The Phonological Characteristics of Northern Chinese of the Jin Dynasty

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This article analyzes the phonological characteristics of modern northern Mandarin that can be retrieved from Chinese loanwords written in the Jurchen script. The Jurchen materials used are basically the steles of the Jin dynasty. In the analyses an internal contrastive method is used to determine phonological categories to avoid circular arguments in dealing with the transcriptions between two unknown languages. The results of our analyses demonstrate that the limited Chinese loanwords in the Jurchen language actually contain critical information about the Chinese phonology of the Jin dynasty (1115-1234). The analyses of ten phonological characteristics show that Jin Chinese is clearly related to modern northern Mandarin as represented by the Beijing dialect. The phonological characteristics of Jin Chinese provide an important piece of information about the history of Mandarin before the Zhongyuan Yinyun 中原音韻 of 1324, which is commonly perceived as the earliest evidence of Mandarin phonology.

Keywords: History of Mandarin phonology, Phonological characteristics of Mandarin, Jurchen script, Chinese loanwords

1. Introduction

In this article we analyze the phonological characteristics of Chinese that can be retrieved from Chinese words written in the Jurchen script.¹ Our analysis shall show that the limited Chinese loanwords actually contain critical information about the Chinese phonology of the Jin dynasty (1115-1234). The phonological characteristics retrieved clearly indicate that the Chinese language spoken in the territory of the Jin dynasty is an ancestral language of modern Mandarin and especially modern northern Mandarin (hereafter MNM) as represented by the Beijing dialect.² We shall show that,

¹ In a previous study (Shen 2006b) we analyzed a few phonological characteristics of Chinese of the Jin dynasty. This article is a more complete examination.
² Modern Mandarin refers to guanhua fangyan 官話方言 and modern northern Mandarin refers to beifang guanhua 北方官話, which is a cover term referring to two Mandarin subdialects: Beijing guanhua 北京官話 and dongbei guanhua 東北官話 (Li 1989).
like Liao Chinese (Shen 2007), Jin Chinese is another important piece of evidence to prove that the phonological characteristics of MNM can be traced back to a time earlier than the *Zhongyuan Yinyun* 中原音韻 of 1324, which is commonly considered the earliest evidence of the Mandarin phonology.

The phonological information of Chinese is mainly based on analyses of Chinese loanwords and the phonetic transcriptions of personal and place names in the Jurchen steles. In comparison with Khitan, the source materials from the Jin dynasty are quite limited, basically a half dozen or so steles (Liu 2002). With such a limitation the reconstruction of an entire phonology, like Sino-Khitan (Shen 2007), is obviously impossible. But as we shall show in the following analyses the limited Jurchen materials are sufficient for us to identify key phonological characteristics of the Chinese language.

2. The nature of the Jurchen script

As a logographic writing system the Jurchen script uses characters as its basic writing units. The characters are basically logograms, which represent whole words, but some are phonograms, which represent sounds.3

The number of Jurchen characters is about one thousand, according to Jin and Jin (1980). But only a limited number of them are used for transcribing Chinese. In the transcription of Chinese loanwords, Jurchen characters represent a syllable with a structure of CVC, CV, or VC. A Chinese syllable is represented by one, two, or three Jurchen characters. For example:

One character:  
CV 帝, 書; CVG 修, 昭; CVN 官, 縣, 東, 英

Two characters:  
CVG 遼, 校; CVN 編, 林, 鳳, 隆

Three characters:  
CGVN 原

C = consonant, V = vowel, G = glide, N = nasal

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3 According to the *Jin Shi* 金史 two scripts were invented. They are called the *Nüzhen Dazi* 女真大字 ‘Jurchen Greater Script’ and the *Nüzhen Xiaozi* 女真小字 ‘Jurchen Lesser Script’. Unlike the Khitan scripts no real example has been found to distinguish the two. Functionally speaking all the Jurchen writing examples are more similar to the Khitan Greater Script, which is a logographic system, representing units of meaning. It is also evident that the Jurchen characters are basic writing units and structurally cannot be further divided into smaller components, like the characters of the Khitan Lesser Script. But there is no question that in Chinese transcriptions the Jurchen characters represent phonetic values only.
Although the Chinese words can be transcribed logographically the number of characters used is seemingly related to the syllable similarities between the two languages. It should not be difficult to understand that if a Chinese syllable can be transcribed by one Jurchen character, there is no reason to use more than one Jurchen character for the transcription. The availability of Jurchen syllable types should determine the number of characters to be used. If a Chinese syllable cannot be transcribed by one Jurchen character, two Jurchen characters are used, and if a Chinese syllable cannot be transcribed by two characters, three Jurchen characters are used. It has often been observed that when two characters are used there is often a vowel agreement between the two. The first character represents a CV syllable and second represents a VC syllable. The two vowels are often identical.

3. The available materials

In the study of the Jurchen language the main material used by Jurchenologists is the so-called 女真譯語 (hereafter the NZYY or YY in the examples), which is actually the 女真 section of the 華夷譯語 compiled in the Ming dynasty (1368-1644). Two available versions are referred to as the Yongle version and the Huitong Guan version (Jin and Jin 1980, Liu 2002). The Yongle version has the Jurchen characters in the Zazi 雜字 part and the Huitong Guan version does not have any Jurchen characters. However, for the purpose of studying the Chinese phonology of the Jin dynasty the NZYY is not very reliable because it was produced centuries later in time. The phonological information is very likely from the languages of the Ming dynasty. In order to make sure that the Chinese language referred to is the Chinese dialect spoken at the time in the territory of Jin, only the Jurchen materials, mainly the steles, produced in the Jin time should be used as the main evidence. For the same reason the Jinshi 金史 cannot be the primary source material, because it was written in the Yuan dynasty and finished in 1344. We cannot totally eliminate the possibility that the phonological information contained in the loanwords was influenced by the Chinese and Jurchen languages of the Yuan dynasty. The dating of the Dajinguo Zhi 大金國誌 is very questionable. Based on the contents of this book it is likely it was put together in the Yuan dynasty instead of the year of 1234 indicated in the book. Because of these problems the NZYY, Jinshi and Dajinguo Zhi cannot provide information with reliable dates and thus cannot be used as direct evidence. For the same reason 雠儿干永宁寺碑 (1413) of the Ming dynasty cannot be used as primary material.
But these materials are not useless for the study of the Jin Chinese phonology. They can provide useful information if they are dealt with correctly. Although the NZYY cannot be used as a primary source for the Chinese phonology of the Jin dynasty, some of the transcriptions in the NZYY are very helpful in determining the phonetic values of the characters from the Jurchen steles.

