

## Korean Hankul and the hP'ags-pa script

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From the annals of the reign period of King Sejong of Korea, the fourth king of the Yi Dynasty, who ruled from 1418 to 1450, we learn that in the 12th month of the 25th year of his reign (1443), the king invented the Korean alphabet. This alphabet, now known as *Hankul*, was called *Hunmin Ceng'im*, 'Right Sounds for Instructing the People'<sup>1</sup> at the time it was introduced, and later simply *En-mun* 'Vernacular Script'. According to popular tradition, the shapes of the letters, most of which are rectilinear or angular, were inspired by the shapes in the fretwork on Korean windows. This writing system is a true alphabet, and not a syllabary, though signs for discrete sounds are organized into single blocks of signs, each representing a syllable in the way that Chinese characters are complexes made up of various strokes organized into single blocks, each of which represents a syllable; a syllabary is a writing system in which each combination of consonants with a syllabic core is represented by a unique sign as, for example, the Japanese *Kana* (*Hiragana* and *Katakana*).

Almost a century earlier, in 1260, in the year of his election to the position of Great Khan of the Mongols and Emperor of China,<sup>2</sup> Khubilai Khan appointed National Preceptor a Tibetan monk named hP'ags-pa he had met seven years earlier, when hP'ags-pa was only nineteen, and commissioned him to create a new Mongolian script. Eight years later, in 1268, hP'ags-pa lama presented his creation to Khubilai Khan and the following year Khubilai issued an edict promulgating the script for use throughout his empire. According to the *Jirüken-ü Tolta* («Core of the Heart»), the Mongolian translation of Chos-kyi hOd-zer's *Sñiñ-thsil*,<sup>3</sup> the shapes of the letters of the Mongolian alphabet were inspired by the notches on a tanning stick that Saskya paṇḍita, the inventor of the alphabet, saw an old woman carrying (in a vision) while he was meditating one night,<sup>4</sup> but the alphabet referred to here is not the hP'ags-pa alphabet, for the order of the letters given as they are invented is the order of the letters in the Mongolian Uighur alphabet, and Saskya paṇḍita had already passed away in 1251, at the age of seventy, seventeen years before Khubilai Khan commissioned the new writing system.

### The creation of the two alphabets

There is no question about what the model was for the new writing system that *hP'ags-pa* invented, for it closely approximates Tibetan script except that it incorporates a few additions. Tibetan script was modeled upon Gupta script.<sup>5</sup> Gelb considers all Indic scripts to be syllabaries, just as he considers Semitic scripts to be syllabaries,<sup>6</sup> but even though in these scripts the vowels are in graphic weight subordinate to the consonants, placed over or under the consonant signs, they are nevertheless alphabets. Gelb places too much importance on the fact that in the Indic scripts each consonant, unless accompanied by a vowel sign, is to be read with an inherent *a* sound (in Semitic this is certainly not the case). But this does not make the Indic script systems syllabaries; it is a matter of economy: the vowel *a* is realized as zero, except at the head of a word, where each basic vowel has its own basic letter. The Tibetan script subjoins the vowel signs to a vowel carrier to write vowels in initial position, but in the *hP'ags-pa* alphabet each initial vowel has its own sign, as though a revival of the system used in Indic scripts, and the *hP'ags-pa* script approaches even more closely the Western idea of an alphabet by placing the vowel signs on line with the consonant signs (vertically rather than horizontally), following the example of the Uighur script.

Not long after the Korean alphabet was invented, certain commentators began to express the view that King Sejong was not himself responsible for the creation of the alphabet,<sup>7</sup> possibly with the example of Khubilai Khan in mind thinking that a king simply did not do that kind of thing, but commissioned a panel of his ministers to do the job. This view is current among present-day Korean scholars. The *Sejong-sillok* states, however, that King Sejong «personally created the twenty-eight letters of the Korean alphabet.»<sup>8</sup> It was Seng Hyen (1439–1504) who first stated in his commentary *Yongcay chonghwa*<sup>9</sup> that King Sejong established a bureau called the Vernacular Script Headquarters and gave orders to Sin Sukchu, a bright young man of twenty-six, the Royal Secretary Seng Sammun and others (including Minister Cheng Inji)<sup>10</sup> to create the Vernacular Script. But King Sejong was well-versed in Chinese phonological theory and compiled,<sup>11</sup> or had compiled by a newly-established Office for Publication in Hankul,<sup>12</sup> a work entitled *Tongkuk ceng'un* («Dictionary of Proper Korean Pronunciations»), which dealt with the transcription of Chinese characters into the Korean alphabet, and so it may be assumed that he was fully capable of devising a writing system on his own.

Unfortunately there is nothing in the Yüan annals or commentaries of the period to indicate whether or not Khubilai Khan had some idea in

mind of the kind of writing system he wanted when he entrusted *hP'ags-pa* lama with the project. During the time that *hP'ags-pa* lama was at work on his commission, Khubilai Khan may have had little opportunity to monitor the progress of the commission, for *hP'ags-pa* left for Tibet in 1265 and only returned to Khubilai's court after a three-year absence;<sup>13</sup> if he had finished the project before he left, Khubilai would have issued an edict then introducing the new writing system, so most probably *hP'ags-pa* lama completed the project while he was away in Tibet. And Khubilai would not have anticipated that the script would necessarily be an adaptation of Tibetan script, for it is unlikely that Khubilai chose *hP'ags-pa* lama because he knew beforehand that he wanted a writing system that would be like Tibetan, and it is less likely that he chose him because of his personal accomplishments than because he was the nephew of Sa-skya paṇḍita, the inventor of the earlier writing system.

