are represented by Mandarin (Beijing Yan) (written in Hanyu Pinyin including non-simplified forms), Cantonese (Guangzhou Yue) (written in Jyutping) and Minnan (Taipei Min) (written in Tâi-lô). English glosses are made in the present study. Historically attested OC rhymes of the etyma are given according to Zhōu Z. (1966), Wáng L. (1980a), Chén F. and Hé J. (1987) and Guō X. (1986, 2010) (in case of inconsistencies, category up to Wáng L. 1980a, glyph allocation up to Zhōu Z. 1966). Reconstructed phonetic values of the rhymes are made according to Appendix 2 in Gao (2020b).

Reconstructed forms are added only for reference reasons. All the attested forms are compared instead of trusting the phonetic and semantic details of reconstructions, because the reconstructions are always subject to changes depending on [newly] compared attested linguistic data. Two OC reconstructions are listed: 1) OC-W according to Wáng L. (1980a, modifications up to Wáng L. 1985); 2) OC-Z according to Zhèng-zhāng (2003a, 2013a). For a better comparison, their signs for aspiration are unified to the sign /ʰ/; their signs for long vowel are unified to the sign /ː/. Other reconstructions are cited from the direct references without modification.
Tibeto-Burman etyma are based on the comparative works Benedict (1972) and Matisoff (2003). Uralic etyma are based on the etymological dictionaries 1988-UEW and 2001-SSA (of Uralic languages, Sami/Lappish North/Lule/Inari/Skolt/Kildin equivalents up to 1989-YSaS; North Sami forms are adjusted according to 1989-SSS). Non-English glosses are translated into English in the present study. Some modifications (adding or deleting equivalents) are made and remarked.

In addition to the aforementioned sources, etymological equivalents suggested by other scholars are checked according to some additional etymological or comparative works, e.g. 1996-CV5ST and 2007-EDOC. Refutations of previously claimed etymological equivalents are given in footnotes.

Proto-Sinitic, also known as Proto-Chinese, cannot be compared because it is only a theoretical notion without reconstructed results. Proto-Sino-Tibetan cannot be compared because it is a hypothetical notion without a sufficient amount of etyma representing a sufficient number of the languages in question. Many scholars (e.g. Shī X. 2000, 2007; Huáng S. 2005; Zhang et al. 2019) are still comparing only Tibetan, Burmese or another Tibeto-Burman branch to Sinitic. The works Benedict (1972) and Matisoff (2003) have compared more “Sino-Tibetan languages”, whereas many comparisons do not touch Sinitic. The work 1996-CV5ST compares only five “Sino-Tibetan languages”: Sinitic, Tibetan, Burmese, Jingpho/Kachin and Mizo/Lushai, whereas still many comparisons do not touch Sinitic. Etyma without Sinitic equivalents cannot be labeled as ‘Sino-Tibetan’. Etyma with equivalents only in a Tibeto-Burman branch and Sinitic may be non-genetically diffused (loaned/borrowed) from Sinitic or the Tibeto-Burman branch. There is a website called “The Sino-Tibetan Etymological Dictionary and Thesaurus” (https://stedt.berkeley.edu), whereas its content is so far a thesaurus (book of synonyms, collection of X-English dictionaries) rather than an etymological dictionary. This is the current situation of the comparative studies between Sinitic and Tibeto-Burman. Moreover, the Sino-Tibetan hypothesis has been successively criticized (Miller 1974; Beckwith 2002, 2006, 2008; Hé J. 2004; Gěng Z 2005; Guō X. 2008, 2010: 21; Zhāng M. 2012, 2013, 2014; Qū A. and Jǐn S. 2013). Besides, there are hypotheses for the multiple origins of Sinitic (Lǐ B. 1990; Schuessler 2003). In sum, the notion Sino-Tibetan cannot be considered as a certain language family that includes or represents Sinitic.

Etymological equivalents (compared words) are given in orthographies or transcriptions. Equivalents in Western alphabets are given in boldface if they are found in official languages covered by ISO 639-1. Equivalents in Roman alphabets are given in italics. IPA-based transcriptions are not given in italics. If a given equivalent is longer than one morpheme, the targeted morpheme is underlined (if certain). In successive data, dialectal and authorial variants are separated by a slash (/); grammatical variants are separated by a backslash (); while lexical variants are separated by a comma (,).

Ancient and fully etymological Sinitic etyma are put in the solid brackets 【】 and labeled as DOM in tables. Ordinary Chinese terms are put in the blank brackets 〖〗 or written without brackets. Unattested and reconstructed forms are marked with an asterisk (*). Attested but phonologically realized forms based on ancient Sino-linguistic data (e.g. Chinese descriptions in rhyme tables and rhyme dictionaries)
are marked with a blank star (✩). Double quotation marks (““”) are added when its target is quoted (on sentences) or not agreed (on forms and terms). Double arrows (⇒ or ⇐) indicate genetic diffusions. Single arrows (→ or ←) indicate non-genetic diffusions. The sign ♣ indicates that its target is a dependent (bound) morpheme (only denoted for Mandarin). In etymological results, a triangle sign (△) marks that the referenced comparison is fundamentally correct while the details of equivalents are amended in the present study.


3. Discussion

3.1. Refutation of the fundamental arguments of liquid medial for division-2 in OC

The hypothesis of liquid medial reconstruction in OC goes back to Yakhontov (1960, Jaxontov 1963). Yakhontov’s (1960: 3–7) original hypothesis includes the following arguments (the original style is unchanged):

#1) Syllables of the IInd division hardly ever begin with the consonant "l".
#2) It should be noted that when one graphic group includes words with initial "l" and words with other initial consonants, the latter (if they do not contain the medial i or i) are mostly syllables of the IInd, and not of the Ist, division.
#3) Comparison with other languages where l or r correspond to the l in Chinese, provides evidence of the presence of l in Chinese syllables of the IInd division. E.g. 八 pwat (*plat) "eight" – Tibetan b-r-gyad; 百 pɐk (*plâk) "one hundred" – Tibetan b-r-gya; 馬 mlâII (*mlâm) "horse" – Burmese mrangII; 江 kång (*klong) "river" – Thai khlung "canal"; 甲 kap (*klap) "armour" – Tibetan khrab.

Of the Sino-linguists’ side, three papers (Lǐ J. 2007; Cuī Y. 2007; Sūn Y. 2014) have focused on refuting this hypothesis.

Lǐ J. (2007: 11) has counted 22 xieszeng series (e.g. 來, 賴, 樂, 里, 立, 侖, 豐, 窮) with Middle Chinese (MC) initial 來 l- phonetic component, altogether 212 Sinograms8 [called “words” in Yakhontov 1960]. 150 of them are read with the initial 來 l- (來母字, l-Sinograms), 62 of them are not read with the initial 來 l- (非來母字, non-l-Sinograms). Of these 62 non-l-Sinograms, 6 belong to division-1, 18 to division-2, 34 to division-3, 4 to division-4.

He has also counted 23 xieszeng series (e.g. 各, 虱, 咫, 兼, 劾, 東, 京, 咫) without initial 來 l- phonetic components but with initial 來 l- turnouts, altogether 209 Sinograms. 84 of them are read with the initial 來 l- (來母字, l-Sinograms), 125 of them are not read with the initial 來 l- (非來母字, non-l-Sinograms). Of these 125 non-l-Sinograms, 19 belong to division-1, 30 to division-2, 48 to division-3, 28 to division-4.

---

8 The details of these Sinograms were not published in Lǐ J. (2007) but in Lǐ J. (2015: 300–329).
He concludes: “There are altogether 187 non-l-Sinograms without the initial 來 ✩l- but related to the initial 來 ✩l- phonetic components [in which the descriptivists’ side shall reconstruct *Cl- or *Cr-]. 25 (13.3%) of them belong to division-1, 48 (26.1%) of them to division-2, 82 (43.6%) of them to division-3, 32 (17.0%) of them to division-4. There are indeed more division-2 Sinograms than division-1 Sinograms, but there are even more division-3 Sinograms. Why could Yakhontov exclude division-3 and division-4 before his interpretation?” (Lǐ J. 2007: 11, translated from Chinese) This reveals that Yakhontov’s original argument #2 “are mostly syllables of the IInd. […], division” is incorrect.

Referee B (the most radical anonymous referee, apparently from the descriptivists’ side) argues: “The author must have misunderstood something. A number of Division-3 and 4 rimes must be reconstructed with *-r-. *-r- is not only hypothesised for Division-2 rimes.” No, we have not misunderstood anything. You have not understood that it is important to confirm whether Yakhontov’s original arguments are correct. We will return to this issue later.

Cuī Y. (2007: 22) has counted 417 division-2 Sinogram families, and found that only 15 (3.6%) of them are related to other Sinograms having the initial 來 ✩l-. She deduces: If all the division-2 Sinograms are reconstructed as *Cl- [*Cr-], the medial *-l- [*-r-] has vanished in more Sinograms with no trace left, it is illogical and invalid.

Referee C says: “These different claims [the counts of Lǐ J. (2007) and Cuī Y. (2007)] are very hard to reconcile.” Here we explain. Their findings are in two different directions. Lǐ J. (2007) counts xiesheng series and then counts the four divisions. Cuī Y. (2007) counts only division-2 Sinograms and then examines the postulated shift *Cr- > *r- > ✩l- (from OC medial *-r- to MC initial ✩l-) which turns invalid in conclusion.

Cuī Y. (2007: 22) has listed some xiesheng series pairs consisting of a division-1 Sinogram and an initial 來 ✩l- Sinogram, in which the division-1 Sinogram cannot be explained as a later change, e.g. 咎~縝, 悟~里, 潞/蜃/蜃~樂, 論~侶, 飢~立. This reveals that Yakhontov’s original argument #2 “not of the 1st, division” is incorrect.

Referee B argues:
Her arguments do not seem to be flawless as well. For example, 咎 has two Middle Chinese forms, Division-3 [✩]gjuwX and Division-1 [✩]kæw, the one connected to 廔 [✩]jjuwX is [✩]gjuwX, not [✩]kæw, the Old Chinese form is to be reconstructed with something like *grju (Division-3). This example shows unfamiliarity with Middle Chinese phonology.

This argument is not impactful. As long as a Sinogram has a division-1 form, you cannot ignore it. Nevertheless, the other form is of division-3, not your expected division-2.