For the reasons stated above the Chinese transcriptions used in our analyses are from the steles of the Jin dynasty. The amount of Chinese transcriptions varies greatly in different Jurchen materials. The *Nüzhen Jinshi Timing Bei* 女真進士題名碑 of 1224 contains many transcriptions of Chinese personal names, place names, and official titles. For reasons of convenience the materials used in our analysis are listed below along with their abbreviations, which will be referred to in the analyses below.

<table>
<thead>
<tr>
<th>Steles</th>
<th>Description</th>
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<tbody>
<tr>
<td>DS</td>
<td><em>Da Jin Desheng Tuo Song Bei</em> 大金得勝陀頌碑 (1185)</td>
</tr>
<tr>
<td>ZY</td>
<td><em>Zhaoyong Da Jiangjun Tongzhi Xiongzhou Jiedushi Mubei</em> 昭勇大將軍同知雄州節度使墓碑 (1186)</td>
</tr>
<tr>
<td>JF</td>
<td><em>Jiufeng Shibi Jigong Bei</em> 九峰石壁紀功碑 (1196)</td>
</tr>
<tr>
<td>JY</td>
<td><em>Ao-tun Liang-bi Jianyin Bei</em> 奧屯良弼賜恩碑 (1206/1210)</td>
</tr>
<tr>
<td>JS</td>
<td><em>Nüzhen Jinshi Timing Bei</em> 女真進士題名碑 (1224)</td>
</tr>
<tr>
<td>SB</td>
<td><em>Ao-tun Liang-bi Shi Bei</em> 奧屯良弼詩碑 (unknown)</td>
</tr>
<tr>
<td>QY</td>
<td><em>Qingyuan Jun Nüzhen Guoshu Bei</em> 慶源郡女真國書碑 (unknown)</td>
</tr>
</tbody>
</table>

The two cliff carvings, *Hailong Nüzhen Guoshu Moya* 海龍女真國書摩崖 (1167) and *Beiqing Nüzhen Guoshu Moya* 北靑女真國書摩崖 (1218), are not used because they do not contain the information we are looking for. We also refer to the *Yongle* version of the NZYY. When examples from the NZYY are quoted, we mainly choose examples which contain sounds not involved in the sound changes in question. For example, the phonetic value of the Middle Chinese *tou*透 initial is *tʰ* and it is still *tʰ* in MM.  

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4 The *Da Jin Desheng Tuo Song Bei* 大金得勝陀頌碑 is based on Daoerji and Hexige (1984), the *Jiufeng Shibi Jigong Bei* 九峰石壁紀功碑 is based on Mu and Sun (2004), and the rest are based on Jin and Jin (1980).

5 The reconstructed phonetic values of Middle Chinese as represented by the *Qieyun* 切韻 are based on Pan (2000).

6 In the beginning of the Jin dynasty the Khitan script was still in use. A few materials written in the Khitan Lesser script were actually produced in the Jin dynasty, for example *Dajin Huangdi Duteong Jinglue Langjun Xingji* 大金皇弟都統經略郎君行記 of 1134, *Xiao Zhonggong Muzhiming* 蕭仲恭墓誌銘 of 1150, *Jindai Boshou Fangyushi Muzhi* 金代博州
What should be noted is that the dates and locations of the Jurchen steles vary. *Da Jin Desheng Tuo Song Bei* of 1185 is in modern Fuyu county in Jilin province, and *Zhaoyong Da Jiangjun Tongzhi Xiongzhou Jiedushi Mubei* of 1186 is in modern Shulan county in Jilin province, but *Nüzhen Jinshi Timing Bei* of 1224 is in Kaifeng city in Henan province. However, the Jurchen characters used in the Chinese transcription are fairly consistent in different Jurchen steles. For example, 同知 in *Da Jin Desheng Tuo Song Bei* and *Zhaoyong Da Jiangjun Tongzhi Xiongzhou Jiedushi Mubei* are transcribed identically with Jurchen characters 113 and 407. Also 武 in phrases 修武校尉 and 周武 is found in *Nüzhen Jinshi Timing Bei* and *Da Jin Desheng Tuo Song Bei* respectively. In both cases 武 is transcribed by Jurchen character D10. It is likely that there was an orthographic standard for transliterating Chinese loanwords at the time.

4. Method

In the study of Sino-Jurchen phonology it is easy to get into circular arguments, due to the fact that both languages were written in logographic characters and the determination of phonological information usually relies on the other language. The phonological information of Jurchen relies on an understanding of the contemporary Chinese language, and vice versa. To avoid any potential problem as such, we use a simple internal contrastive method. This method is used to obtain categorical information by observing whether the Chinese syllables in question are transcribed identically or not in the Jurchen script. This internal contrastive method is especially useful for detecting mergers in the Chinese phonological system. By using this method the sound changes that affect the contrast of phonological categories can be easily determined.

Many of the phonological changes that happened from MC to various stages of Mandarin are phonological mergers: for example, the merger of the MC *zhi* 知 and *zhao* 照 initial groups, the loss of the *yi* 疑 initial, the loss of the bilabial nasal coda -m, and the loss of the stop coda of the *ru* syllables -p, -t, -k. Whether the changes have occurred can be determined by comparing the Jurchen transcription of the syllables in question. For example, in the MC system 同 has a voiced stop initial *d-*, 通 has a voiceless aspirated stop initial *tʰ-*, and 東 has a voiceless unaspirated initial *t-. They

防禦使墓誌 of 1170, and *Xiao Jushi Muzhiming 蕭居士墓誌銘* of 1175. But the spelling tradition of the Khitan Lesser script may not reflect the Chinese phonological system of the Jin dynasty. So the Khitan materials are not included in the current study.
form minimal pairs in the MC system. As the result of sound change in MNM the initial of 同 has become the same as the initial of 通. This change can be observed in the Zhongyuan Yinyun (hereafter the ZYYY) of 1324 as well. In the Jurchen materials both 同 and 通 are transcribed by the same Jurchen character (see section 5.3). On the other hand the Jurchen characters used to transcribe the initial of 東 are different. Thus through this simple example it is very clear that the phonological change in question has already occurred.

The internal contrastive method described above can be summarized as follows:

a. If A and B are different in MC phonological categories, A = B indicates a merger of A and B.

b. If A and B are the same in MC phonological categories, A ≠ B indicates a split of A and B.

A phonological system consists of two pieces of basic information, the phonological categories and the phonetic values of the categories. What has been demonstrated is a method to obtain categorical information. The phonetic values of the categories are also possible to determine without much difficulty. For example, based on the reconstructed MC phonology, the ZYYY, and modern Mandarin, we can conclude the initials of 同 and 通 are both ʰ- in the Jurchen materials.