The objective of King Sejong in creating a new alphabet and that of Khubilai Khan in having a new alphabet created were also different. At the time of the great influx of Chinese loanwords into Korean, around 600 A.D.,<sup>14</sup> the Korean pronunciation of Chinese would have approximated the original only insofar as the simpler sound system of Korean permitted, and both languages had changed since then. King Sejong was concerned primarily with the restitution of the correct pronunciation of Chinese characters and this would be possible only with a writing system based on phonetic principles. To a certain extent the old pronunciations could be restored by comparing the pronunciations preserved by tradition up to the 15th century with the original pronunciations of Chinese from the beginning of the 7th century as represented in the rhyme tables and the *fan-ch'ieh* («cut-and-splice») spellings of the *Ch'ieh-yün*, published in 601 A.D. and, though lost, incorporated into the *Kuang-yün* of 1007 A.D.; if the traditional pronunciations of Chinese characters in Korean were that conservative, their values should have matched fairly closely those which may be inferred from the *Ch'ieh-yün*, but if the Chinese of King Sejong's time was to serve as authority, and King Sejong's observation that «The sounds of our country's language are different from those of the Middle Kingdom and are not confluent with the sounds of characters»<sup>15</sup> suggests that it did, a number of readjustments would have been necessary. In that case Sino-Korean values for Chinese words are not so reliable in reconstructing Old Chinese as is generally thought. But King Sejong was not only concerned with rendering Chinese loanwords accurately, he was also interested in providing an effective but simple script for writing the vernacular as evidenced by several translation projects and works in the vernacular on farming methods and Confucian ethics, as well as

collections of new songs and of folk songs and ballads from various districts of Korea.<sup>16</sup>

In a decree issued by Khubilai Khan in 1269 ordering the use of the hP'ags-pa script throughout his empire, reference is made to the Liao Dynasty and the Chin Dynasty and to countries far off, each of which had its own script.<sup>17</sup> By the script of the Liao Dynasty of course is meant the script of the Khitans, founders of the dynasty, or Khitan script, of which there are two forms, and the script of the Chin Dynasty is the script of the Jurchens, founders of that dynasty, or Jurchen script. These were both dynasties founded by invaders from the north and it is obvious from this analogy that Khubilai Khan was thinking now, with the establishment of the Yüan Dynasty by the Mongols, of their own dynastic script.

It was to be an official script. Because of its square decorative form it was apparently designed to be used primarily for inscription in stone, a medium in which it has an impressive effect, and in seals and edicts and the like. It was also emphasized that it was to be used by all of the people of the empire, «The People of Five Colors,»<sup>18</sup> a means of creating political unity. A dictionary of Chinese with phonetic transcriptions, the *Meng-ku Tzu-yün*, compiled by Chu Tsung-wen in 1308, was meant as a reference work for scribes who were to write Chinese in hP'ags-pa script. Despite repeated edicts directing that the hP'ags-pa script was to be used for Chinese rather than Chinese characters, which indicates that this was not being done as expected, this does not mean that the hP'ags-pa script was intended for everyday use. For one thing, the lack of an overt marker for the vowel *a* and of a sufficient number of other signs to render the rich vocalic system of Chinese makes spelling and reading difficult and, for another, writing the square script is slow and laborious; writing Chinese characters, despite the complexity of some, is faster and easier.

Also there is no evidence that the hP'ags-pa script was meant to replace Uighur script for general purposes. True, the Uighur script has certain ambiguities,<sup>19</sup> but that poses no particular problem for anyone familiar with the language. The script has continued in use down to the present day; that proves its serviceability. These ambiguities might have been resolved by placing an *alif* (ʾ) in front of the *waw* (w) to distinguish mid round vowels from high round vowels, and a single dot might have been used, as in the Manchu version of Uighur script, to distinguish *t* from *d*, *j* from *y*, and *k* from *g*, but that was all that was needed. The hP'ags-pa script offers no advantages over the Uighur script for other sounds and it certainly offers no greater ease in writing. It would have made little sense to give up a writing system with letters which are «simpler and easier and do not have as many mysteries as those of China»<sup>20</sup> for one which, though its letters possess a kind of Art Deco

elegance, requires effort to fashion and degenerates when compressed into fretwork.

From early in the 13th century, Korea had been nominally subject to the Mongols, beginning with a campaign against Korea by Chinggis Khan in 1218, upon which the Korean king, Kojong, declared himself a vassal of the Khan. In 1231 the murder of a Mongol envoy to Korea prompted an invasion of the country under the leadership of Ögedei. The Mongols captured forty of the principal towns and appointed their own prefects in seventy-two districts to replace the Korean administrators of local government. Ögedei's campaign ended when Kojong eluded his forces and fled to Kanghwa island, off the east coast of the peninsula.<sup>21</sup> The occupying Mongol forces found it difficult to flush the peasants out of the mountains where they had taken refuge and so resorted to the tactic of setting fire to the fields when the grain was ripe. Food supplies ran short and the peasants suffered.<sup>22</sup> Exasperated by Mongol rule, the peasants rose and murdered all of the Mongol prefects. This provoked even more severe retaliatory measures and a large Mongol army overran the country again and imposed heavy taxes on the people.<sup>23</sup>

In 1253 or 1254, Möngke Khan sent an expedition against the Korean court, who were still holed up on Kanghwa Island, under Jalayirtai Qorči.<sup>24</sup> Jalayirtai wisely decided not to attempt the crossing to Kanghwa Island, but concentrated on overwhelming the king's forces on the mainland<sup>25</sup> and during the warfare devastated the countryside they passed through, reducing it to ashes and leaving the land strewn with corpses. They took back with them more than 200,000 captives,<sup>26</sup> including a certain number of artisans.<sup>27</sup> This campaign had no direct result in ousting the Korean ruling class, led by the powerful Ch'oe clan, but resentment against the hardships that the people had suffered by this oppressive regime led in 1258 to a military coup and the last of the Ch'oe dictators was assassinated. Power then reverted to the royal family and they decided to make peace with the Mongols. The next year Crown Prince Chen (later King Wenjong) went to Khubilai's court to convey his country's wishes for peace<sup>28</sup> and offered himself as hostage.