Sūn Y. (2014: 124–125) has listed 52 division-2 Sinograms with the initial 來 ✩l-, e.g. 【瀧, 比, 漂, 漂, 漂, 漂, 燿, 燥, 漃, 燴】. It reveals that Yakhontov’s original argument #1 “syllables of the IInd division hardly ever begin with the consonant ‘l’” is incorrect.

Sūn Y. (2014: 123) has listed that 10 MC initials (邪 *z-, 俟 *ʒ-, 章 *te-, 昌 *teh-,
常\(^\star\)z-, 書\(^\star\)c-, 船\(^\star\)dz-, 日\(^\star\)ŋz-, 群\(^\star\)g-, 以\(^\star\)j-) do not form any valid syllable with division-2 rhymes; 7 MC initials (透\(^\star\)tʰ-, 定\(^\star\)d-, 來\(^\star\)l-, 精\(^\star\)ts-, 淸\(^\star\)tsʰ-, 從\(^\star\)dz-, 心\(^\star\)s-) form only 1–5 valid syllables with division-2 rhymes. He has asked: Why did Yakhontov pick only the initial 來 for an analysis towards *Cl- [*Cr-]*?

So far, these crucial questions from the Sino-linguists’ side have not been answered by the descriptivists’ side in the Chinese academic world. The whole controversy has not been reported internationally.

Referee B complains:

I do not see how this observation is related to refuting *-r-. Let’s agree that Middle Chinese 章母 \([\star\)tɕ\] comes from Old Chinese *t-, if there were Division-2, it would be reconstructed as *tr-, which yield a 知 initial. A “心 母 二等” initial would be a 生 母 *sr-. The distribution of Division-2 does not say anything about *-r-.

Referee D (another radical anonymous referee, apparently from the descriptivists’ side) claims:

This shows that neither Sun nor the A[uthor](s) have grasped the beauty of Yakhontov’s idea. […] The case of 來 is special: the (almost complete) lack of division-2 words beginning in MC \([\star\)l\]- is due to the fact that OC initial *r plus medial *-r- was not a possible onset. For that reason, the 來 initial is mostly absent from division 2. Yakhontov focused on 來 because it made sense, on both distributional and phonetic grounds, that MC retroflexes go back to OC clusters of an apical plus 來.

They did not understand Sūn’s point at all. Here we explain it more. This observation is related to refuting *-r-, because Yakhontov picked only the initial 來 \([\star\)l\]- to reconstruct *Cl- [*Cr-]. This observation reveals that it would be possible to pick, for example, the initial 群 \([\star\)g\] to reconstruct *Cg-, the initial 邪 \([\star\)z\] to reconstruct *Cz-, or the initial 心 \([\star\)s\] to reconstruct *Cs-, if Yakhontov’s practice is ratified. In this way, the possibilities of consonant clusters will be out of control, therefore this ratification cannot be granted.

Referee C does not misunderstand but says:

The fact that 來 \([\star\)l\]- (among others) is rare in Div. II, but not completely absent, is a challenge for *all* analyses, not just for *-r-. So again, the reader is left feeling that the author aims to assemble any and all facts which might speak against *-r- even when these facts defy consistent explanation on *any* approach.

We thank Referee C for acknowledging it, when Referee B and Referee D are trying to argue against it. Our main point is that it is a challenge for all consonantal analyses but not for vocalic analyses. Your side thinks of consonantal analyses by default, just because you believe in your “Sino-Tibetan language family” and you think OC could contain consonant clusters like Written Tibetan. Your belief is just a hypothesis. It cannot be used as a precondition in Sinitic studies.

We present Table 2 to help readers understand this section better.

Table 2 compares reconstructed results of OC-W of the Sino-linguists’ side,
and OC-L (Li F. 1971), OC-Z, OC-B (Baxter 1992) and OC-BS (Baxter and Sagart 2014) of the descriptivists’ side. The Sino-linguists’ side treats the difference of divisions as vocalic medials. The results are very systematic. Sinograms with the same phonetic component are reconstructed with the same final. The \( ^\star l \)- interchange in the initial position should be explained with other factors, e.g. simply \( ^*C- > ^\star l- \). The descriptivists’ side believes that OC contained consonant cluster initials or onsets as Written Tibetan (reconstructions with consonant clusters initials or onsets are shadowed in Table 2), thus all the \( ^\star l- \) interchanges should be reconstructed and explained within the onset position: \( ^*C- < ^*Cr- > ^*r- > ^\star l- \). However, Table 2 reveals that their expected systematic solution is not valid, because the \( ^\star l- \) interchange is not limited to division-2, thus many \( ^\star l- \) interchanges are not reconstructed and explained with the same solution (inconsistencies are marked in Table 2). They started to treat division-2 as a liquid consonant, since Yakhontov (1960) found that division-2 and a liquid initial could be in complementary distribution. This finding is incorrect. The descriptivists’ side did not notice it, thus it has produced strange outcomes such as OC-L \(^*lramx\) and OC-Z \(^*gr\cdot re:\cdot m\). It has to be acknowledged that the liquid approach is wrong in its groundwork.

Table 2. Comparison of OC systems involving \( ^\star l- \) interchange

<table>
<thead>
<tr>
<th></th>
<th>DOM</th>
<th>1008-GY</th>
<th>OC-W</th>
<th>OC-L</th>
<th>OC-Z</th>
<th>OC-B</th>
<th>OC-BS</th>
</tr>
</thead>
<tbody>
<tr>
<td>division-1</td>
<td>【論】</td>
<td>鄰昆切</td>
<td>*luan</td>
<td>*( ^\star l-an )</td>
<td>*( ^\star l-n )</td>
<td>*( ^r-)u[n]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>【諭】</td>
<td>胡本切</td>
<td>*( ^r)uən</td>
<td>*( ^r)u( \text{ex} )</td>
<td>*( ^r)u:n</td>
<td>*( ^r)un?</td>
<td>--</td>
</tr>
<tr>
<td></td>
<td>【拉】</td>
<td>鄰合切</td>
<td>*( ^l)ap</td>
<td>*( ^l)ap</td>
<td>*( ^l):b</td>
<td>*( ^l)ap</td>
<td>*( ^r)əp</td>
</tr>
<tr>
<td></td>
<td>【對】</td>
<td>蘇合切</td>
<td>*( ^s)əp</td>
<td>*( ^s)ap</td>
<td>*( ^s):b</td>
<td>*( ^s)ap</td>
<td>--</td>
</tr>
<tr>
<td>division-2</td>
<td>【孛】</td>
<td>生全切</td>
<td>*( ^l)oan</td>
<td>*( ^l)ruan( \text{h} )</td>
<td>*( ^m)ro:n( s )</td>
<td>*( ^s)r( \text{on} )s</td>
<td></td>
</tr>
<tr>
<td></td>
<td>【 icmp】</td>
<td>莫還切</td>
<td>*( ^m)oan</td>
<td>*( ^m)ruan</td>
<td>*( ^m)ro:n</td>
<td>*( ^m)ro[n]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>【咐】</td>
<td>力減切</td>
<td>*( ^l)eam</td>
<td>*( ^l)ram( x )</td>
<td>*( ^g)r\cdot re( m? )</td>
<td>*( ^e)r( m? )</td>
<td>--</td>
</tr>
<tr>
<td></td>
<td>【甾】</td>
<td>膦斨切</td>
<td>*( ^k)eam</td>
<td>*( ^k)ram( x )</td>
<td>*( ^k)rc( m? )</td>
<td>*( ^k)rem</td>
<td>*( ^C\cdot g)( r)( o)jm</td>
</tr>
<tr>
<td>division-3</td>
<td>【吏】</td>
<td>力置切</td>
<td>*( ^l)ia</td>
<td>*( ^l)ag( h )</td>
<td>*( ^r)us</td>
<td>*( ^c)( r)( ā)s</td>
<td>*( ^r)o( s )?( s )</td>
</tr>
<tr>
<td></td>
<td>【使】</td>
<td>蹁士切</td>
<td>*( ^J)e</td>
<td>*( ^J)r( \text{ex} )</td>
<td>*( ^s)ru( \text{u} )</td>
<td>*( ^s)r( \text{ə} )</td>
<td>*( ^s)( r)( o )?</td>
</tr>
<tr>
<td></td>
<td>【陸】</td>
<td>力竹切</td>
<td>*( ^l)juk</td>
<td>*( ^l)j( \text{k} )( w )</td>
<td>*( ^m)ru</td>
<td>*( ^c)( r)( ā)k</td>
<td>*( ^r)( j)k</td>
</tr>
<tr>
<td></td>
<td>【霉】</td>
<td>莫六切</td>
<td>*( ^m)juk</td>
<td>*( ^m)j( \text{k} )( w )</td>
<td>*( ^m)u</td>
<td>*( ^m)ju</td>
<td>*( ^m)( r)( u)k</td>
</tr>
<tr>
<td>division-4</td>
<td>【禮】</td>
<td>鄰啓切</td>
<td>*( ^l)ie( i )</td>
<td>*( ^l)i( dx )</td>
<td>*( ^r)i( ? )</td>
<td>*( ^l)e( r)( ī )</td>
<td>*( ^r)( ū )?</td>
</tr>
<tr>
<td></td>
<td>【體】</td>
<td>他禮切</td>
<td>*( ^t)ie( i )</td>
<td>*( ^t)i( dx )</td>
<td>*( ^r)i( ? )</td>
<td>*( ^t)( i )( ī )</td>
<td></td>
</tr>
<tr>
<td></td>
<td>【荔】</td>
<td>郎計切</td>
<td>*( ^l)iap</td>
<td>*( ^l)ab( h )</td>
<td>*( ^c)( bs )</td>
<td>*( ^c)( r)( e)( p)</td>
<td>*( ^t)( e)( p)( s )</td>
</tr>
<tr>
<td></td>
<td>【協】</td>
<td>胡頤切</td>
<td>*( ^y)iap</td>
<td>*( ^y)iap</td>
<td>*( ^m)le</td>
<td>b</td>
<td>*( ^g)e</td>
</tr>
</tbody>
</table>
3.2. Refutation of OC *-r- by initial repeating reduplicative words

Sūn Y. (2014: 120–122) has listed 23 OC ‘initial’ repeating reduplicative words’ (IRRW)\(^9\) that are made of a division-2 Sinogram and a non-division-2 Sinogram, e.g. 綿蠻 (詩·小雅·綿蠻); 霰霂 (詩·小雅·信南山); 草薀 (爾雅·釋草); 鳴鳴 (爾雅·釋鳥); 蒹葭 (詩·秦風·蒹葭). He has asked: If all the division-2 Sinograms are reconstructed *Cl- [or *Cr-], these words would be in *C-Cl- [*C-Cr-] or *Cl-C- [*Cr-C-] structure. How can they be initial repeating reduplicative words?\(^11\)

We compile Table 3 to help readers understand this point better.