As demonstrated above, the categorical as well as the phonetic information of 同, 通, and 東 can be determined with a high degree of confidence. Thus, by using the methods described we can be quite certain about the phonological information we retrieve from the materials.

One more issue regarding the phonetic value that should be addressed is whether the pronunciation of the Chinese loanwords was influenced by the Jurchen language. It is possible that the pronunciation of the Chinese words might have been altered due to
the fact that the phonological systems of Chinese and Jurchen were different. However, this issue is not that critical to this study, since the purpose of our study is to determine phonological characteristics in the Chinese language. For example, whether the realization of Chinese labiodental fricatives in the Jurchen language is f̂- or pʰ- is not certain (Sun 2004:67). But our focus is the pronunciation of this consonant in Chinese. Based on the Chinese as well as the Jurchen materials, this consonant must be f̂- in the Chinese phonology (refer to section 5.1).

5. The phonological characteristics of Jin Chinese

The phonological characteristics to be identified in this study are the innovative features that are present in modern Mandarin. These features show the developments from the MC phonological system. Of these features, some are not Mandarin specific, some are Mandarin specific, and some are even northern Mandarin specific. Collectively these characteristics should let us locate a historical stage in the lineage between MC and modern Mandarin. As a member of Altaic language family, the Jurchen language is not tonal. So it is not expected that the information of tones will be directly observed in the Sino-Jurchen materials.

The phonological characteristics to be analyzed are necessary and sufficient for identifying the phonology of MNM. The features to be analyzed in this article are:

1. labiodentalization;
2. merger of the MC zhi 齊 and zhao 照 initial groups;
3. devoicing of MC voiced obstruents;
4. loss of the MS stop coda and the diphthongization of MC -k syllables;
5. the loss of the MC bilabial nasal coda -m;
6. loss of the MC yi 疑 initial ñ-;
7. vowel apicalization;
8. merger of the finals of the zeng 曽 and geng 條 rhyme groups;
9. development of the palatal glide of MC division II syllables; and
10. MC wei 微 initial as a non-nasal consonant.

In the following parts all the informative examples are provided. The available data for the analyses of the features vary and are limited by the amount of Jurchen materials. Some features can be better identified and better analyzed than others. For the purpose of convenience and succinctness, at the beginning of each section of this part we list the phonological information of five relevant and consecutive historical
stages for each of the features examined. The five stages are: Middle Chinese, Sino-Khitan, Sino-Jurchen (in boldface font), the ZYYY (Yang 1981), and modern Mandarin. The phonological system of Sino-Khitan phonology is based on Shen (2007).

For each Chinese character to be analyzed we provide six pieces of information in the following analyses:

1. the code of the Jurchen character according to Jin & Jin’s *Nüzhên Yuyan Wenzi Yanjiu* 女真語言文字研究 ‘Studies of the Jurchen Language and Script’ (1980)\(^7\);
2. phonological reconstruction of the Jurchen character;
3. the Chinese word or phrase which contains the Chinese character;
4. the reference of the Jurchen material;
5. the phonological information of MC in six traditional Chinese characters;
6. the reconstructed MC value of the sound in question; and
7. the reconstruction of the Chinese sound in question.

For example,

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<th>1</th>
<th>2</th>
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<th>5</th>
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<th>7</th>
</tr>
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<tbody>
<tr>
<td>鳳</td>
<td>410+</td>
<td>pʰu</td>
<td>丹鳳門</td>
<td>JS12</td>
<td>通合三去送奉</td>
<td><em>b</em>-</td>
</tr>
</tbody>
</table>

The appendix of the article contains lists of the Jurchen characters which are used in this article and their codes based on Jin and Jin (1980). In the following discussion only the codes of the Jurchen characters are used.

**5.1 Labiodentalization (p- / pʰ- / b- > f- > f- > f- > f-)\(^8\)**

The labial dental initial f- of MNM is from MC *p-, *pʰ-, and *b- initials. The difficulty of identifying this consonant is largely due to the question of whether f- existed in the Jin time. Jurchenologists use Manchu phonology as a clue to suggest

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\(^7\) The coding of Jurchen characters by Jin and Jin (1980) is a revision of Wilhelm Grube’s coding in his *Die Sprache und Schrift der Jučen* (1896). The codes have largely remained unchanged.

\(^8\) The “*” which indicates the reconstructed forms is not used. There is no ambiguity that all the forms are reconstructed besides modern Mandarin.
that Jurchen had f- as well (Jin and Jin 1980). But there is no direct proof that there was an f- in Jurchen phonology in the Jin time.

We take a different approach to identify the status of f- in the Jurchen materials. Let’s take a look at the relevant data first.

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<tbody>
<tr>
<td>凰</td>
<td>410+</td>
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<td>丹鳳門</td>
<td>JS12</td>
<td>通合三去送奉</td>
</tr>
<tr>
<td>奉</td>
<td>410+</td>
<td>pʰu</td>
<td>通奉大夫</td>
<td>JS8</td>
<td>通合三上用奉</td>
</tr>
<tr>
<td>傳</td>
<td>410</td>
<td>pʰu</td>
<td>英王傳</td>
<td>JS10</td>
<td>通合三去遇非</td>
</tr>
<tr>
<td>府</td>
<td>410</td>
<td>pʰu</td>
<td>大名府</td>
<td>JS19</td>
<td>通合三上遇非</td>
</tr>
<tr>
<td>府</td>
<td>410</td>
<td>pʰu</td>
<td>開府</td>
<td>JF2</td>
<td>通合三上遇非</td>
</tr>
</tbody>
</table>

Graph 410 is used to transcribe the MC voiceless unaspirated stop, as in words 傳, 府, and the voiced stop, as in words 凰, 奉. There is no distinction between the initial consonants, which could be distinguished if they were not merged. Also, they are all division III syllables. But none of them suggests the palatal medial, the distinctive feature of division III syllables. So there is no question that this graph transcribes syllables with the labiodental fricative f- in Chinese. In other words, labiodental initials were in existence in Chinese.

5.2 Merger of the MC zhi 知 and zhao 照 initial groups
(zhi≠zhao > zhi=zhao > zhi=zhao > zhi=zhao > zhi=zhao)

The MC phonology zhi group initials are retroflex stops and the zhao group initials are affricates and fricatives. After the zhi initials changed from stops to corresponding affricates, MC zhi and zhao groups merged together. The Menggu Ziyun (the MGZY) and the ZYYY show the completion of this merger. This merger is also evident in the Sino-Khitan materials. In the Jurchen materials there is no sign that the zhi and zhao initial groups have a contrast.