The same year King Kojong died. Khubilai decided upon the recommendation of his advisers to support Prince Chen as the next king of Korea and sent him back to his country with an armed escort.<sup>29</sup> But the new king, Wenjong, found his countrymen armed and ready to resist once again the Mongols; they were not prepared to accept Wenjong as their king unless he renounced all treaties making Korea subject to the Yüan empire. The Mongol chiefs who had escorted Wenjong were still at the frontier and informed Khubilai Khan of the revolt. Khubilai decided on a policy of reconciliation and sent back to Korea all the captives taken in the

last campaign as well as all of the families who had emigrated from Korea during the period of strife. This tactic mollified the rebels, who now agreed to accept Wenjong as their king.<sup>30</sup> Mongol back-up to the Korean throne now assured stability for, in spite of some opposition of the military to peace with the Mongols, the situation eventually became stable and relations between Khubilai Khan and King Wenjong were amiable. To make the bond between the two countries even stronger, King Wenjong asked permission for his son, later King Ch'ungnyel, to marry a princess of the Yüan court, and Khubilai sent his own daughter.<sup>31</sup> After that alliances between the two royal families were frequent and altogether during the Yüan Dynasty seven Mongol princesses married sons of Korean kings this way. There was thus a special relationship between the Mongol rulers of China and the rulers of Korea.

It might be supposed that, because of the level of refinement of Korean culture, Mongolian culture would have no influence upon it.<sup>32</sup> On the other hand, it would be odd if, after 150 years of Mongol presence in Korea, this contact would leave no trace. As a matter of fact, it did. And in a very immediate way, for there are a number of Mongolian loanwords in early Middle Korean which began to enter the language in the 13th century, Middle Mongolian words having to do with administration, such as *bičiyeci* (~ *bičigeči*) 'clerk, scribe', *daruγačün* (~ *daruγa*) 'chief, commander', *qoniči* 'shepherd', *šibaγuči* 'falconer, keeper of the falcons', and *jamči* 'guide, scout', which are found in the Annals of Korye in transcription in Chinese characters. Ki-Moon Lee lists about two dozen Mongolian loanwords in Middle Korean, pertaining in particular to horses, falconry, and the military,<sup>33</sup> most of which have survived into Modern Korean. A specific study should turn up a number more.

Khubilai Khan's edicts enforcing the use of the *hP*'ags-pa script throughout the Yüan Empire would have applied to the Korean nation as well. As people who used Chinese characters to write their language, any treatises explaining transcription of Chinese characters would have been directed to the Koreans as well as the Chinese, and thus it is that the *Mengku Tzu-yün* and the *Meng-ku Yün-lüeh*<sup>34</sup> came to be known in Korea.

### The structure of the Korean alphabet

Present-day Korean possesses signs for 19 consonants and 6 vowels; of the consonant signs, 5 are the signs for the corresponding «simple» sounds doubled and vowel signs may be combined to write 4 diphthongs (*ay*, *ey*, *oy*, and *uy*). In addition a stroke may be added to the vowel signs *a*, *e*, *o*, and *u* to write the glide *y*- before these vowels, and the vowel

signs *o* and *u* are used to write the glide *w-* before certain other vowels (*o* before *a* and *u* before *e* and *i*).

The consonants may be divided into five series: labial, dental, palatal, velar, and laryngeal. The plosives, which belong to the first four of these series, may be divided into three orders: plain voiceless, aspirated voiceless, and «emphatic» voiceless or fortis;<sup>35</sup> and there are homorganic nasals in the labial, dental, and velar series. There is a dental fricative *s* and a double form of it, *ss* (the phonemic status of which is open to question), a laryngeal fricative *h*, and a dental resonant transliterated as *l* but pronounced variously as *l*, *r*, or *n*, depending upon dialect and position within the word.<sup>36</sup>

The phonetic inventory of Late Middle Korean, the language spoken during the 15th century, at the time of King Sejong, was unlike this in several significant respects. It had 17 consonants rather than 19 (not counting the «double» consonants *ss* and *hh* included in the inventory given by Ki-Moon Lee,<sup>37</sup> but the language of this period differed from that of the modern period by eight consonants.

Late Middle Korean had a voiceless dental affricate *ts*, transcribed as *c*, which later was palatalized and merged with *c*; a voiced bilabial fricative (possibly a labiodental *v*); a voiced dental fricative *z*; and a voiced laryngeal *h*. The «emphatic» consonants had their origin in the assimilation of a prefixed *p-* to a following *t-*, *t'-*, *ts-* or *s-* or a prefixed *p+s-* to a following *k-* or *t-*, for example: *ptêy* 'dirt' > *ttay*; *pt'î-* 'be split' > *ttî-* 'cut, cut up'; *ptsak* 'pair' > *ccak* 'one of a pair'; *psêl* 'uncooked rice' > *ssal*; *pskiy* 'mealtime, time' > *kki*; *pstay* 'time' > *ttay*; later the cluster *p+s-* was simplified to *s-* before *k-* in the process of evolving into an emphatic consonant: *pskil* 'chisel' > *skil* > *kkil*; *pskul* 'honey' > *skul* > *kkul*.