**Table 3. Comparison of OC systems involving initial repeating reduplicative words**

<table>
<thead>
<tr>
<th>IRRW</th>
<th>OC-W</th>
<th>OC-L</th>
<th>OC-Z</th>
<th>OC-B</th>
<th>OC-BS</th>
</tr>
</thead>
<tbody>
<tr>
<td>綿蠻</td>
<td>*mian-moan</td>
<td>*mian-mruan</td>
<td>*men-mron</td>
<td>*mjen-mron</td>
<td>--</td>
</tr>
<tr>
<td>霰霂</td>
<td>*mek-mok</td>
<td>*mæk-muk</td>
<td>*mek-mok</td>
<td>*mæk-mok</td>
<td>--</td>
</tr>
<tr>
<td>鳴鳴</td>
<td>*ket-kjuk</td>
<td>*kɛt-kgəkw</td>
<td>*kɛt-d-kug</td>
<td>*kɛt-kjuk</td>
<td>--</td>
</tr>
<tr>
<td>蒹葭</td>
<td>*kiam-kea</td>
<td>*kiam-kəg</td>
<td>*kəm-kəa:</td>
<td>*kem-kəa</td>
<td>--</td>
</tr>
</tbody>
</table>

When the different systems of OC reconstructions are applied to the initial repeating reduplicative words in OC, OC-W reconstructions are still initial repeating reduplicative words; the others are not, because they are interrupted by the liquid medial *-r- (shadowed in Table 3). The reason of this failure is not complex. The other authors did not notice such words in OC verses when they added the liquid medial *-r- to divison-2 Sinograms in their systems. Their motivation is comparing Tibeto-Burman rather than reading OC verses. Their enterprise cannot be granted.

Of the Sino-linguists’ side, this is to date the most impactful and original argument against the liquid medial reconstruction. The author Sūn Yù-wén 孫玉文 (born in 1962) is a leader of the Peking school, professor at Peking University. His magnum opus (Sūn Y. 2000) has been introduced in English (see Behr 2002). Most scholars working on OC phonology have not particularly investigated such words in OC verses. This finding requires the author’s high ability in both OC phonology and philology.

He has already excluded the extreme cases in which the initial repeating reduplicative words are made of two division-2 Sinograms, while the descriptivists’

---

\(^9\) Sino-linguistic term 声纽/声纽 initial. It is mostly corresponding to an onset in Western linguistics. Their difference appears only in a few cases; e.g. /kw-/ is an onset but an initial /k-/ plus a medial /-w-/.

\(^10\) Sino-linguistic term 雙聲聯綿詞: Disyllabic words in which the identical initial repeats, cf. English see-saw, flip-flop.

\(^11\) A consonant initial plus a liquid must be analyzed as an initial of consonant cluster. Cf. /skr-/, /sk-/, /kr-/, /s-/, /k-/, and /r/ are phonologically equal onsets and initials. A medial must be vocalic until the liquid medial hypothesis attempted to add the liquid.
side would reconstruct *Cl-Cl- [or *Cr-Cr-] (initial repeating). If the descriptivists’ side will reconstruct *Cl-Cl- [or *Cr-Cr-] in all the initial repeating reduplicative words involving only one division-2 Sinogram, say 薷蒓 as *kreː-kroːʔ, instead of OC-Z *kreː-koːʔ, it means that they reconstruct *Cl- [or *Cr-] also for non-division-2 Sinograms. Their comparative basis, the liquid medial for division-2, is ruined by themselves.

Referee B argues:

For some of them, especially with a 侯 rime character, it is impossible to distinguish Division-1 from Division-2. Since there is simply no Division-2 in the rime. Therefore 蕁 and 逅 probably had *-r-. Second, in Sino-Tibetan languages, IRRW do not necessarily repeat the whole onset, in a lot of cases, the main initial is reduplicated, and the medial or preinitials are omitted, see Xiàng and Chén (2004) and Lài (2013). I do not see this as a major issue against *-r-.

For the first part, your argument is an assumption without attested evidence. We understand that you are claiming that OC divisions could be different to MC divisions. However, it is important that the MC divisions are attested preconditions. One can either follow the attested preconditions in full or reconstruct a whole system of OC divisions with full scale correspondences between OC and MC divisions. You follow the attested preconditions when they are of your expected division-2, but alter them when they are not of your expected division-2. This practice is incorrect.

For the second part, despite the validity of your “Sino-Tibetan language family”, we consult the papers you mentioned. The paper Xiàng and Chén (2004) has listed five initial repeating reduplicative words involving both positive and negative deletion of the component -r-, -l- or -j-: ‘mbɯ-mбро (+), βru-βraʁ (-), mbɯ-mbjis (+), ʃju-ʃjit (-), -βlosing-βle (-)’. The paper Lài (2013) has listed two items (with many free variants): ‘srǽm-sra (-) / srǽm-sru (-), zgrə̀-zgra (-) / zgrə̀-gra (-) / zgrə̀-zga (+) / zgrə̀-ga (+)’. By seeing these words, we must suggest the deletion of the component -r-, -l- or -j- is conditioned by the length of initial. If the initial is long (mb-, zg-), the next consonantal component (mbública, zgŮ-) can be omitted. If the initial is short (β-, ʁ-), the next consonantal component (βɾ- , ʁj- , βl-) cannot be omitted. Because the OC initial in question is short, the next consonantal component cannot be omitted. Since it is omitted in your reconstruction, it is a major issue against *-r-.

Besides the shared mistake on the 侯 rime, Referee D argues against it but in a totally opposite direction:

With the other examples cited by the author(s): 霆霆, 驚駁 and 蒼葭, one should keep in mind the possibility of a doublet: the non-division-2 member of the disyllable had an 〈t〉 infix in the original pronunciation, but not in the reading that underlies Middle Chinese.

This argument is not valid. These words are attested since OC. If your 〈t〉 infix was in OC but lost in MC, OC should use other Sinograms to write these words. You might suggest it was lost in OC but preserved in your “Proto-Sino-Tibetan”. However, what evidence do you have for it apart from your theoretical presumption? There is no Sino-Tibetan comparative evidence for these words.
In simple words, Referee B claims that ‘*kreː-koʔ’ should be fine, while Referee D claims that there must be a sound change ‘*kreː-koʔ > *kreː-koʔ’. You do not even try to suggest a sound change *keː-koʔ > *kreː-koʔ. You attempt to rescue your liquid medial at any price. What prevents you from abandoning *r- and considering OC-W *ke-ko? It is apparently only your faith in your ‘Sino-Tibetan language family’. Unfortunately, you have not suggested any Tibeto-Burman word in the form of kre-ko or kre-kro to be compared to this Sinitic word.

3.3. Refutation of Sino-Tibetan comparisons involving OC *-r-

Fairly speaking, Yakhontov’s argument #3 “Comparison with other languages […]” has not been effectively refuted. The Sino-linguists have argued that external comparisons in general can be invalid (e.g. Guō X. 2002: 6–8; 2003: 6–11; 2010: 21; Sūn Y. 2014: 119) with some examples, but without demonstrating how the comparisons involving OC *-r- are invalid. We would like to contribute detailed arguments to refute Yakhontov’s argument #3.

Basically, some of the external comparative evidence for OC *-r- are invalid. Yakhontov’s two primary examples “[Sinitic] 八 [ʦʰ]pwat (*plat) ‘eight’ ~ Tibetan b-r-gyad” and “百 [ʦʰ]puk (*plâk) ‘one hundred’” ~ Tibetan b-r-gya’ have been disclaimed in Jin L. (2003) from the descriptivists’ side. He discussed that the b- part in these Tibetan words is an affix that does not belong to the target morpheme of the comparisons, but to another morpheme, cf. Tibetan words bzi ‘four’, bdun ‘seven’, btcu ‘ten’.

Referee B argues:

That the Tibetan b- is a prefix does not mean that it cannot have correspondences in other Sino-Tibetan languages. Numeral prefixes can probably be reconstructed into Proto-Sino-Tibetan, it is not surprising that Chinese possesses some of their traces.

This argument is invalid. If you claim that Sinitic possesses the prefix b-, why is it not preserved in the Sinitic numerals four, seven and ten, but only in the Sinitic numerals eight and hundred? The match from the prefix b- in Tibetan to the initial *p- in Sinitic is apparently a chance resemblance.

Yakhontov’s another primary example “[Sinitic] 江 [ʦʰ]kång (*klong) ‘river’ ~ Thai khlong ‘canal’” is refuted in a footnote in Section 4.

Generally, even if we assume that all the Sino-Tibetan comparisons of the descriptivists’ side involving OC *-r- are valid, their comparisons cannot support the postulated division correspondence ‘Sinitic division-2 ⇔ Tibetan/Burmese -r-’, because their data fail to pass a negative control. In this negative control (see Table 4), ten non-division-2 etyma are observed, that they should NOT yield the hypothesized phonetic outcome -r- in Tibetan and Burmese.

As shown in this negative control, the division-3 and division-4 etyma do also yield the hypothesized phonetic outcome -r-. Although it has been suggested that ‘the chóng-niǔ division-3 重紐三等’ etyma should also contain *-r- (Pulleyblank 1962; Baxter 1977; Zhèng-zhāng 1987), it can explain only the outcome in line 3 【泣】, all the other outcomes cannot be explained. Handel’s (2002, 2009) modification (including its following Zhang et al. 2019 application of the modification) of this
The hypothesis is not relevant to this negative control. This modification postulates where the elements *r could be in some division-2 etyma (first as the prefix/preinitial *r-, then lost), it does not explain why there are also the elements -r- in the putative non-Sinitic equivalents of Sinitic non-division-2 etyma. Finally, it is illogical to claim all the division-1, -2, -3, and -4 etyma may contain *-r-, because it contradicts the fundamental hypothesis of Yakhontov (1960) that only division-2 etyma should contain the liquid medial.