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</thead>
<tbody>
<tr>
<td>知</td>
<td>407</td>
<td>tʃi</td>
<td>同知</td>
<td>DS2</td>
<td>止開三平支知</td>
<td>*t-</td>
<td>*tʃ-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>指</td>
<td>407</td>
<td>tʃi</td>
<td>都指揮</td>
<td>YN15</td>
<td>止開三上指章</td>
<td>*tc-</td>
<td>*tʃ-</td>
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<tr>
<td>長</td>
<td>547+</td>
<td>tʃʰa</td>
<td>長河</td>
<td>JS14</td>
<td>右開三平陽澄</td>
<td>*dz-</td>
<td>*tʃʰ-</td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>尚</td>
<td>547+</td>
<td>tʃʰa</td>
<td>尚書右丞</td>
<td>JS8</td>
<td>右開三平陽禪</td>
<td>*dz-</td>
<td>*tʃʰ-</td>
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</table>

9 In the Guangyun 尚 has two readings 時亮切 and 市羊切. The 尚 of the official title 尚書 is the second reading with ping tone, 尚書, 官名 ‘Shanghsu, official title’. The Jurchen transcription also indicates so because the first Jurchen character represents tʃʰa (see section 5.3.1).
知 is the representative character for the zhi 知 initial group and 指 is from the zhao-III 照三 initial group. Both are transcribed by Jurchen character 407. 長 is from the 知 initial group and 尚 is from the zhao-III 照三 initial group. Both are transcribed by Jurchen character 547. There is no indication that the initials from the 知 initial group still kept the manner of articulation of stops.

5.3 Devoicing of MC voiced obstruents

(b > p / pʰ > p / pʰ > p / pʰ, bilabial stops are used to represent all types of obstruents)

Devoicing of voiced obstruents is a major change from MC to OM. The special devoicing pattern involved in MNM is that voiced obstruents in the syllables with ping 平 tones change to aspirated and in ze 仄 tones (non-ping tones) change to unaspirated voiceless obstruents. It is quite fortunate that the very limited data actually provide very clear examples of this change pattern.

5.3.1 Devoicing in ping tone syllables (b > pʰ > pʰ > pʰ)

A comparison of the spelling of three Chinese characters, 同, 通, and 東, provides the best indication that the initial consonant of 同 has changed to a voiceless aspirated stop. In the MC system the initials of 同, 通, and 東 are voiced, voiceless aspirated, and voiceless unaspirated respectively. After devoicing of the voiced initials, the initial of 同 changed to voiceless aspirated because 同 is a ping tone syllable. So in the Jurchen spellings both 同 and 通 are transcribed by using Jurchen character 113 *tʰu. In contrast the initial of 東 is transcribed by using Jurchen character L3 *tu instead.

同 113 tʰuŋ 同知 DS2 通合一平東定 *d- *tʰ- 通
同 113 tʰuŋ 同知 ZY1 通合一平東定 *d- *tʰ- 通
通 113 tʰuŋ 通奉大夫 JS8 通合一平東透 *tʰ- *tʰ- 通
東 L3 tuŋ 東平府 JS20 通合一平東端 *t- *t- 通

This devoicing pattern can also be supported by the transcription of the Chinese character 唐. In the MC system the initial of 唐 is voiced. In the Jurchen spelling character 384 is used. The phonetic value of character 384 should be *tʰa. Character 384 is in contrast with character 625 *ta, which is used to transcribe the initial of 黨. That the initial of 唐 is voiceless aspirated can be further supported by the
transcriptions in the NZYY.\textsuperscript{10} In the NZYY Jurchen character 384 is transcribed by Chinese character 塔, the initial of which is voiceless aspirated *tʰ- in MC. In the NZYY character 625 is also transcribed by 答 which has a voiceless unaspirated initial *t- in MC.

\begin{tabular}{llllllll}
唐 & 384+ & tʰa & 唐(玄)宗 & DS17 & 宰開一平唐定 & *d- & *tʰ-\\
堂 & 384+ & tʰa & 堂 & JS3 & 宰開一平唐定 & *d- & *tʰ-\\
黨 & 625+ & ta & 上黨 & DS17 & 宰開一上蕩端 & *t- & *t-\\
塔 & 384 & tʰa & YY & 咸開一入盃透 & *tʰ- & *t-\\
答 & 625 & ta & YY & 咸開一入合端 & *t-
\end{tabular}

The Jurchen phonology lacks the alveolar affricates ts- and tsʰ-. In transcribing Chinese tsʰ- is transcribed the same as the voiceless fricative s-. In the Jurchen materials the Chinese characters 慈 and 司 are transcribed by using the same Jurchen character 405 *si. In contrast the voiceless unaspirated ts- is transcribed by using the Jurchen character D7 *tsi.\textsuperscript{11} A comparison of the Jurchen transcription of these three Chinese characters thus indicates that the MC voiced affricate *dz- has changed to tsʰ-.

\begin{tabular}{llllll}
慈 & 405 & si & 慈聖宮 & JS10 & 止開三平之從 & *dz- & *tsʰ- \\
司 & 405 & si & 修內司 & JS23 & 止開三平之心 & *s- & *s- \\
資 & D7 & tsi & 資德大夫 & JS10 & 止開三平脂精 & *ts- & *ts-
\end{tabular}

Since Jurchen phonology had only two-way contrast of the obstruents, with the examples provided above the devoicing of the obstruents can be further supported by comparing the minimal pairs of 長 and 彰. Jurchen character 547 represents a voiceless aspirated initial *tʰa because it is used to transcribe voiceless aspirated initials for 策 and 昌. Jurchen character 435 must be *tʰa according to the NZYY. Thus, the initial of 長, a ping tone syllable, is a voiceless aspirated initial, which is an expected result of the devoicing.

\textsuperscript{10} The NZYY transcriptions are based on the lists of Jurchen characters in Jin and Jin (1980: 69-107).

\textsuperscript{11} It should be noted here that in the NZYY, the phonetic values of Jurchen characters 406 and D7 are reversed (Jin and Jin 1980:303).
The devoicing pattern of the MC chan 禪 initial *dz- is like an affricate in the ping tone syllables. It usually becomes a voiceless aspirated affricate. 尚 is transcribed by Jurchen character 547 and 丞 by Jurchen characters 333, both are voiceless aspirated.

5.3.2 Devoicing in ze tone syllables (b > p > p > p)

The other half of this devoicing rule is that the syllables with ze tones change into voiceless unaspirated stops or affricates.