The vowel inventory of Late Middle Korean included a seventh vowel, transcribed *ê*, which was described in several sources as having a sound «midway between *a* and *o*». In the dialect of Cheju Island there is a low back rounded vowel [ɔ] which corresponds to the letter in question in the written language of the Middle Korean period.<sup>38</sup>

In the 28th year of King Sejong's reign (1446), a work was published entitled *Hunmin Cheng'im* («The Correct Sounds for Teaching the People to Pronounce Chinese Characters»). In this work King Sejong's new national alphabet was introduced with explanations on usage and illustrative examples. There were signs for 17 consonants presented in this work. In the following year another work, *Tongkuk Cheng'un* («Correct Readings of the Eastern Country») appeared, in which signs for 23 consonants were presented.<sup>39</sup> Since there were only 17 distinct sounds in Late Middle Korean, the «double» sounds and consonant clusters capable

of being written with combinations of letters (and by this time the plosives with prefixes had started to evolve into «explosive» consonants, so that there were variant spellings *sp-* ~ *pp-*, *st-* ~ *tt-*, *sk-* ~ *kk-*, so 23 consonant signs were not actually needed to write Korean. But the primary intention of both works was to show how Chinese characters could be rendered phonetically in the new writing system.

These works reflect King Sejong's interest in Chinese phonological theory, for the values of the Korean letters were described in traditional Chinese phonological terms: *back-tooth sounds* for 'velars', *tongue sounds* for 'alveolar plosives' and 'prepalatal plosives', *front-tooth sounds* for 'apico-dentals' and 'retroflex' consonants (alveolar and palatal fricatives and affricates), *throat sounds* for 'gutturals' (laryngeals and vowels), *half tongue sound* for 'lateral' and *half tooth sound* for 'dorso-nasal fricatives'.<sup>40</sup> The 23 letters correspond to the 23 *tzu-mu* (initials) that are used in rhyme tables to indicate the sounds that the characters entered in the tables begin with.<sup>41</sup>

### The hP'ags-pa script and the Korean alphabet

After the compilation of the *Meng-ku Tzu-yün* in 1308, by Chu Tsung-wen, a native of Hsin-an in Chekiang province, there was published a study of the *Meng-ku Tzu-yün* called the *Meng-ku yün-lüeh* (蒙古韻略). According to the preface to the *Meng-ku Tzu-yün*, Chu Tsung-wen based his work on an earlier rhyme dictionary, the *Ku-chin Yün-hui* (古今韻會). The printed form of the *Meng-ku Tzu-yün* itself has long been lost, the only source being a manuscript copy in the British Museum; the *Ku-chin Yün-hui* has also been lost, but it exists in an abbreviated form in a work entitled *Ku-chin Yün-hui Chü-yao* (古今韻會舉要); and the *Meng-ku Yün-lüeh* has been lost but there is an adaptation in Korean called *Saseng T'ongko*.<sup>42</sup> Considering his interest in Chinese phonology, it is not unlikely that King Sejong was familiar with this work; and with the idea in mind of devising a system of recording sounds accurately enough to communicate the correct pronunciation of the Chinese characters in use in Korea at the time, he would have been particularly interested in prior efforts to do the same thing. In fact, it would not be unreasonable to suppose that King Sejong got the idea for such a writing system from examples of the hP'ags-pa script.

But the Korean alphabet is much simpler in its structure than the hP'ags-pa script. There have been several attempts to show that the Korean alphabet was either derived from or at least inspired by the hP'ags-pa script,<sup>43</sup> but these essays have made little impression on the scholarly world.<sup>44</sup> The most recent attempt, by E. R. Hope, to establish

this connection<sup>45</sup> has not been generally received either, probably because, as Gari Ledyard remarks in a recent article,<sup>46</sup> «His arguments suffered much from being pushed too far and were gravely weakened by his inability to handle an already large Korean literature on the alphabet's origin.» Nevertheless, it is not hard to see the resemblances between the Korean letters and the corresponding *hP'ags-pa* letters in certain of the comparisons he makes, and regardless of the volume of work published with opposing opinions, we may judge the validity of his conclusions simply on the basis of how extensive and systematic these resemblances prove to be.

The reason the *hP'ags-pa* script never gained currency in Khubilai's realm has been attributed to the resistance of the Chinese people to cultural intrusion and the short duration of the Mongol reign, but even a cursory examination of *hP'ags-pa* script shows that though it was undoubtedly decorative, especially on seals and engraved on stone, the more decorative and the more «quadrate» it was in form, the more difficult it was to read. And it is certainly difficult to write. In the *Meng-ku Tzu-yün* it is sometimes hard to distinguish one letter from a similar one due to even a slight degree of imprecision in writing and it must have required an effort to write these letters carefully. It was not a writing system for the people.

The Korean alphabet, on the other hand, is easy to read and easy to write. No one letter requires more than four strokes. The script is very simple and even though the letters are predominantly angular in form each is distinctive enough to maintain its identity. If the *hP'ags-pa* script had ever in fact been intended for general use rather than being restricted to seals, coins, and edicts, the first thing to do would have been to simplify it. It is no less a tribute to King Sejong to suppose he derived his alphabet from the *hP'ags-pa* script than to say it was a totally new creation, for his genius would have been in recognizing the need to simplify the script and to bring greater order into the system so that the letters might be quickly learned and quickly written.

The fact is that the *hP'ags-pa* script is phonetic and the *Meng-ku Tzu-yün* and such commentaries as the *Shu-shih Hui-yao* demonstrate in a concrete way that such an alphabet could be used effectively to write Chinese. This is precisely what King Sejong was hoping to do for the Korean language with its large corpus of Chinese loanwords. Other scripts such as Uighur and Tibetan had been used before sporadically to write Chinese but there was no key to reading them and so they remained to some extent ambiguous. But in the *Meng-ku Tzu-yün* Chinese characters were listed systematically with what were in effect phonetic transcriptions.