### Table 4. Postulated division correspondence negative control:

NEGATIVE {Sinitic division-2 ⇔ OC-Z -r- ⇔ Tibetan/Burmese -r-}

(Previously claimed Tibetan and Burmese equivalents from Gong 1980, 1995, up to Gong 1995)

<table>
<thead>
<tr>
<th>DOM</th>
<th>1161-YJ</th>
<th>OC-W</th>
<th>OC-Z</th>
<th>Tibetan</th>
<th>Burmese</th>
</tr>
</thead>
<tbody>
<tr>
<td>【霧】</td>
<td>division-3</td>
<td>*miø</td>
<td>*moq</td>
<td>*mugs-pa</td>
<td>*mrA</td>
</tr>
<tr>
<td>121-SW: (霧) fogs</td>
<td>'dense fog'</td>
<td>'fog, mist, haze'</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>【立】</td>
<td>division-3</td>
<td>*lijøp</td>
<td>*rub</td>
<td>'khrab</td>
<td>*rap</td>
</tr>
<tr>
<td>121-SW: (立) stop</td>
<td>'to strike'</td>
<td>'to stand, to stop'</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>【泣】</td>
<td>division-3</td>
<td>*kliøp</td>
<td><em>k</em>rub</td>
<td>'khrob-khrab</td>
<td>--</td>
</tr>
<tr>
<td>121-SW: (在) weep</td>
<td>'weeper'</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>【胃】</td>
<td>division-3</td>
<td>*yuøt</td>
<td>*guds</td>
<td>grod</td>
<td>--</td>
</tr>
<tr>
<td>121-SW: (胃) stomach</td>
<td>'belly, stomach'</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>【友】</td>
<td>division-3</td>
<td>*yuø</td>
<td>*gu?</td>
<td>grogs-po</td>
<td>--</td>
</tr>
<tr>
<td>121-SW: (友) friend</td>
<td>'friend, companion'</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>【越】</td>
<td>division-3</td>
<td>*yuøt</td>
<td>*gu?</td>
<td>'grod</td>
<td>--</td>
</tr>
<tr>
<td>121-SW: (去) go</td>
<td>'to go, to travel'</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>【羽】</td>
<td>division-3</td>
<td>*yuø</td>
<td>*gu?</td>
<td>sgro</td>
<td>--</td>
</tr>
<tr>
<td>121-SW: (羽) feather</td>
<td>'large feather'</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>【手】</td>
<td>division-3</td>
<td>*yuø</td>
<td>*gu?</td>
<td>gro</td>
<td>krwa'</td>
</tr>
<tr>
<td>121-SW: (手) hand</td>
<td>'to walk, to go'</td>
<td>'to proceed'</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>【芋】</td>
<td>division-3</td>
<td>*yuø</td>
<td>*gu?</td>
<td>gro-ma</td>
<td>--</td>
</tr>
<tr>
<td>121-SW: (芋) potato</td>
<td>'potato'</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>【憐】</td>
<td>division-4</td>
<td>*lieŋ</td>
<td>*reŋ</td>
<td>drim</td>
<td>kān-</td>
</tr>
<tr>
<td>121-SW: (憐) sorrow</td>
<td>'kindness, favor, grace'</td>
<td>'love'</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
This negative control failed; unexpected outcomes are left without explanation, therefore the postulated division correspondence ‘Sinitic division-2 ⇔ Tibetan/ Burmese -r-’ is invalid. When the descriptivists’ side demonstrated the postulated division correspondence with the expected results ‘Sinitic division-2 ⇔ Tibetan/ Burmese -r-’, it was artificially selected. On the Sinitic side, only division-2 etyma were collected.

Referee B argues:

A number of Division-3 and 4 rimes must be reconstructed with *-r-. *-r- is not only hypothesised for Division-2 rimes. [...] You presuppose that *-r-proponents agree that division-2 rimes in Chinese corresponds to Tibeto-Burman -r- and vice versa. This is not true. Nobody ever made that claim.

This argument is lacking grounds of logic and mathematics. If you think Tibeto-Burman -r- can widely appear without a mapping to Chinese division-2, then you cannot support Yakhontov’s argument #3 “Comparison with other languages where l or r correspond to the l in Chinese, provides evidence of the presence of l in Chinese syllables of the IInd division”, and you cannot reconstruct Chinese division-2 as *-r-. The vital problem is not that Tibeto-Burman -r- does not correspond to Chinese division-2 in full, but that they may also correspond to other divisions in the way you claim for division-2.

We set: division-2 = X; division-3 = Y; division-4 = Z; division-1 = W. We know: X ≠ Y ≠ Z ≠ W. In order to solve the values of X, Y, Z and W, we must collect equations. Yakhontov (1960) collected five equations, say: 8aX = 8b(r); 100aX = 100b(r); 81aX = 81b(r); 9265aX = 9265b(r); 910aX = 910b(r). It seemed perfect at first sight, thus the solution X=r was claimed. The problem is that, according to the comparisons of Gong (1980, 1995), there are actually also equations, say 28aY = 28b(r); 303aY = 303b(r); 94aY = 94b(r); 9123aY = 9123b(r); 974aY = 974b(r), thus the solution Y=r can also be claimed, but it violates the condition X≠Y. Therefore both the solutions X=r and Y=r are incorrect.

Referee D argues:

The author(s) wish to demonstrate that the reconstruction of a liquid medial in division-2, first proposed by Yakhontov in 1960, is incorrect. While Yakhontov’s proposal was limited to division 2, the systems of Zhengzhang, Baxter, Starostin, Baxter-Sagart, at least, all allow medial -r- in division 3 as well, not just in division-3 chongniu but also in all division-3 retroflex initials and sometimes after grave initials, when evidence from xiesheng series or Chinese loanwords supports it. A central idea in the paper is that one cannot reconstruct -r- for division 2 because the arguments work just as well for division 3. This is only to be expected. Modern systems see a basic distinction between divisions 1, 2 and 4 on the one hand (type A) and division 3 (type B) on the other hand; division 3 contains ‘iodized’ versions of all the type A syllables, including division-2 (leaving aside the nature of ‘iodization’ here). So, yes, division-3 also includes words with medial -r-. Instead of trying to debunk Yakhontov’s 60-year-old paper, the authors should have examined modern systems such as Zhengzhang’s or Baxter-Sagart.
The fundamental logics of Referee D and Referee B are very similar. They think their later modifications such as allowing *-r- to some division-3 (even also some division-4 by Referee B) Sinograms can solve the problem. They have forgotten that it violates the fundamental logic of the liquid medial hypothesis. The four divisions are four categories. We have to find certain and different values for these four categories. Yakhontov (1960) started to suggest that the value of the category division-2 is a liquid. His basic argument is the exclusive correspondence between division-2 and the liquid. His logic is correct while his results are incorrect. If you claim that the exclusive correspondence is not necessary, your logic is incorrect, already. We say that \( X = r \) is incorrect, because \( Y = r \) and \( X \neq Y \). Instead of correcting the value of \( X \), you are proclaiming \( X = Y \) (even also \( X = Y = Z \)). One day, would you proclaim \( X = Y = Z = W \)? Do you deny the four divisions or your logic? Ancient Chinese rhyme tables and Sino-philologists gave us the four divisions as four categories, and clarified they are different. You started your studies correctly with the rhyme tables as your primary preconditions. You cannot later deny or alter your primary preconditions when they do not satisfy your expectation. Once your groundwork is defective, all your constructions on it are falling.

Potentially, there will be a valid mapping if they claim a correspondence between division-2&3 (all of division-2 and division-3) and the liquid medial (thus to reconstruct all of division-2 *-r-, all of division-3 *-rj-, and to reject all the Sino-Tibetan comparisons from Tibeto-Burman -r- to Sinitic division-1&4). Actually, they cannot claim so. It will result that too many (two out of four divisions) OC word roots contain *-r-. It is typologically unacceptable. Referee D has listed that they have tried to rearrange the four categories into two categories: division-1&2&4 and division-3. Therefore, this potentially valid mapping does not help them.

Referee C does not proclaim \( X=Y \) but says:

The author argues that comparative evidence from Tibeto-Burman languages fails to support Old Chinese *-r- in Div. II syllables. However, it is already well-known that straightforward Chinese-to-TB onset or “medial” correspondences are difficult to identify by reference to *any* OC system. Furthermore, the author does not demonstrate that this material can support their argument for Wang Li’s *-e-/*-o-.

We thank Referee C for acknowledging it, when Referee B and Referee D are trying to argue against it. Our main point here is the logic of negative control in scientific researches in general. Certainly, we do not demonstrate this Tibeto-Burman material can support Wang Li’s vocalic medial hypothesis. We do not think these Sino-Tibetan comparisons are correct enough to be considered in Sinitic studies. We have Sino-Vietnamese and Sino-Uralic material to support Wang Li’s vocalic hypothesis (Section 3.4 and 3.5).

Referee C and Referee D raise the issue of the diachronic changes of retroflex initials involving the medial *-r-. Referee C says:

Proponents of OC *-r- think, for example, that *-r- is a useful way to explain the absence of dental series onsets in Div. II because perhaps OC dental onsets like *t- + medial *-r- >> not Middle Chinese dental \([^2]t-\)
The intensive controversy on Chinese historical phonology but rather retroflex stops “[⁎]tr-” or some similar (>> affricates ≈ /ʈʂ/ in many modern varieties.) That is, this group of authors emphasizes concrete phonetic values and plausible diachronic changes, and points out that similar changes to Cr- clusters have occurred in other languages.

Referee D says:
Yakhontov thought MC [⁎]l- reflected OC [*]l-, but if one admits that MC [⁎]l- goes back to a retroflex OC *r-, then the distribution of ‘+’ and ‘-’ in the table is clarified: the division 1 line represents OC initials without medial [*]r- and division 2 the same initials with medial [*]r-. MC retroflexes come from apicals plus [*]r-, which is phonetically highly plausible. The author(s) do not mention retroflexes once in their paper.

This issue is actually not relevant to the present study, but we answer it. First, the sound change /rt/ > /ʈ/ is attested in Swedish, not /tr/ > /ʈ/, cf. karta [²kʰɑːʈa] ‘map’, but trappa [²tʰrapːa] ‘stairs’. Second, even if the sound change /tr/ > /ʈ/ is valid, you can only reconstruct *-r- in those Sinograms which contain the retroflex initials, but you have reconstructed *-r- in all the division-2 Sinograms, at least. There is no evidence for your practice.