簿 and 部 are homophones. Both have the *b- initial in MC. They are transcribed by Jurchen character 459, which is transcribed by Chinese 卜 in the NZYY. Since 卜 has a voiceless unaspirated initial, the phonetic value of this Jurchen character must be pu with a voiceless unaspirated initial p-. So, the initial of 簿 and 部 is voiceless unaspirated.

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The explanation provided for 簿 and 部 can be used for 定 as well, since the relationship in terms of devoicing between them is parallel. 度 is transcribed the same as 都. Since the MC initial of 度 is *d- and of 都 is *t-, it is clear that the MC voiced obstruents of zesheng syllables have changed to voiceless unaspirated.

The same devoicing pattern can be observed for 治, which is a MC ze syllable with the 澄 *d- initial. In the Jurchen materials 治 is transcribed by character 407, and Characters 407 also transcribes 政 with a voiceless unaspirated initial.

治 407  tʃi 彭德治中 JY1 止開三去志澄 *tʃ- *tʃ-
政 407+ tʃi 奉政大夫 JS11 梗開三去敬章 *tʃ- *tʃ-

So, the Jurchen transcription of Chinese syllable 治 also indicates that MC voiced initial 澄 *d- changed to voiceless unaspirated in ze tone syllables.

5.4 Loss of the stop coda and diphthongization of MC -k syllables
(Vk > VG > VG > VG > VG)

In this section the MC ru syllables with a -k coda are the focus of the analyses. The diphthongization can be used as an indicator of the loss of the MC stop coda -k in particular and the loss of MC stop codas in general because the MC stop codas (-p, -t, -k) are not individually preserved in MNM phonology. They either disappeared or reduced to a glottal stop. The diphthongization of the MC -k syllables is a very characteristic phonological change in northern Mandarin. The phonetic values reflected in the hP’ags-pa spellings of the MGZY (Shen 2008a) indicate that all MC -k syllables underwent this process. Because of the phonological restrictions the final result can be in either diphthong or monophthong forms (Shen 2005). This sound change can be traced to the Liao time because the MC Chinese -k syllables, such as 洛, 藥, 伯, 册, transcribed in the Khitan Lesser script clearly show evidence of diphthongization (Shen 2007).

Only a few examples from MC zeng and geng rhyme groups can be found and they show the forms of diphthongization. 策 is a division I syllable of the zeng rhyme group. The second character in the spelling is the same one used for 待 and 楷. 待 is a division I syllable and 楷 is a division II syllable. Both are from the xie 蟹 rhyme group, which has a -j ending. Character 219 is also found in the NZYY to be transcribed by Chinese character 哀, which is also a division I syllable from the xie rhyme group. So Jurchen character 219 represents phonetic value ai, therefore the pronunciation of 策 is a diphthong.
北 is a MC ru syllable. It is transcribed by Jurchen character 274. In the NZYY character 274 is transcribed by Chinese character 背, which is a syllable from the xie rhyme group. Both are diphthongs with the same final in the MGZY and modern Chinese. Another example is 德. In the NZYY the same Chinese character 德 is used to transcribe Jurchen character 285. It is possible that there were not many homophonic words to choose. 得 is the only common word in this homophonic group.

A parallel hekou example is 國, which is also a division I syllable from the zeng rhyme group. The second Jurchen character in the spelling is character 106, which is transcribed by Chinese character 貴 in the NZYY. 貴 is a division III syllable from the zhi rhyme group. According the MGZY 國 and 貴 have the same hP‘ags-pa spelling, as kui.

No ru syllable from the MC dang 窩, jiang 江, and tong 通 rhyme groups is found in the materials. So the diphthongization of MC ru syllables with a -w coda form cannot observed.

5.5 The status of the MC bilabial nasal coda (-m > -m > -m > -m > -n)

The MC bilabial nasal coda -m was still systematically preserved at the Yuan time as indicated by both the MGZY and the ZYYY. The ZYYY system indicates an early stage of the loss of -m, appearing in the syllables with a labial initial, e.g. 品 *pʰin, 凡 *fan. There is good reason to assume that in the Jin time, which is earlier
than both the MGZY and the ZYYY, the coda -m was still preserved in Chinese phonology.

The status of the coda -m is not clear if we refer to the NZYY. Chinese character 因* -in is used to transcribe three Jurchen graphs, 420, 104, and 42. But the Jin steles show that these three graphs, 420, 104, and 42, are used for -im, -in, and -iŋ respectively. Here are the examples showing that the three nasal codas are very consistently transcribed by three different graphs. In the words of the Jurchen language, character 104 is used for -in only, e.g. alin ‘mountain’ JF9. The consistent use of the same characters in the transcription indicates there were three different nasal endings in the system.

<table>
<thead>
<tr>
<th>禮</th>
<th>+420</th>
<th>im</th>
<th>文林縣</th>
<th>JY3</th>
<th>深開三平侵來</th>
<th>*-m</th>
<th>*-m</th>
</tr>
</thead>
<tbody>
<tr>
<td>禮</td>
<td>+420</td>
<td>im</td>
<td>翰林</td>
<td>DS1</td>
<td>深開三平侵來</td>
<td>*-m</td>
<td>*-m</td>
</tr>
<tr>
<td>遼</td>
<td>+104</td>
<td>in</td>
<td>進士</td>
<td>JS0</td>
<td>臨開三去震精</td>
<td>*-n</td>
<td>*-n</td>
</tr>
<tr>
<td>平</td>
<td>+42</td>
<td>iŋ</td>
<td>宛平縣</td>
<td>JS17</td>
<td>梗開三平庚並</td>
<td>*-ŋ</td>
<td>*-ŋ</td>
</tr>
<tr>
<td>明</td>
<td>+42</td>
<td>iŋ</td>
<td>明俊殿</td>
<td>JS2</td>
<td>梗開三平庚明</td>
<td>*-ŋ</td>
<td>*-ŋ</td>
</tr>
<tr>
<td>卿</td>
<td>+42</td>
<td>iŋ</td>
<td>奥屯舜卿</td>
<td>JY2</td>
<td>梗開三平庚溪</td>
<td>*-ŋ</td>
<td>*-ŋ</td>
</tr>
<tr>
<td>英</td>
<td>+42</td>
<td>iŋ</td>
<td>英王傅</td>
<td>J10</td>
<td>梗開三平庚影</td>
<td>*-ŋ</td>
<td>*-ŋ</td>
</tr>
<tr>
<td>名</td>
<td>+42</td>
<td>iŋ</td>
<td>大名府</td>
<td>JS19</td>
<td>梗開三平清明</td>
<td>*-ŋ</td>
<td>*-ŋ</td>
</tr>
<tr>
<td>淳</td>
<td>+42</td>
<td>iŋ</td>
<td>淳州</td>
<td>JS16</td>
<td>梗開三平清明</td>
<td>*-ŋ</td>
<td>*-ŋ</td>
</tr>
</tbody>
</table>