Another important point is that the hP'ags-pa script possessed a certain coherence between form and sound which it inherited from Indic script systems in general through Tibetan. Although the hP'ags-pa script is unnecessarily intricate, there is generally some geometric shape that is common to all members of a series—velar, dental, labial, palatal, affricate/fricative, and laryngeal—and in some cases in the hP'ags-pa script (as in Tibetan but not in Nagari), a letter is written in mirror image for a sound that differs slightly (that is, by one distinctive feature) from another sound.

Beginning with the letter *k* (as it is written in the *Mengku Tzu-yün*, not in the *Fa-shu K'ao* and the *Shu-shih Hui-yao*), what is common to the plosives of the velar group is a right angle with the apex in the upper right for the letters *k* and *g*, in the upper left for the letter *kh*, and this is essentially the form the letter *k* has in Korean. The Korean letter for the velar nasal *n* is a circle with a small stroke at top; this bears no resemblance to the corresponding letter in hP'ags-pa script, but it does resemble the *anusvāra* used for Sanskrit, a small dot placed above a letter to represent a generalized nasal at the end of a syllable, and in Tibetan a small circle used in the same way in transcribing Sanskrit words, possibly meant to be included also in the hP'ags-pa inventory.

In the dental series, the Korean letter *t* is so similar to the hP'ags-pa letter *t* that it might be the same sign, except that the upright stroke on the left in the Korean letter goes straight up; the hP'ags-pa letter for the aspirated voiceless plosive *th* is rather like a double form of this, with one subjoined part directly under the other and closed on the righthand side, and the corresponding Korean letter is constructed on the same principle of doubling one part over another by adding a stroke above the letter *t*, a device used for the other aspirated consonants *kh* and *ch* and for *h*. The Korean letter for the nasal in this series, *n*, appears to be the letter *t* without the stroke at top.

Next in order in the *Meng-ku Tzu-yün* is the palatal series but the letters for the plosives are the same as those given for the prepalatal affricates, which are placed after the dental affricates and fricatives. Korean has no nasal in this series so there was no group of four letters to place in this position.

The letters for the labial stops are all basically squares; the Tibetan *b* is almost completely square, and in the Korean alphabet the labial nasal *m* is a perfect square. The Korean letter for *p* is apparently derived from this square with the two sides projecting at the top, but the aspirated stop, *ph*, differs in derivation from the other aspirated stops in not having an added stroke at top but it does maintain a square form in the center. Of the three letters that are given in the preface to the *Meng-ku Tzu-yün* for

labio-dental fricatives, it is the letter for *f* and the letter for *v* which are the same, and in the body of the work only two sounds are distinguished. The sounds that evolved from the plain voiceless stop *p*- and the aspirated voiceless stop *p'*- would have been the same sound *f*-, and so it is the first two letters which should be the same. In the Korean alphabet a small circle is placed beneath the *p*, the double *p* (*pp*) and the *m* to transcribe Chinese *f*-, *v*- and *w*- (< *m*- in the same environments that produced *f*- and *v*-), but there is no letter for what would have been the corresponding aspirate sound.

The Korean plain dental affricate (> plain palatal stop) is like the *hP'ags-pa* aspirated palatal in having a horizontal line at the top with two parts projecting from the middle of this line below it; in the *hP'ags-pa* script these projecting parts are two small squares but in the Korean alphabet the bottom part is an inverted «V». The letter *s* in the Korean alphabet is like the left-hand part of the *hP'ags-pa* *s* without the horizontal upper stroke and the diagonal stroke at the bottom; with the horizontal upper stroke this is the same as the letter *c*. This appears to be a convergence of models, for the affricates/palatals were conflated with the sibilants in the same series and the general principle behind the Korean alphabet is for letters in the same series to have some characteristics in common. In order to distinguish between the dental affricate series and the palatal/retroflex series in transcribing Chinese, the dental affricate could be modified so that the left leg of the inverted «V» was longer than the right leg for the dental affricate series and the right leg of the «V» was longer than the left leg for the palatal retroflex stop series. The letter for the voiceless sibilant *s* was similarly modified and it was doubled to transcribe its voiced counterpart.

In the laryngeal series, it is the letter for the sound classed amongst the sonorants (the nasals, *w*-, *l*-, and *r*-) which serves as the basis for the series; it is the same as the letter *n* without the little upright stroke at the top. It is equated with the *yü-mu* initial (喻), which Karlgren identifies as «smooth vocalic ingress» (transcribed as ' ) from an earlier post-velar or uvular fricative \**ɣ*,<sup>47</sup> and words listed in the *Ch'ieh-yün* and other rhyme tables under this initial have zero (Ø-) initial in the modern Chinese dialects. Contemporary Chinese phonologists call this initial 元音 *yüan-yin* «initial sound».<sup>48</sup> The equivalent letter in the *Meng-ku Tzu-yün* is derived from the Tibetan initial vowel-carrier, and used in Mongolian written in *hP'ags-pa* script for initial *a*-. The *hP'ags-pa* letter and the corresponding letter in Hankul obviously represents zero initial.