3.4. Sino-Vietnamese evidence for the vocalic medial for division-2 in OC

What are more plausible values for the divisions in OC? They are vocalic medials. Wáng L. (1957, 1980a, 1985) listed the vocalic medial *null/-u- for division-1, *-e/-o- for division-2, *-i/-iu- for division-3, *-i/-iu- for division-4. When you do not find these vocalic medials in Tibeto-Burman languages, you cannot change the plausible vocalic values of OC to your liquid values according to Tibeto-Burman languages, because they are different languages (even if you believe that they are genetically related); you have to reevaluate your Sino-Tibetan comparisons.

Here Referee C has completely misunderstood our point:
Most problematic is the discussion of comparative evidence. When arguing against OC *-r-, the author considers irregular correspondences with TB -r-, etc., to be a serious defect. However, when arguing in favor of Wang Li’s OC *-e/-o-, the author considers irregular correspondences to be irrelevant (“[w]hen you do not find these vocalic medials in Tibeto-Burman languages […] you have to reevaluate your Sino-Tibetan comparisons.”)

This misunderstanding originates in their belief of “the Sino-Tibetan language family”. In fact, we mean you have to reevaluate whether your Sino-Tibetan comparisons are valid or invalid. We do not imply that we accept your Sino-Tibetan comparisons. We do not imply that we leave the nonexistence of the vocalic medials in Tibeto-Burman languages as irregular correspondences in your “Sino-Tibetan language family”. This serious defect is limited to the Sino-Tibetan comparisons. It is irrelevant to the etymological comparisons in other directions.

Wáng L. (1957, 1980a, 1985) reconstructed the vocalic medial *-e/-o- for division-2 without demonstrating evidence. Wáng L. (1964: 44) compared it typologically to Old English medial -e- and Vietnamese medial -o-. It is orally told
that he had evidence for it from Archaic Sino-Vietnamese. We have researched Wáng’s original paper on Sino-Vietnamese (Wáng L. 1948) and made a division correspondence table (Table 5) with his etymological comparisons to division-2.

Based on the comparative evidence in Table 5, Sinitic division-2 is correlated to the vocalic medial -e/-o- in Archaic Sino-Vietnamese. Wáng L. (1948: 58–63) introduced the differences between Archaic Sino-Vietnamese and undifferentiated Sino-Vietnamese and implied that the distinction between division-1 and division-2 is lost in undifferentiated Sino-Vietnamese but not in Archaic Sino-Vietnamese. Therefore, his argument cannot be opposed with counterexamples in undifferentiated Sino-Vietnamese. Without considering this

| Table 5. Division correspondence (Dc2021GaoJ-1406-0922-T5-1948WangL-1562-5915):
| Sinitic division-2 ⇔ OC-W* -e/-o- ⇔ Archaic Sino-Vietnamese -e/-o- (-e/-o-)
| (DOM and non-orthographical Vietnamese data from Wáng L. 1948: 60–65) |

<table>
<thead>
<tr>
<th>DOM</th>
<th>1161-YJ</th>
<th>OC-W</th>
<th>OC-Z</th>
<th>Archiac Sino-Vietnamese</th>
<th>Sino-Vietnamese</th>
</tr>
</thead>
<tbody>
<tr>
<td>【巧】</td>
<td>division-2</td>
<td>*kʰjou</td>
<td>*kʰruː?</td>
<td>khe⁶ (khêo)</td>
<td>xao (xiao)</td>
</tr>
<tr>
<td>121-SW:黑夜 (‘quick-white’).</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>【誇】</td>
<td>division-2</td>
<td>*kʰqa</td>
<td>*kʰwaː</td>
<td>khoa⁴ (khoa)</td>
<td>khoa¹ (= khoa)</td>
</tr>
<tr>
<td>121-SW:黑夜 (‘boast’).</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>【謬】</td>
<td>division-2</td>
<td>*kʰu</td>
<td>*kʰruː.w</td>
<td>khe³ (khêo)</td>
<td>giao³ (giao)</td>
</tr>
<tr>
<td>121-SW:黑夜 (‘close’).</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>【權】</td>
<td>division-2</td>
<td>*deːk</td>
<td>*tʰeː:wgs</td>
<td>chêo⁵ (chêo)</td>
<td>trao⁴ (trao)</td>
</tr>
<tr>
<td>121-SW:所以漢語 (‘one’).</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>【讎】</td>
<td>division-2</td>
<td>*moː</td>
<td>*mreː.w</td>
<td>mo⁶ (mêo)</td>
<td>mieu¹ (miêu)</td>
</tr>
<tr>
<td>121-SW:黑夜 (‘cat’).</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>【卯】</td>
<td>division-2</td>
<td>*mêu</td>
<td>*mruː.ʔ</td>
<td>mo⁶ (mêo)</td>
<td>-- (mão)</td>
</tr>
<tr>
<td>121-SW:黑夜 (‘cap’).</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>【豹】</td>
<td>division-2</td>
<td>*peːk</td>
<td>*tʰeː:wgs</td>
<td>bêo¹ (bêo)</td>
<td>bao⁵ (bào)</td>
</tr>
<tr>
<td>121-SW:黑夜 (‘leopard’).</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>【樁】</td>
<td>division-2</td>
<td>*yoi</td>
<td>*gruː.l</td>
<td>hoa² (hoa)</td>
<td>-- (= hoa)</td>
</tr>
<tr>
<td>121-SW:黑夜 (‘tree [pagoda]’).</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

12 Wáng L. (1948: 63): “所謂外轉二等韻[…]依上文所述的漢越語的系統來看，它們的韻值和一等韻完全相同[…]但是，我們相信古漢越語裏的情形並非如此。” ‘The so-called extrovert division-2 rhymes […] in the Sino-Vietnamese system, discussed in the foregoing paragraphs, are phonologically identical to division-1 rhymes […] But we believe that it was not so in Archaic Sino-Vietnamese.”
Referee D lists undifferentiated Sino-Vietnamese counterexamples. If you really want to testify against this division correspondence, you should do a negative control with division-3 counterexamples in Archaic Sino-Vietnamese.

Referee A questions: “What is your counterargument against the Sino-Vietnamese borrowings postdating the shift of *re > *e (according to descriptivist-type reconstructions)?” This postulation is invalid. Despite the flaw of external comparative evidence for *-r- as we have discussed in previous paragraphs, there is no internal comparative evidence for *-r-. One of these division-2 etyma, the etymon 【貓】‘cat’, is obviously of an onomatopoetic origin from the vocalization of cats, cf. English meow; French miaou; German/Spanish/Portuguese/Polish/Lithuanian/Finnish/Hungarian miao; Italian miaow; Danish mjau; Swedish mjau; Russian/Bulgarian my (mjau); Czech/Slovak mňau; Latvian náu; Estonian mäu/náu; Turkish miyav; Korean ᄄᆞแปลก yaang/нят nyang); Japanese にゃー niya; Indonesian meong; Arabic مُواء muwaa’. Onomatopoetic words are very conservative. This etymon must be already *[mxaw] (cf. OC-W *meô) when it was formed in OC. The descriptivists’ side’s reconstruction with *-r- such as *mreːw is apparently invalid, because cats are not able to pronounce [r]. Referee B claims: “Note that cats meow differently in different languages. Old Chinese and modern Sinitic languages are different languages, we never know how Old Chinese speakers interpreted cat sounds.” We must reply: Do not argue without evidence. Can you give any example that the vocalization of cat is interpreted with a liquid medial in any human language? OC speakers must be of the same human being. Referee D says: “Actually it is not uncommon in English to interpret cat vocalization as mra(a)w. Examples gathered from the internet. […].” We thank Referee D for gathering it from the internet. However, this fact reveals that this personal -r- is rather secondary to -e- in English. First, English -r- being postalveolar approximant [ɹ] differs distinctly from Swedish -r- being alveolar trill [r] which can make the retroflex consonants. Second, by seeing the English equivalents meow, mraw and mraaw, shall we reconstruct any Proto-English *mreow? We cannot reconstruct it because it is against the English philology and the nature of the vocalization of cats. If you agree with it, why would you insist on reconstructing the form *mreːw for cats in OC?

Referee C does not insist on *mreːw for cats in OC but argues:

The author discusses sound symbolic words like māo 貓 ‘cat’. Here they could consult for instance Axel Schuessler, “What are cognates and what are variants in Chinese word families” (Papers from the Third International Conference on Sinology, Linguistics Section, 2003: 231): “[…] not all div. II syllables derive from OC r-clusters. [In some cases] a div. II vowel was preserved for reasons of sound symbolism. Generally, onomatopoetic words do not always follow regular phonological developments.”

This argument is illogic. Once you accept that the onomatopoetic words do not always follow regular phonological developments, you have to accept that the vocalic value in the onomatopoetic words is more original. However, your implied phonological development is *-r- > *-e-, not *-e- > *-r-.
Referee A questions: “How do you explain 立 as a phonetic component in 泣 if the latter has no liquid?” We answer it. A velar stop may become a liquid via a uvular fricative: [g] > [ʁ] > [ʀ], cf. German Kugel [ˈkʰuːɡəl] > Luxembourgish Kugel [ˈkʰuːʁəl] > Luxembourgish repeated by Dutch [ˈkuːʁəl]. There could be some OC dialect with similar sound changes. This dialect formed those Sinograms in which velar stops and liquids are correlated.

Referee D says:

This is very hard to believe. First, the explanation does not work for alternations between labials and [*l]-, as in 凌 vs 冰; second, if 立 had a velar initial in OC without medial [*]-r-, then one would expect to see a velar without -r- in TB languages; but the TB word for ‘weep’ has a Kr- type cluster in many branches: Tani, Deng, Kuki-Chin, Naga, Garo, northern Naga, Jingpo, Kanauri, Tibetan, Burmese... see https://stedt.berkeley.edu/~stedt-cgi/rootcanal.pl/etymon/1103.

For the first part, a labial stop may become a labial trill and then an alveolar trill: [b] > [ʙ] > [r]. For the second part, it is again about the validity of Sino-Tibetan comparisons. You have not confirmed this Sino-Tibetan comparison with a regular sound correspondence consisting of multiple etyma. An etymological comparison cannot be confirmed without a regular sound correspondence, no matter how similar the compared words are. A regular sound correspondence cannot be established with only one etymon, no matter how many equivalents or branches of that one etymon you demonstrate. Moreover, the etymon 立 is not of division-2 but of division-3. Even if it is a valid comparison, it does not support the basis of the liquid medial hypothesis.