The examples consistently show a clear distinction between the three different MC nasal codas.

| 安 | 102 | an | 隆安府路 | JS17 | 山開一平寒影 | *-n | *-n |
| 懶 | +102 | an | 昔懶路 | QY3.3 | 山開一上旱來 | *-n | *-n |
| 漢 | +102 | an | 漢祖   | DS | 山開一去翰曉 | *-n | *-n |
| 岸 | 102 | an | YY     |     | 山開一去翰疑 | *-n |     |
| 郎 | +112 | anj | 文林郎 | JY3 | 宕開一平唐來 | *-ŋ | *-ŋ |
| 郎 | +112 | anj | 禮部侍郎 | JS10 | 宕開一平唐來 | *-ŋ | *-ŋ |
| 尚 | +112 | anj | 尚書   | JS8 | 宕開三去陽禪 | *-ŋ | *-ŋ |
| 安 | 112 | an | YY     |     | 山開一平寒影 | *-n |     |

12 Jurchen character 104 has quite a few graphic variations (Jin and Jin 1980:73).
In the NZYY Jurchen characters 102 and 112 are transcribed by Chinese characters 岸 and 安 respectively. To use 安 to transcribe the phonetic value of Jurchen character 112 seems to indicate the merger of -an and -aŋ. But as shown above in the Jurchen steles Jurchen characters 102 and 112 are distinctive and consistently used to transcribe -an and -aŋ. No example for -am found in the available materials. Based on the analysis above it is not difficult to conclude that codas -m, -n, and -ŋ were preserved in the Chinese phonology of the time.

5.6 Loss of the MC yi 疑 initial ŋ-
(ŋ- > ŋ- > ŋ- > ŋ- > ŋ- / _ division III)

The existence of the MC velar nasal initial can be identified by comparing the syllables with the MC ŋ- initial (疑) and the syllables with the zero initial (影).

| 原  | J82+ | (əƞ) | 太原 | DS17 | 山合三平元疑 | *ŋ- | *ŋ- |
| 元  | J82+ | (əƞ) | 宗元 | DS30 | 山合三平元疑 | *ŋ- | *ŋ- |
| 宛  | --+ | ŋ | 宛平ixa | JS17 | 山合三上影 | *ŋ- | *ŋ- |

Since this graph is also used for Chinese final -ŋ in the syllables 政 JS11, 增 JS8, 應 DS2, its phonetic value must be a velar nasal. 原 and 元 historically have a yi 疑 initial, which is a velar nasal, but 宛 has a ying 影 initial, which is a zero initial. The spellings of these three syllables clearly indicate that the velar nasal initial was kept. 原 and 元 are spelled with three characters (J82+J9+L12), and 宛 is spelled with two characters (J9+L12). The two Jurchen characters used to spell 宛 are the exact second and third characters of the spelling for 原 and 元. In comparison with 宛, 原 and 元 were spelled with an additional character J82.

| 議  | 352 | ki | 通議大夫 | JS10 | 止開三去真疑 | *ŋ- | *ŋ- |
| 吉  | 352 | ki | YY | 臨開三入質見 | *ŋ- | *ŋ- |
| 益  | 633 | i | 益 | JS3 | 梗開三入影 | *ŋ- | *ŋ- |
| 一  | 633 | i | YY | 臨開三入質影 | *ŋ- | *ŋ- |

---

13 It should be mentioned that according to the MC system 原 or 元 forms a minimal pair with 宛. The modern pronunciation of 宛 wān is quite misleading because 宛 is a division III syllable in the MC system. In terms of the initial and final, 宛 should be the same as 冤, 冉, and 怨 as they are spelled in the MGZY and listed in the ZYYY.
議 is transcribed by Jurchen character 352. In the NZYY character 352’s transcription is 吉 which has a velar stop *k- in MC. To use ki to transcribe 議, a syllable with a velar initial *ŋ- in the MC system, indicates that the ŋ- initial is still preserved. In the Jurchen phonology ŋi is not an available syllable, thus ki is used instead. In contrast, 益, a syllable with zero initial, is transcribed differently by using Jurchen character 633, which is transcribed by Chinese character 一 in the NZYY. 一 is a syllable with zero initial as well. The available examples are MC division III syllables. Because of this limitation the status of the MC velar nasal initial of the syllables from the other three divisions cannot be examined.

5.7 Vowel apicalization (division III kaikou syllables of the zhi 止 rhyme group > i > i > i > i) 14

In MNM dialects vowel apicalization is mainly shown in the syllables with alveolar sibilants as well as retroflex initials. Because of the limitations of the data we focus on the apicalization of the syllables of the zhi 止 rhyme group. This change affected the syllables with four groups of MC initials, the jing 精 group, the zhuang 莊 group, the zhang 章 group, and the zhi 知 group.

The so-called apicalization is a gradual phonological process. The MGZY shows this change has occurred in the syllables with jing group and zhuang group initials; the ZYYY shows the change had further spread to the syllables with zhang group initials; and the Dengyun Tujing 等韻圖經 (1606) shows the change finally spread to the syllables with the zhi initials (Shen 2008b). The sound change of apicalization started quite early. Our analysis of the Khitan data shows that in the Liao time northern Chinese already had apical vowels (Shen 2007).

As expected, the apical vowel can be identified in the syllables with MC jing group initials. In the examples below the MC reconstruction is replaced with the more relevant information of the ZYYY rhyme group.

| 字 | 分 | 假 | 地方方言 | 反切 | 韻 | 古 | 古
<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>資</td>
<td>D7</td>
<td>tsi</td>
<td>資善大夫</td>
<td>JS10</td>
<td>止開三平脂精</td>
<td>支思</td>
<td>*-i</td>
</tr>
<tr>
<td>資</td>
<td>D7</td>
<td>tsi</td>
<td>資德大夫</td>
<td>JS10</td>
<td>止開三平脂精</td>
<td>支思</td>
<td>*-i</td>
</tr>
<tr>
<td>慈</td>
<td>405</td>
<td>si</td>
<td>慈聖宮</td>
<td>JS10</td>
<td>止開三平之從</td>
<td>支思</td>
<td>*-i</td>
</tr>
<tr>
<td>司</td>
<td>405</td>
<td>si</td>
<td>修內司</td>
<td>JS23</td>
<td>止開三平之心</td>
<td>支思</td>
<td>*-i</td>
</tr>
</tbody>
</table>

14 For the reason to use a high central vowel for the so-called apical vowel see Shen (2008b).
士, 詩, 師, 史, and 使 below are transcribed by Jurchen character 642. The phonetic value of character 642 is ʃɨ. The apicalization is also found in the syllables with MC zhuang (zhao-II) group initials with no exception.