The plain voiceless stop of the laryngeal series in the Korean alphabet is the symbol for this sonorant with a horizontal stroke above it. The

order of letters in this series in the *Meng-ku Tzu-yün* is different, for the corresponding letter in the *hP'ags-pa* script is third in line, not first, but the one letter may be identified with the other because they are both equated with the initial *ying-mu* (影). Karlgren points out that since this initial results in words with level tone in modern Mandarin, just as the plain voiceless initials *p-*, *t-*, and *k-* did, and since this initial was included in the laryngeal series, it must have been identical to the *Knacklaut* (or glottal stop) of German.<sup>49</sup> In certain modern Chinese dialects it is realized as a prenasalized voiced velar (or uvular) stop [ng-] (from earlier [g-]), in others as a voiced velar fricative [ɣ-] (from earlier [g-]), or as a velar nasal [ŋ-] (from earlier [ng-] < [g-]) or dental nasal [n-] (from earlier [n] < [ng-] < [g-]), except before a high front vowel [i], a high back vowel [u], their corresponding palatal and labial glides [y] and [w], or a low front vowel [a] which resulted in *ya-* in Mandarin. The original sound, a glottal stop, apparently advanced gradually in point of articulation from the glottal position to the uvular and then velar position.

The letter for the corresponding aspirated sound in the Korean alphabet is made by adding an upright point to the preceding letter and the letter for the corresponding «emphatic» sound is this last letter doubled. But here it may be inferred from the corresponding Chinese initials, *hsiao-mu* (曉) and *hsia-mu* (匣) respectively, that the former of these is in fact a voiceless fricative, not an aspirated voiceless stop, and the latter is a voiced fricative, not an «emphatic» stop. Karlgren assigns the voiceless initial the value of [x-] and the voiced initial the value of [ɣ-], both «gutturals», on the strength of the Japanese Go-on renderings, *k-* and *g-* respectively,<sup>50</sup> but the letter in *hP'ags-pa* script used to write words in Chinese with the initial *hsiao-mu* is the same letter used to write Mongolian words with initial *h-*. It is combined with a following glide *-w-* to render the labial fricative [f]; words with this initial were transcribed as *h-* in Annamese and with this same letter in Korean that is in present-day Korean pronounced [h-], and this initial is [h-] in some modern Chinese dialects as well as [x-] in others. Old Japanese had no initial *h-*,<sup>51</sup> so the velar stops *k* and *g* would have been the only sounds available in the inventory of Old Japanese to render sounds of Chinese in the general «guttural» area, whether velar, uvular, or laryngeal, plosive or fricative. It is just as likely that these two initials in Chinese were laryngeal fricatives, voiceless [h-] and voiced [fi-].

The last two letters, both sonorants, are transcribed as *l* (or *l ~ r*) and *z*. The Korean letter *l* is the same as the *hP'ags-pa* letter *l* simplified, without the longer vertical strokes on either side. The Korean letter transcribed *z* is an equilateral triangle. There are no such triangles

amongst the hP'ags-pa letters except for the pendant part of the letter *w*, but it is quite unlikely there is any connection; the corresponding hP'ags-pa letter used to transcribe the Chinese *zih-mu* (or *rih-mu*) initial (日), in Middle Chinese *ńź-* (according to Karlgren) or possibly a fricative resonant [ř] (as in Czech), does, however, have a loop in the center which may have been reshaped into a triangle to distinguish it from the circular letter used to write zero initial. The value of this letter would not have been [z], however, since such a letter should have been grouped with the affricate/fricative series. Ramstedt proposes a palatal nasal value [ñ], for this letter was used to write native Korean words which in cognate words in other Altaic languages had a nasal sound in the same position, words such as *kəñi* 'dog' (> *kay*), corresponding to \**kan-* in OT *qancuq* 'bitch' or *eñi* 'mother animal; mother' (> *e'i*), corresponding to Ev. *eñe* 'mother'. This would confirm the nasal quality of the proposed sound for Chinese *zih-mu* initial, but if the sound of the letter in Korean was actually [ñ], it should have been grouped with the palatal sounds.

As for the vowels, there are fewer resemblances between the Korean vowel signs and those of the hP'ags-pa script than there are between the consonant letters; but the Korean vowel signs are very simple. There is no overt marker for the sound [a] in hP'ags-pa script so there is no model to follow here. But the Korean letter *u*, a horizontal stroke with a shorter perpendicular stroke written down from the middle of it is very much like the hP'ags-pa letter for initial *o*- without the two diagonal strokes. Also, the hP'ags-pa letter for the closed *e* sound transcribed *é* might have in its medial form, a horizontal or slightly sloping stroke with a small point in the middle under it, have served as model for the Korean letter for *e*; in the *Saseng T'ongko* the hP'ags-pa letters *e* and *é* are both transcribed by the Korean vowel sign for *ye*, and it might have been the use of the small subscript point on the hP'ags-pa letter which suggested the use of an added point to create letters for yodized vowels in Korean script.

The recent trend amongst scholars has been to attribute the shapes of the Korean letters to the shape of the speech organs at the point of articulation where the sounds represented by certain letters are produced or the configuration of speech organs when producing other sounds.<sup>52</sup> This theory has been motivated by commentaries on the Korean letters in the *Hunmin cheng'im haerye*, compiled by Cheng Inji, Sin Sukchu and others in 1446. They say that the letter *k* represents «the outline of the root of the tongue blocking the throat»; the letter *n* «depicts the outline of the tongue touching the upper palate»; the letter *m* «depicts the outline of the mouth»; the letter *s* «depicts the outline of the incisor»; and the letter *h* «depicts the outline of the throat.»<sup>53</sup>

This analysis is ingenious but there are several considerations that make it difficult to accept without question these phonetic principles as the original ground-plan for designing the Korean alphabet.