We deny the liquid medial. We do not deny the possible existence of some additional liquid element, i.e. the liquid affix. This liquid affix is not relevant to any division but to the rhotacization or erhua 兒化 in Sinitic. Valid Sino-X comparisons involving non-Sinitic -r/-l- should be explained in this direction. Nobody would try to explain the Sinitic rhotacization with the Sinitic divisions.

We should clarify that the descriptivists’ side is not a single academic camp that must protect the liquid medial hypothesis as its basis. A few descriptivists, Pulleyblank (1965: 206), Jacques (2015) and Hill (2019: 196), have already questioned whether all division-2 come from *-r-. They have recognized similar logical problems of the liquid medial hypothesis. They just have not gone so fast to reject the whole hypothesis as the Sino-linguists do from the beginning.

We end this section with Jacques’ words (Jacques 2015: 220):

Third, an alternative possibility is that the present models of Old Chinese reconstruction (including Starostin 1989, Schuessler 2009, and Baxter and Sagart 2014) overestimate the quantity of syllables with medial or prefixed *r- in Old Chinese by overgeneralization. [...] there is no definite proof that *-r- should be reconstructed in all cases.
3.5. Sino-Uralic evidence for the vocalic medial for division-2 in OC

Now that we have disabused ourselves of the assumption that division-2 word roots reconstruct to *-r-, a number of Sino-Uralic comparisons appear strengthened by assumption that *-r- is not at play.

Sinic division-2 is correlated to the vocalic medial (called V₁ in Uralic linguistics) -ō- [ɤ̞] or -o- [o̞] in Estonian and Finnish. This is a division correspondence consisting of six (6) etyma (see Table 6).

Table 6. Division correspondence (Dc2021GaoJ-1406-0922-T6):

<table>
<thead>
<tr>
<th>DOM</th>
<th>1161-YJ</th>
<th>OC-W</th>
<th>OC-Z</th>
<th>Sinitic division-2 (‘d2’ in this table) ⇔ OC-W *-e/-o- ⇔ Estonian -õ/-o- ⇔ Finnish/ North Sami -o- (demonstrated etyma from Section 4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>家</td>
<td>gobā</td>
<td>d2 *kōa</td>
<td>*kra:</td>
<td>kōda/kōja kōta goahti kudo ház</td>
</tr>
<tr>
<td>異</td>
<td>bōja</td>
<td>d2 *kēt</td>
<td>*kre:ds</td>
<td>köht köhta -- -- --</td>
</tr>
<tr>
<td>魏</td>
<td>bōda</td>
<td>d2 *ṣēt</td>
<td>*sre:ld</td>
<td>sōda/sōja sōta sōahti šudo- (čid-)</td>
</tr>
<tr>
<td>赵</td>
<td>bōa</td>
<td>d2 *ṣa</td>
<td>*qra:</td>
<td>ōda ōta ōahci oš --</td>
</tr>
<tr>
<td>任</td>
<td>bōng</td>
<td>d2 *kōŋ</td>
<td>*kro:ŋ</td>
<td>jōgi jōe jōki jōe- jōhka Jov -jó</td>
</tr>
</tbody>
</table>

Since this correspondence is of a high coincidental probability, one out of four (1/4) possible values (d1, d2, d3, d4), a negative control is required and given in Table 7. In this negative control, ten non-division-2 etyma are observed, that they should not yield the hypothesized phonetic outcome, e.g. -ō/-o- in Estonian and Finnish.

As shown in this negative control, the division-1, division-3 and division-4 etyma do not yield the hypothesized phonetic outcome (line 7 row 9 North Sami outcome goaiyu- alone with an unexpected -o- is apparently secondary). This negative control passed. The division correspondence Dc2021GaoJ-1406-0922-T6 is reliable.

Based on the comparative evidence above, Sinic division-2 is correlated to -e/-o- in Archaic Sino-Vietnamese, to -ō- [ɤ̞] / -o- [o̞] in Finnic, and should be reconstructed as *-ō- [ɤ̞] / *-o- [o̞] in OC.
Table 7. Division correspondence negative control:
NEGATIVE {Sinitic division-2 ⇔ OC-W *-e/-o- ⇔ Estonian -õ/-o- ⇔
Finnish/ North Sami -o-} (demonstrated etyma line 1–4 from Section 4,
reinforced etyma line 5–10 from Gao 2019a and Gao 2020b)

<table>
<thead>
<tr>
<th>DOM</th>
<th>1161-YJ</th>
<th>OC-W</th>
<th>OC-Z</th>
<th>Estonian</th>
<th>Finnish</th>
<th>North Sami</th>
<th>Erzya</th>
<th>Hungarian</th>
</tr>
</thead>
<tbody>
<tr>
<td>【峰】</td>
<td>121-SW(山de)</td>
<td>d3</td>
<td>*pʰjoŋ</td>
<td>*pʰjoŋ</td>
<td>mä́giːmä́e</td>
<td>mä́kiːmä́e-</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>【丰】</td>
<td>121-SW(山de)</td>
<td>d3</td>
<td>*pʰjoŋ</td>
<td>*pʰjoŋ</td>
<td>viːj</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>
| 【槻】 | 121-SW(山de) | d1 | *doŋ | *doŋ | *tege-teee | *teke-teee | *dakka- | *teje- | *tesz-
| 【漁】 | 121-SW(渔yú) | d3 | *tu | *tus | *teavas*laeva | *taivas*taива- | -- | -- | -- |
| 【求】 | 121-SW(求yú) | d3 | *giu | *gu | *kaevArtakæbea | *kaivArtakapaa | *gä́bi:di- | -- | -- |
| 【究】 | 121-SW(究yú) | d3 | *kiu | *kus | *kaevArtakæwa | *kaiva- | *goiva- | -- | -- |
| 【流】 | 121-SW(流yú) | d3 | *tu | *ni | *laev*laeva | *laiva | *lävi | -- | -- |
| 【太】 | 121-SW(太tā) | d1 | *pʰat | *pʰatə | *tä́ht*ät | *täht*ätə | -- | -- | -- |
| 【列】 | 121-SW(列léi) | d4 | *liat | *red | *laht*lahe | *lahti*lahte- | *luokta | -- | -- |

4. Results

4.1. Etymological results

Full etymological results of the etyma demonstrated in Table 8 and Table 9 are presented here.

1) 【家】 玉篇(543-YP): 居也(‘dwelling’); 錢鏡(1161-YJ): 居家(‘dwelling, home’);
 setCantonese gaal/gu1 ‘home, family’; Minnan ka/ke ‘dwelling, home’; Japanese Go-on ke/ku; Kan-
Cantonese kaal/gu1 ‘dwelling, home’; Minnan ka/ke ‘dwelling, home’; Japanese Go-on ke/ku; Kan-
Cantonese gaal/gu1 ‘home, family’; Minnan ka/ke ‘dwelling, home’; Japanese Go-on ke/ku; Kan-
Cantonese gaal/gu1 ‘home, family’; Minnan ka/ke ‘dwelling, home’; Japanese Go-on ke/ku; Kan-
kuo̯t̥/kuo̯t̥ ‘cottage’; Udmurt\Votyak -ka ‘house’; Kom𝑖\Zyrian -ka/-ko/-ku ‘house’; Khanty\Ostyak kai\zot\‘at ‘house’; Hungarian ház ‘house’; 

{“Proto-Finn–Ugric”} *kota *tent, hut, house (1988-UEW: 190); \{Uralic ↔ Shennong13 (Sino-Uralic) *kọta ‘dwelling’ ⇒ Sinitic\}. This etymon has not been identified in other languages. 14

#2【街】(split [介, 界]) \{説文(121-SW): 四通道也(‘street’), 介也(‘draw’), [畉]境也(‘boundary’);


(*kọajC); Mandarin jiē ‘street’ ~ jiē (介) intervene, (界) boundary. (dialectal: gāi ‘street’ ~ gāda\gār ‘place’); Cantonese gaai1 ~ gaai3 (介) intervene, (界) boundary; Minnan ke\ke\ ‘street’ ~ kāi\kē/ kuè (介) intervene, (界) boundary; Japanese Go-on ke; Kan-on kai; \{OC rhyme s\*-a; OC-W *ke; OC-Z *kre: ‘place’ \} has been compared (△Gāo J. 2008: 160) to the Uralic etymon after Estonian koht\koha ‘place’;

kohta ‘about’; Finnish kohta ‘place’; Selkup kuupt\kopta\kōpti\kōpt ‘seat/place’; \{Proto-Uralic *kopta ‘place’ (1988-UEW: 183); \{Uralic ↔ Shennong (Sino-Uralic) *kọta ⇒ Sinitic\}.

This etymon has been identified (△Gāo J. 2008: 160) in Germanic languages:

Danish gade ‘street’; (gat ‘hole, gat’ ← Low German); Swedish gata ‘street’; (gatt\gat ‘hole, gat’ ← Low German); Norwegian gat ‘street’; (gat ‘hole, gat’ ← Low German); Icelandic gata ‘street, road’; (gat ‘hole’ ← Low German); Old Norse gata ‘path, way, road’; (gat ‘hole, gat’ ← Low German); English gate; Old English get\gat\geat ‘gate’; Dutch gat ‘hole’; (gat ‘unpaved street’ ← High German); (gate ‘airport gate’ ← English); Old Low German gat ‘hole’; German Gasse ‘lane’ (Gatt ‘hole for rope or hook’ ← Low German);

(Gate ‘airport gate’ ← English); Old High German gaza ‘lane’; Gothic gatwaō ‘street’ (→ Finnish katu ‘street’; Lithuanian gatvė ‘street’); \{Proto-Germanic *gata- ‘hole’; *gatwōn- ‘road, alley’ (2013-EDPG: 170)\}; ← or ↔ Shennong (Sino-Uralic).

#3【殺】(split [説文(121-SW): 斬也(‘kill’); 韻鏡(1161-YJ): 外轉第二十一開二等入聲齿音清(音序, final-21, labialized-, division-2, tone-D, dental initial [fricative+ voiced-(*θoa̯tD)]; Mandarin shā (sā) ‘kill’;


14 Refutation: Previously claimed (1977-FUV: 142) etymological equation from Uralic to Persian kad ‘house’ is rejected due to phonetic inconsistencies (no rhyme correspondece). Previously claimed (1996-CVST) etymological equation from Sinitic to Burmese kraʔ-hn̥añ ‘palace, residence’ is rejected due to phonetic inconsistencies. Previously claimed (2007-EDOC: 300) etymological equation from Sinitic to Tibetan mkʰar ‘house, castle’ is rejected due to phonetic inconsistencies.