士 642 ʃɨ 進士 JS0 止開三上止崇 支思 *-i
詩 642 ʃɨ 詩 JS2 止開三平之書 支思 *-i
師 642 ʃɨ 軍師 DS5 止開三平脂生 支思 *-i
史 642 ʃɨ 兼修國史 JS8 止開三上止生 支思 *-i
使 642 ʃɨ 節度使 ZY1 止開三上止生 支思 *-i

政 is transcribed by two Jurchen characters. The first character, 407, is the same as the one used to transcribe 知. The phonetic value of 407 is tʃi, so the vowel of 知 is i and not apicalized. This is consistent with the MGZY and the ZYYY.

政 407+ tʃi 奉政大夫 JS11 梗開三去勁章
知 407 tʃi 同知 DS2 止開三平支知 齊微 *-i
知 407 tʃi 同知 ZY1 止開三平支知 齊微 *-i
治 407 tʃi 彰德治中 JY1 止開三去志澄 齊微 *-i

It is worth noting that 侍 is also transcribed by Jurchen character 642. This is a little unexpected because the MC initial of 侍 is chan, which belongs to the zhang 章 (zhan-III) group. In the MGZY only the syllables with zhuang 莊 (zhao-II) initials show the apicalization, not the ones with zhang (zhan-III) initials. The apicalization in syllables with zhang (zhan-III) initials was first seen in the ZYYY of 1324. This example is from Da Jin Desheng Tuo Song Bei 大金得勝陀頌碑 of 1185. It is about 140 years earlier.

侍 642 ʃɨ 侍郎 DS2 止開三去志禪 支思 *-i

Since this is the only example with a zhang (zhan-III) initial, it is not clear whether this phenomenon is an indicator of apicalization for all the syllables with zhang (zhan-III) initials.

5.8 Merger of the finals of the zeng 曾 and geng 梃 rhyme groups
(-jæŋ / -jæŋ > -iŋ > -iŋ > -iŋ > -iŋ)

The MC zeng rhyme group and geng rhyme group have distinctive nuclear vowels. The zeng rhyme group is ə, i and the geng rhyme group is e. In the phonology
of the ZYYY, division III syllables of MC zeng and geng rhyme groups are merged. The geng syllables merged into zeng and the nuclear vowel became i. This phenomenon can be observed in the Jurchen materials. This merger is another feature of ancient northern Mandarin because it is not observed in ancient northwestern dialect as reflected the Tibetan (Luo 1933) and Tangut (Li 1994) materials.

All the division III syllables of the geng rhyme group with labial and guttural initials show a main vowel i. The division III syllable 政 from the geng rhyme group with the zhang 章 initial has a main vowel a instead, which is the same as the division III syllable 丞 from the zeng rhyme group. The Chinese palatal medial -j- is reflected in the first character of the spellings. But there is an interesting minimal pair of syllables with zero initial, 英 is iŋ and 應 is iəŋ. 英 is from the geng rhyme group and 應 is from the zeng rhyme group. Whether the spelling difference is a real phonological contrast or a free variation remains to be determined. Phonetic forms iŋ and iəŋ as free variations still can be observed in modern Mandarin.

5.9 Development of the palatal glide of MC division II syllables

(-ŋ- > -j- > -j- > -j- > -j-)

MC division II syllables with guttural initials developed a palatal glide - j- MC to modern Mandarin. This change is evident in the hP’ags-pa spellings of the MGZY. Earlier materials such as the Khitan materials also suggest palatalization but not so conclusively (Shen 2007). The Jurchen material can help us to understand the historical development of palatalization. 校 is the only available example which can provide information for the analysis of this phonological feature. In the Jurchen script the first character used to spell 校 is 170, which is transcribed by 下 in the NZYY. Since 下 is also a MC division II syllable and its initial was palatalized in the 16th
century, the intrinsic value of character 170 indicates a palatalized consonant. Thus 校 was palatalized already in the Jin dynasty.

There are some other MC division II syllables such as 楨, 甲, and 顏. But based on the Jurchen characters involved, it is very difficult to determine their phonetic values. The phonetic values of these examples need to be further determined.

5.10 The status of the MC wei 微 initial (ŋ- > v- > v- > v- > ə-)

Two examples with the MC wei 微 initial are found in the material. Both 文 and 武 are transcribed consistently in different materials by the same Jurchen character D10. But they are clearly in contrast with the syllables with the MC ying 影 initial.

The wei initial belongs to the MC fei initial group. This phenomenon is thus related to the labiodentalization discussed in section 5.1. After the labiodentalization the palatal glide of division III has been lost in these syllables as well. So the final of 文 has already changed from -jwən to -wən/ən, which becomes the same as the final of 溫. Thus the contrast between 文 and 溫 must be in the initial. This contrast indicates that the MC wei initial is still preserved. According to the phonetic value of the

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15 Of course a necessary condition is that the phonetic value represented by character 170 includes a palatal element and this palatal element was not the result of change after the Jin dynasty.
adjacent historical stages, the MC *wei* initial can be reconstructed as v, a voiceless labiodental approximant, but not a nasal consonant.

6. Conclusion

Although the phonological characteristics of Chinese are touched upon in the works of Jurchenologists (Jin and Jin 1980, Kane 1989, Sun 2004), they were never their main focus. The analyses of Chinese are usually the byproducts of the studies of Jurchen. On the other hand, the Sino-Jurchen materials, like other non-Chinese materials, were not the main interests of Chinese historical phonologists, who basically rely on the Chinese materials such as rhyme dictionaries and poetry rhyming. Because of these traditions the value of these non-Chinese materials has been largely overlooked in the historical Chinese phonology.

In this article we have examined ten phonological characteristics, namely:

1. labiodentalization;
2. merger of the MC *zhì* 知 and *zhào* 照 initial groups;
3. devoicing of MC voiced obstruents;
4. loss of the MS stop coda and the diphthongization of MC -k syllables;
5. the loss of the MC bilabial nasal coda -m;
6. loss of the MC *yì* 疑 initial ŋ-;
7. apicalization;
8. merger of the finals of *zèng* 曾 and *gēng* 梃 rhyme groups;
9. palatalization of MC division II syllables; and
10. MC *wei* 微 initial as a non-nasal consonant.