Certain articulatory gestures such as those involving the lips, teeth, alveolar ridge, and the front of the blade of the tongue are clearly perceptible, either by observing another speaker or by sensing the position of the tongue in the mouth or the flow of the air in the vocal tract (and this is reflected by the traditional terms for points of articulation), and of course modern phoneticians have been able to determine precisely the position of the tongue for various sounds through X-rays and the structure of the vocal organs through dissection, but without these techniques it would be difficult to know what contour the tongue has when producing a velar sound or the shape of the vocal tract in cross-section.

Even more significant, the actual shapes of most letters do not fit the phonetic facts. The position of the lips closed when producing a labial sound might be represented as a straight horizontal line but the outline of the lips in this position can hardly be called «square»; in producing a retroflex sound, like those in many Indian languages or in Chinese, or in pronouncing English initial [r-], the tip of the tongue is curled up toward the middle of the palate but in producing a dental *n* sound the tip of the tongue touches flat just behind the teeth and a letter based on this configuration would more likely have a short upright stroke on the left with a long diagonal stroke slanting down toward the right; velar sounds are produced with the back of the tongue raised and touching the velum and the front of the tongue sloping down toward the front so a letter based on this configuration should have a short upright stroke on the right with a long diagonal stroke slanting down toward the left, the mirror image of the preceding.

In traditional Chinese phonology, the dental sounds (which include the affricates *ts* and *dz* and the sibilants *s* and *z*) are called «front tooth» sounds but the point of articulation is with respect to the upper teeth, just as in western phonological theory the term «dental» (as well as in the compound «labiodental») refers to the upper teeth, and the word used, *ch'ih* (齒), in fact means specifically «upper incisors»; if the letter *s* is meant to represent the cross section of an incisor, then the shape should be an upright «V», not an inverted «V». There is some inconsistency here, too, because the description of the sound represented by *s* as a «front tooth» sound is from Chinese phonological theory but the sound represented by *k* is described in terms of the «root of the tongue» rather than as it would be described in Chinese terminology, as *ya* (牙), a «back tooth» or «molar» sound.

Of the two remaining consonants, the sonorants transcribed *l* and *z*, the *l* is another «lingual» sound and therefore presumably based upon the letter *n* (which may be seen in the bottom two strokes of the letter *l*) but, if so, its form is unnecessarily complex and, given the very simplicity of the letter *n*, the fact that it forms part of the letter *l* may be purely fortuitous. As for the letter transcribed *z*, if the sound it represents is actually *ñ*, *z*, or some *r* sound (all of which are possible), then it is not the voiced counterpart of *s* (the voiced counterpart of *s*, according to its position in the order of the consonants, its description in traditional Chinese phonological terms as «wholly muddy», and its use to write the *tzu-mu z-*, should be *ss*) and there is no reason why the letter should be based on that of the letter *s*.

Finally, though the forms of the Korean letters for the consonants were said to represent configurations of the articulatory organs, the letters for the vowel signs are said to be based on three basic vowels «described in cosmological terms as representing the classical Confucian ‘three powers’, that is, Heaven, Earth, and Man.» If King Sejong invented the letters for the consonants by analyzing how their sounds were produced, it would have been natural to do the same for the vowels. And, in explaining why the letter for the zero initial (transcribed *h*) resembles the letter for the velar nasal *ŋ* in form, the editors of the *Haerye* say,

«The throat is assigned to Water, while the molars are assigned to Wood». Although *ŋ* (o) stands with the molars, it resembles *h* (o). It is analogous to the buds and shoots of a tree that, produced in water, are soft and pliant and still have much of the material force of water. «With *k*, the tree becomes solid substance; with *kk*, the tree flourishes and grows; and with *kh*, the tree ages and matures. Therefore in these cases we have taken all the depictions from the molars.»<sup>54</sup>

But the sound of *ŋ* is not a throat sound, as *h* is, so there is no reason why the letter should be shaped like a cross-section of the throat. The arcane terms, drawn from the Chinese theory of the five elements, which are used to show the connection between the letter *ŋ* and the throat sounds, only obfuscate the question, and though the sound *ŋ* is in the same series as the velar stops, the shape of the letter for *ŋ* has nothing in common with the shape of the letters *k*, *kh*, and *kk*, so mention of these velar stops is irrelevant. The whole passage makes no sense. And this raises doubts also about the accuracy of the compilers of the *Haerye* in the discussion of the invention of the Korean alphabet.

Ledyard admits that «few would doubt that the speech-organ theory behind the invention of the Korean alphabet» is *ex post facto*, «even though highly interesting», and recognizes that «certain key Korean letters were influenced by *hP'ags-pa* forms.» He also accepts «the

*Haerye*'s testimony as both convincing and authoritative... «an unmovable rock of fact that is not only strongly documented but makes sense in its own terms.»<sup>55</sup> It does not seem possible to reconcile these two positions unless we suppose that as the letters were chosen from the *hP*'ags-pa alphabet they prompted the speech-organ theory because of their approximate resemblance to the structure or configuration of the speech organs when pronouncing certain sounds, or that specific letters were chosen from the *hP*'ags-pa alphabet on the basis of their supposed resemblance to the structure or configuration of the speech organs when pronouncing those sounds. There could have been interaction between shape of letter and phonological theory from the very beginning which influenced the choice and eventual shape of the letters of the Korean alphabet. But the *hP*'ags-pa alphabet was already there and its use to render the correct readings of Chinese characters, which was also King Sejong's primary motivation, would have provided not only the model for individual letters but the very idea that such a writing system could actually do this. It is more likely, then, that the theory grew out of the resemblance that the shapes of certain letters suggested to articulatory gestures than that there was a preconceived notion from what was perceived, abstractly in most instances, as the general geometrical form of certain speech organs and articulatory gestures, of what the letters should look like. If there had been such a preexisting theory about the shapes of speech organs and articulatory gestures, there should be evidence for it in the Chinese phonological literature that King Sejong and the compilers of the *Haerye* were familiar with.