15 Refutation: Previously claimed (2013-EDPG: 170, 176) etymological equation from Proto-Germanic to Proto-Indo-European *gʰėd-e-; Greek χανδάνο (khandano) ‘to hold, include, contain’, etc. is rejected due to semantic inconsistencies.
Cantonese saat3/saai3 ‘kill’; Minnan sat ‘kill’; Japanese Go-on sei/sechi/setsu; Kan-on saat/satsu; {OC rhyme 月 *-ta; OC-W *feat; OC-Z “*sreːd”} has been compared (△Gāo J. 2008: 197) to the Uralic etymon after the equivalents: Estonian sõda\ sōja ‘war’; Finnish sota ‘war’; Sami\Lappish soahti\säähte/sootta ‘--’\ ‘war’; Mordvin šudø/-šudu ‘curse’; Mari\Cheremis šudø ‘curse’; ? Hungarian szid- ‘chide’; {“Proto-Finno-Wolgaic” *šota/šōda/šōda ‘fight, war’ (1988-UEW: 777) (The Hungarian equivalent is retrieved in the present study)}; {Uralic ← Shennong (Sino-Uralic) *θo̞ata ‘kill’ ⇒ Sinitic}.

This etymon has been identified (2007-EDOC: 452) in surrounding languages: Tibetan gsod-pa, bsad ‘kill’; Nung sat ‘kill’; Chepang sat-sa ‘kill’; Burmese sat ‘kill’; Jingpho\Kachin satl ‘kill’; Mizo\Lushai that ‘kill’; Dimasa thai ‘kill’; Garo sot ‘kill’; {Proto-Tibeto-Burman *g-sat (Benedict 1972: 27)}; {Proto-Monic *k-r-cət ‘kill’}; {← Sinitic ‘kill’}.

#4) 【椏】〖說文(121-SW): 月篇(543-YP): 萬能的樹杈 ‘tree fork’; 韻鏡(1161-YJ): 外轉第二十九開二等平聲喉音清(extrovert, final-29, labialized-, division-2, tone-A, laryngeal initial voiced-)(✩ʔo̞a); Mandarin yā (iā) ‘†tree fork’; Cantonese aa1/ngaa1 ‘†tree fork’; Minnan a/ue ‘†tree fork’; Japanese Go-on e; Kan-on a; {OC rhyme 魚 *-a; OC-W *ea; OC-Z ‘*qraː’} is compared (first publication) to the Uralic etymon after Estonian oda ‘spear’; Finnish ota ‘sting’; Sami\Lappish oahci\å̄ htsē\oaci ‘obstacle’; Mordvin oš ‘town’; Komí\Zyrian vož ‘fishing fence’; Mansí\Vogul oš/wūš/iš ‘fence, town’; Khanty\Ostyak wač/woš/was ‘town’; Nenets\Yurak wāʔ ‘fence’; Enets\Yen boʔ ‘town’; Nganasan\Tawgi baʔ ‘town’; Selkup qětte/kette/keččė/keči(qěttj ‘town’; {Proto-Uralic ‘*woča ‘fence, fishing fence; catch fish with a trap’ “ (1988-UEW: 577)}; {Uralic ← Shennong (Sino-Uralic) *θo̞ata ‘kill’ ⇒ Sinitic}. This etymon has not been identified in other languages.

#5) 【江】〖說文(121-SW): 水篇(543-YP): 玉篇(543-YP): 木篇(161-YJ): 春轉第二十九開二等平聲喉音清(extrovert, final-29, labialized-, division-2, tone-A, laryngeal initial voiced-)(✩ʔo̞a); Mandarin jiāng (jiāŋ) ‘♣river (of South and Northeast China)’; Cantonese gong2 ‘river (of South and Northeast

16 Caveat: Uncertain equivalent due to irregular outcome in the rhyme correspondence Rc2021GaoJ-1406-0922-T8, see Table 8.

17 Because there is almost no internal diversity in Tibeto-Burman and the sense in Tibeto-Burman is identical to Sinitic, it must be a non-genetic diffusion (loanword) from Sinitic. The g- part in Tibetan gsod-pa belongs to another morpheme. The word gsod-pa should be a dimorphemic hybrid doubling compound containing of a native term *gVC for ‘kill’ and the diffused term -sod ‘kill’. Dimorphemic hybrid doubling compounds are common in Sinitic, e.g. in Mandarin, in the word 殺戮 shā-lù ‘killing’, the second morpheme 戮 lù ‘to kill (literary only)’ is a non-genetically diffused term; in the word 屠戮 tú-shā ‘slaughtering’, the first morpheme 屠 tú ‘to slaughter (literary only)’ is a non-genetically diffused term. Native Mandarin speakers without education may only guess the meanings of these two compound words with the native term 殺 shā ‘to kill’ in them.
The intensive controversy on Chinese historical phonology

125

Mandarin kang ‘river (of South and Northeast China)’; Japanese Go-on kō; Kan-on kō; {OC rhyme 東 *-ŋo; OC-W *kœŋ; OC-Z “*kroŋ”} has been compared (△Gǎo J. 2008: 155) to the Uralic etymology for the equivalents: Estonian jōgijõõ ‘river’; Finnish joki ‘river’; Sami\Lappish johka/jâhkâ/iuuhâ/jo’kk/jõok ‘river’; Mordvin Jov ‘Moksha River’; Mari\Cheremis jõje- ‘flow’; Udmurt\Votyak ju-šur ‘river’; Kom\Zyrian ju ‘river’; Khanty\Ostyak jijii/jexa/jixj ‘small river’; Mansi\Vugol jē/jājē ‘river’; Hungarian -jó ‘river, in place names’; Nenets\Yurak jaxa ‘river’; Enets\Yen āaha ‘river’; Selkup kǐjīkā/čaği ‘river/swamp, small lake’; Kamass čaγa ‘river’; {Proto-Uralic *joke ‘river’ (1988-UEW: 266) (The Selkup equivalents are retrieved in the present study)} {Uralic ← Shennong (Sino-Uralic) *kŋəŋ ‘river’ ⇒ Sinitic}. This etymon has not been identified in other languages.18

#6【峰】

Mandarin fēng (fēn) ‘peak’; Cantonese fung1 ‘peak’; Minnan hong ‘peak’; Japanese Go-on fu ‘peak’; Kan-on hō; {OC rhyme 東 *-ŋo; OC-W *pʰjœŋ; OC-Z “*pʰoŋ”} has been compared (△Gǎo J. 2008: 150) to the Uralic etymology for the equivalents: Estonian māgimāe ‘mountain, hill’; Finnish maikimäe ‘hill’; Khanty\Ostyak mių/mių/wių ‘small earth mound / earth cusp / lawn hill’; Selkup maka/makka ‘lawn hill’; {“Proto-Finno-Ugric” *maķe ‘hill, mountain’ (1988-UEW: 266) (The Selkup equivalents are retrieved in the present study)} {Uralic ← Shennong (Sino-Uralic) *mpɵŋkʷə ‘sharp mountain’ ⇒ Sinitic}. This etymon has not been identified in other languages.19

#7【丰】

Mandarin fēng (fēn) ‘abundant’; Cantonese fung ‘abundant’; Minnan hong ‘abundant’; Japanese Go-on fu/ibu; Kan-on hō/fū; {OC rhyme 東 *-ŋo; OC-W *pʰjœŋ; OC-Z “*pʰoŋ”} is compared (first publication) to the Uralic etymology after the equivalents: Estonian vāgi/vāe ‘force’, vāga ‘very’; Finnish vükiväe ‘crowd, force’; Sami\Lappish viehka/viehka/viehak ‘rather/force’; Mordvin vij/vi ‘force’; Mari\Cheremis wi/wij ‘force’; Udmurt

18 Refutation: Previously claimed (Yakhontov 1960: 7) etymological equation from Sinitic to Thai klong ‘canal’ is rejected due to phonetic inconsistencies (no rhyme correspondence). Previously claimed (Norman and Mei 1976: 280; 2007-EDOC: 306) etymological equation from Sinitic to Vietnamese sông, Bahnar/Sedang kroŋ, Katu karun, Bru kloŋ, Gar\Koho roŋ Laʔven dakhom Biat n’hoŋ, Hre khraŋ, Old Mon kroŋ/kroŋ ‘river’; {Proto-Monic *kroŋ}; Tibetan kluŋ ‘river’; Thai khloŋ ‘canal’; Malay kroŋ is rejected due to phonetic inconsistencies (no rhyme correspondence). Previously claimed (1996-CVSSST) etymological equation from Sinitic to Jingpho\Kachin kruŋ ‘valley’; Mizo\Lushai kuan ‘the channel (of river)’ is rejected due to phonetic inconsistencies (no rhyme correspondence).

19 Refutation: Previously claimed (2007-EDOC: 238) etymological equation from Sinitic to Khmer kpuŋ ‘summit, peak’ is rejected due to phonetic inconsistencies.
Votyak -vi ‘force’; Khanty/Ostyak wöγ/weγ/wej ‘force’; Mansi/Vogul wäw/wä/wäγ ‘force’; Nenets/Yurak wiγ ‘force’; {Proto-Uralic *wäke ‘force’} (1988-UEW: 563) {Uralic ⇐ Shennong (Sino-Uralic) *peŋkʷə-many ⇒ Sinitic}. This etymon has not been identified in other languages.

#8) 鬚【瞳】〖說文(121-SW): 玉篇(543-YP): 目珠子 ‘eye ball’; 韻鏡(1161-YJ):同内轉第一開一等平聲舌音濁(introvert, final-1, labialized-, division-1, tone-A, alveolar initial voiced+)(✩dōŋA); Mandarin tóng(tónγ) ‘eyeball’; Cantonese tung4 ‘eyeball’; Minnan tông ‘eyeball’; Japanese Go-on zū; Kan-on tō; {OC rhyme 東*-ŋo; OC-W *doŋ; OC-Z *doŋ}]] is compared (first publication) to the Uralic etymon after the equivalents: Estonian näh-näge-näe- ‘see’; Finnish näh-näke-näe- ‘see’; Sami/Lappish niehku/niehko/-/-/- ‘dream (noun)’; Mordvin ńeje-/ńajə- ‘see’; Udmurt/Votyak naal- ‘look’; Khanty/Ostyak ni-/niw- ‘be visible’; Mansi/Vogul näw/nįγ-ne/niŋγl- ‘be visible’; Hungarian néz- ‘look’; “{Proto-Finno-Ugric” *näke- ‘see, look’ (1988-UEW: 302);} {Uralic ⇐ Shennong (Sino-Uralic) *ntǒŋkʷə ‘eye ball’ ⇒ Sinitic}. This etymon has not been identified in other languages.