The status of these historical developments is summarized in the chart below.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
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<tbody>
<tr>
<td>MC</td>
<td>–</td>
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<td>–</td>
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<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Khitan</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>–</td>
<td>–</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Jurchen</td>
<td>+</td>
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<td>+</td>
<td>–</td>
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<td>+</td>
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<td>ZYYY</td>
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<td>+</td>
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<td>+</td>
</tr>
</tbody>
</table>

The data and analyses provided above clearly show that the Chinese language as reflected in the Jurchen transliterations is clearly related to modern Mandarin. Some
phonological features even show the characteristics of MNM as represented by the Beijing dialect. Based on what have been shown in the recent studies of the Khitan and hP’ags-pa materials (Shen 2006a, 2006b, 2007) this result should be expected. However, the significance is that this expectation now can be confirmed independently.

Because of its geographical location, Jin Chinese is unquestionably a genealogical link between the northern Chinese language of the Liao dynasty and the Yuan dynasty. This link can demonstrate a continuous and gradual phonological development of northern Mandarin phonology. This lineage also shows clear distinctions from a parallel lineage of a northwestern dialect, which can be traced from modern dialects to the Tang dynasty (Luo 1933, Gong 1981, Li 1994, Wang 1987). By comparing the basic phonological characteristics of these two lineages it is obvious that Sino-Khitan, Sino-Jurchen, the MGZY, and the ZYYY are the consecutive historical links of modern Mandarin, and more precisely the ancestral forms the northern Mandarin.
Appendix: The Jurchen characters used in this article and their codes

All the numbers are based on Jin and Jin (1980). The four lists of Jurchen characters are distinguished in the following way: the numbers without a prefix are from the main list Bolinben nvzhen wenzi ji zixing bianqian biao 柏林本女真文字及字形變遷表, the numbers prefixed with “D” are from the Dongyan wenkuben nvzhen wenzi zixing bianqian biao 東洋文庫本女真文字及字形變遷表, the numbers prefixed by “J” are from Jinshi keci suojian nvzhen wenzi ji zixing bianqian biao 金石刻詞所見女真文字及字形變遷表, and the numbers prefixed with “L” are from Laiwen zhong suojian nvzhen wenzi ji zixing bianqian biao 來文中所見女真文字及字形變遷表.

Beside the codes and the Jurchen characters, the Chinese characters for transcribing the Jurchen characters as seen in the NZYY are listed (the ones in parentheses are not from the NZYY). The phonetic values we use in this article are also listed.

<table>
<thead>
<tr>
<th>Code</th>
<th>Jurchen character</th>
<th>YY</th>
<th>Phonetic value</th>
<th>Code</th>
<th>Jurchen character</th>
<th>YY</th>
<th>Phonetic value</th>
</tr>
</thead>
<tbody>
<tr>
<td>42</td>
<td>友</td>
<td>因</td>
<td>*iŋ</td>
<td>102</td>
<td>来</td>
<td>岸</td>
<td>*an</td>
</tr>
<tr>
<td>104</td>
<td>列</td>
<td>因</td>
<td>*in</td>
<td>106</td>
<td>孙</td>
<td>貴</td>
<td>*kuj</td>
</tr>
<tr>
<td>112</td>
<td>凶</td>
<td>安</td>
<td>*aŋ</td>
<td>113</td>
<td>冻</td>
<td>同桶</td>
<td>*tʰuŋ</td>
</tr>
<tr>
<td>159</td>
<td>斐</td>
<td>都</td>
<td>*tu</td>
<td>170</td>
<td>占</td>
<td>下</td>
<td>*hia</td>
</tr>
<tr>
<td>219</td>
<td>币</td>
<td>被</td>
<td>*aj</td>
<td>274</td>
<td>卍</td>
<td>背</td>
<td>*buj</td>
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<td>德</td>
<td>*tʃi</td>
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<td>丁</td>
<td>丁</td>
<td>*tʃŋ</td>
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<tr>
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<td>央</td>
<td>赤</td>
<td>*tʃi</td>
<td>352</td>
<td>吉</td>
<td>吉</td>
<td>*ki</td>
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<td>角</td>
<td>*u</td>
<td>384</td>
<td>聲</td>
<td>塔</td>
<td>*tʰa</td>
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<td>弋</td>
<td>子</td>
<td>*si</td>
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<td>只</td>
<td>*tʃi</td>
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<tr>
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<td>易</td>
<td>府撫弗</td>
<td>*pʰu</td>
<td>420</td>
<td>来</td>
<td>因</td>
<td>*im</td>
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<td>扎</td>
<td>*tʃa</td>
<td>459</td>
<td>靈</td>
<td>卜</td>
<td>*pu</td>
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<tr>
<td>547</td>
<td>吞</td>
<td>茶</td>
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<td>625</td>
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<td>一</td>
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<td>642</td>
<td>卐</td>
<td>土侍師史</td>
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<td>賜</td>
<td>*tʃi</td>
<td>D10</td>
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<td>角</td>
<td>*ʃu</td>
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<tr>
<td>J9</td>
<td>丹</td>
<td>--</td>
<td>*y</td>
<td>J64</td>
<td>英</td>
<td>(溫)</td>
<td>*un</td>
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<tr>
<td>J82</td>
<td>仗</td>
<td>(恩)</td>
<td>*(e)ŋ</td>
<td>L3</td>
<td>丈</td>
<td>(東)</td>
<td>*tʃŋ</td>
</tr>
<tr>
<td>L12</td>
<td>又</td>
<td>(烟)</td>
<td>*en</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

16 I would like to thank Dr. Bojun Sun at the Institute of Ethnology and Anthropology, Chinese Academy of Social Sciences for providing the Jurchen font.
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金代北方漢語的語音特徵

沈鍾偉
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本文分析從女真材料中漢語借詞中所提取的北方官話語音特徵。採用的女真材料以金代的碑刻為主。在分析中採用了內部對比法，以避免在研究未知語言互譯中可能出現的循環論證。研究結果顯示女真語言中有限的漢語借詞實際上含有金代漢語語音的重要信息。本文分析了十個語音特徵。結果顯示金代漢語和現代以北京話為代表的北方官話一脈相承。成書於1324年《中原音韻》是一致公認的官話音系的最早證據，而金代漢語的語音特徵則為官話歷史提供了更早的信息。

關鍵詞：官話語音歷史、官話語音特徵、女真文字、漢語借詞