4.2. Validation of the etymological results

The etyma #1–4 form a rhyme correspondence (see Table 8). A rhyme correspondence is a strict and composite rule of interdialectal sound correlations. A rhyme correspondence achieves that not only a single phoneme but also a composite rhyme (the -VCv, -Cv or -v part of a CVCv morpheme) is consistently correlated among related language varieties, thus ruling out chance resemblances. Different rhyme correspondences in Shennong (Sino-Uralic) etymologies have been published (Gao 2014, 2018, 2019a, 2019b, 2020a, 2020b; Gāo J. 2014; Gao and Tender 2020). We expect more Shennong (Sino-Uralic) rhyme correspondences in further studies.

20 Refutation: Previously claimed (1988-UEW: 563) etymological equation from Uralic to Turkish bek ‘firm, solid, stable’; Mongolian bekii ‘firm, solid, stable’; Manchu beki ‘firm, solid, stable’ is rejected due to phonetic and semantic inconsistencies.
The intensive controversy on Chinese historical phonology

Table 8. Rhyme correspondence (Rc2021GaoJ-1406-0922-T8):

<table>
<thead>
<tr>
<th>OC rhyme</th>
<th>Mandarin</th>
<th>Cantonese</th>
<th>Minnan</th>
<th>Estonian</th>
<th>Finnish</th>
<th>North Sami</th>
<th>Erzya</th>
<th>Hungarian</th>
</tr>
</thead>
<tbody>
<tr>
<td>魚* -a</td>
<td>jiā</td>
<td>goa1</td>
<td>kā/kē</td>
<td>kōda koja</td>
<td>kota</td>
<td>goahti</td>
<td>kudo</td>
<td>ház</td>
</tr>
<tr>
<td>月* -ta</td>
<td>jiē</td>
<td>goa3</td>
<td>kāi/kē/kuē</td>
<td>koht koha</td>
<td>kohta</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>

Table 9. Rhyme correspondence (Rc2021GaoJ-1406-0922-T9):

<table>
<thead>
<tr>
<th>OC rhyme</th>
<th>Mandarin</th>
<th>Cantonese</th>
<th>Minnan</th>
<th>Estonian</th>
<th>Finnish</th>
<th>North Sami</th>
<th>Erzya</th>
<th>Hungarian</th>
</tr>
</thead>
<tbody>
<tr>
<td>東* -ŋo</td>
<td>jīng</td>
<td>gong1</td>
<td>kāng</td>
<td>jōgī jōe</td>
<td>jōkī jōe</td>
<td>jōhkā</td>
<td>Jōv</td>
<td>-jó</td>
</tr>
<tr>
<td>丰* -ŋo</td>
<td>fūng</td>
<td>hōng</td>
<td>mūgī māē</td>
<td>mūkī māē</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>丰* -ŋo</td>
<td>fūng</td>
<td>hōng</td>
<td>viēkī vāē</td>
<td>viēkī vāē</td>
<td>viēkā</td>
<td>viē</td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>

The etyma #5–9 form a rhyme correspondence (see Table 9).

Table 9. Rhyme correspondence (Rc2021GaoJ-1406-0922-T9):

<table>
<thead>
<tr>
<th>OC rhyme</th>
<th>Mandarin</th>
<th>Cantonese</th>
<th>Minnan</th>
<th>Estonian</th>
<th>Finnish</th>
<th>North Sami</th>
<th>Erzya</th>
<th>Hungarian</th>
</tr>
</thead>
<tbody>
<tr>
<td>東* -ŋo</td>
<td>jīng</td>
<td>gong1</td>
<td>kāng</td>
<td>jōgī jōe</td>
<td>jōkī jōe</td>
<td>jōhkā</td>
<td>Jōv</td>
<td>-jó</td>
</tr>
</tbody>
</table>

Finnish -Voīe ↔ North Sami -Vhka ↔ Erzya -eje ↔ Hungarian -eszl-ez

This is a deep rhyme correspondence with five etyma. It is substantially evidential. Its coincidental probability\(^{21}\) is as low as 1/727,255,744: The first etymon with a rhyme (29/29=1) * the first etymon has comparable onsets (1/4 [there are four sorts of onsets: labial, coronal, dorsal and laryngeal]) * the second etymon falls into the same OC rhyme group (1/29 [there are 29 rhyme groups in OC]) * the second etymon has

---

\(^{21}\) It is comparable to a lottery probability for four (4) matching numbers chosen from 29 and five (5) matching numbers chosen from four (4) options, repeatedly.
comparable onsets (1/4) * the third etymon falls into the same OC rhyme group (1/29)
* the third etymon has comparable onsets (1/4) * the fourth etymon falls into the same
OC rhyme group (1/29) * the fourth etymon has comparable onsets (1/4) * the fifth
etymon falls into the same OC rhyme group (1/29) * the fifth etymon has comparable

Although the present paper has supported the Sino-linguists’ side by refuting
the liquid medial hypothesis of the descriptivists’ side, we do not think that all
the hypotheses of the descriptivists’ side should be refuted. E.g. the tonogenesis
hypothesis, *-x(-ʔ)-s for tone-B\C, has been supported with Sino-Uralic evidence
(Gao 2014: 103–104). We will discuss the other hypotheses on future occasions.

5. Conclusions

The hypothesis of the liquid medial for division-2 in OC is refuted with philological
arguments and a negative control of comparative evidence. The hypothesis of the
vocalic medial for division-2 in OC is supported with Sino-Vietnamese and Sino-
Uralic comparative evidence. Sinitic division-2 is correlated to -e-/o- in Archaic
Sino-Vietnamese, to -ə- [ɣ] / -o- [ɤ] in Finnic, and should be reconstructed as *
,o- [ɤ] / *-o- [o] in OC.

Using etymological methods, the present study has identified nine (9) Sinitic and
Uralic shared etymologies. Four (4) Shennong (Sino-Uralic) etymologies belong
to a rhyme correspondence. Five (5) Shennong (Sino-Uralic) etymologies belong
to another rhyme correspondence. These two (2) regular sound correspondences
validate the etymological connections between Sinitic and Uralic.

Acknowledgements

A part of this study was first presented at the Chinese panel of The Second Baltic
Alliance for Asian Studies Conference, Tartu, April 7–9, 2016. I would like to thank
the participants for our useful discussions, especially Qiao Quansheng, Zhang
Minquan, Sun Yuwen, Wang Weimin and Li Jianqiang. I would also like to thank
Nathan W. Hill for his encouragements and comments on major versions of this
paper.

This study is supported by the National Key R&D Program of China
(2020YFE0201600), the B&R Joint Laboratory of Eurasian Anthropology
(18490750300), the National Social Science Fund of China (20AZD126) and the
Education Commission of Beijing (CIT&TCD20190107).

Address:
Gao Jingyi 高晶一
School of European Studies
Beijing International Studies University
Dingfuzhuangnanli 1, Chaoyang, Beijing, China
E-mail: gao.jingyi@bisu.edu.cn
References

121-SW = Xu, Shen (121) Shuowen jiezi. Luoyang (Luoyang). Xu, Xuan (jiao) (986). Dongjing (Kaifeng).


1008-GY = [Chen, Peng-nian (xiu)] (1008) Da song cong guang yin. Dongjing (Kaifeng).

1161-YJ = Zhang, Lin-zhi (xu) (1161) Yuanjing. Lin-an (Hangzhou).


The intensive controversy on Chinese historical phonology


Gao, Jingyi (2020a) “Sino-Uralic etymology for ‘Jupiter, year’ supported by rhyme correspondence”. _Archaeoastronomy and Ancient Technologies_ 8, 1, 1–11.


Gao, Jingyi; Tender, Tõnu (2020) “Sino-Uralic etymology for ‘moon, month’ supported by rhyme correspondence”. _Archaeoastronomy and Ancient Technologies_ 8, 1, 60–68.


The intensive controversy on Chinese historical phonology


The intensive controversy on Chinese historical phonology


### Appendix 1. Major monographic titles on Chinese historical phonology by the two sides

<table>
<thead>
<tr>
<th>The Sino-linguists’ side</th>
<th>The descriptivists’ side</th>
</tr>
</thead>
</table>

Titles: 7 + 25 + 4 = 36. Authors: 26

Titles: 15 + 10 + 2 = 27. Authors: 20
### Appendix 2. Major Chinese papers on the intensive controversy by the two sides

<table>
<thead>
<tr>
<th>The ‘Sino-linguists’ side</th>
<th>The descriptivists’ side</th>
</tr>
</thead>
</table>
The intensive controversy on Chinese historical phonology


<table>
<thead>
<tr>
<th>Titles: 83. Authors: 52</th>
<th>Titles: 73. Authors: 30</th>
</tr>
</thead>
</table>

Abbreviations: re: = reply to; ▼ = refutation of; ▽ = caveats to, or questions on; ▲ = defense of (with counterarguments); ▼ = promotion of (without counterarguments); Cc- = consonant clusters as initial; CHP = Chinese historical phonology; PST = Sino-Tibetan as a certain language family; S-T = Sino-Tibetan; T6V = the six vowels.

* These two authors are not Sino-linguists but con-Sino-Tibetan descriptivists.
Appendix 3. Chinese references in Sinograms

121-SW = 许慎 (漢建光元年121) 説文解字. 雒陽. 徐铉等 (校) (宋雍熙三年986). 東京.
543-YP = 顧野王 (梁大同九年543) 玉篇. 建康. (陳彭年等 (校) (宋大中祥符六年1013) 大廣益會玉篇. 東京.
1008-GY = (陳彭年等 (校) (宋大中祥符元年1008) 大宋重修廣韻. 東京.
1161-YJ = 张麟之 (序) (宋紹興辛巳1161) 韻鏡. 鄭州.