## Conclusion

King Sejong's moves to introduce the Korean national script into general use in his country met with some opposition by the *yangban* ruling class, for whom the Chinese writing system was a mark of their social position and guaranteed their monopoly on learning.<sup>56</sup> Ch'oe Malli, vice-director of the *Chi-phyenjen* («Hall of Worthies») that King Sejong had established and the leader of the anti-alphabet faction, was particularly vocal in his opposition to the new writing system and wrote several memorials expressing his views. However, King Sejong continued in his efforts to promulgate the script, particularly through the Office for Vulgate Publication, and such projects as the translations of Buddhist texts, agricultural manuals for farmers, and military texts which, if written in Korean script, could be kept secret from outsiders. In time the women of the palace and of the *yangban* class began to use the new Korean script for letters and the like and though many major works

compiled by government bureaus continued to be written in Chinese characters, its use by educated women was an important step in popularizing the script.

Khubilai's efforts to get his people to use the hP'ags-pa script, however, only met with failure. By the end of the Yüan Dynasty the script existed only as a curiosity.<sup>57</sup> The reason the hP'ags-pa script made no headway in China is not simply because there was resistance to the new writing system by the educated class who, of course, preferred to use their own Chinese characters, because the situation there was much the same as in Korea. There was no active opposition to use of a new script, as there was in Korea: the reaction amongst the Chinese was more that of apathy—they simply did not take this new script seriously.

In the first place, Khubilai Khan obviously never meant the hP'ags-pa script for general use and did not intend for it to replace other writing systems totally; otherwise he would not have stated in his edict of 1269 that the script of whatever people used the hP'ags-pa script was to be written beside what was written in the new script.<sup>58</sup> This is certainly not an endorsement of its legibility and practicality. And, if Khubilai had really wanted the new script to be widely used, he might have set up a bureau for publication of literary works in the script, as King Sejong did for his.

Except for the mirror-image letters, though, which may be confused, the problem with the hP'ags-pa script is not its legibility (unless written in a compressed form for decorative purposes); the problem is its complexity. To be suitable for general use it would have to have been simplified, which Khubilai would surely have been prompted to do if this had been his intent. And, if we accept the view that the Korean script is based at least in part on the hP'ags-pa script, this is exactly what King Sejong did. For the Korean script is simple, easy to write and easy to read. It was eventually adopted in spite of opposition whereas the hP'ags-pa script did not, even in its limited application, in spite of the fact that there was no overt opposition to it.

## Notes

- 1 Ki-Moon Lee, *Geschichte der koreanischen Sprache*, Wiesbaden: Reichert Verlag, 1977, p. 60.
- 2 Morris Rossabi, *Khubilai Khan: His life and times*, Berkeley: University of California Press, 1988, p. 53.
- 3 Tibetan *thsil* actually means 'fat'.

- 4 *söni tugdam bariju erte manayar belegleküi-dür nigen ekener kümün mören degereben kederge modun-i bariju ireged* (3r18–22) ‘while meditating all night, an old woman came early in the morning bearing over her shoulder a tanning stick to present to him.’ In Schmidt’s translation, quoted in his *Geschichte der Ost-Mongolen*, note 9, from his own *Forschungen im Gebiete der ältesten religiösen, politischen, und literarischen Bildungsgeschichte der Völker Mittelasiens, vorzüglich der Mongolen und Tibeter*, the phrase *mören degereben kederge modun-i bariju ireged* is rendered, ‘kam... mit einem breitem Kerbholz über der Schulter’. This ‘Kerbholz’, *kedergen modun*, is given in Kowalewski as *ghederghé* ‘houe’ (2463b); in Lessing et al. this is *kedergen* ‘a wooden scraper used in tanning hides’ (441a); Khalkha has *xedreg* ‘a toothed implement of wood or metal used in dressing skins’ (Hangin and Gombojab, MED 486b) and Buryat has *xederge* ‘kozhemjalka’ (a tanning implement).
- 5 Michael Hahn, *Lehrbuch der klassischen tibetischen Schriftsprache*, Bonn. Indica et Tibetica Verlag, 1985, p. 1.
- 6 Ignace Jay Gelb, *A study of writing*, Chicago: The University of Chicago Press, 1969, pp. 149–150.
- 7 Ki-Moon Lee, «The inventor of the Korean alphabet,» in: Young-Key Kim-Renaud, ed., *The Korean alphabet: Its history and structure*, Honolulu: University of Hawaii Press, 1997, pp. 11–13.
- 8 «In diesem Monat legte Seine Majestät persönlich die 28 Zeichen einer Vulgärschrift fest,» Ki-Moon Lee, *Geschichte der koreanischen Sprache*, p. 60. The verb here is 制 *cey*, which means ‘regulate, govern; determine, decide, fix, prepare’, so there is a certain degree of ambiguity as to whether the king personally created the alphabet or personally decided upon which proposed letters were to be included in the alphabet. In his recent article, «The Inventor of the Korean Alphabet» (cf. note 7 above), Lee goes on to say, «It is easy to imagine that it might have been customary at the time to ascribe all accomplishments to the king. But in fact such was not the case. Rather, of all the many accomplishments of Sejong, this is the only instance in which the *Sejong Sillok* described the accomplishment as 親制 *chincey* (‘the personal creation of the king’),» p. 15.
- 9 Ki-Moon Lee, «The inventor of the Korean alphabet,» in: Young-Key Kim-Renaud, ed., *The Korean alphabet: Its history and structure*, Honolulu: University of Hawaii Press, 1997, p. 11.
- 10 Ki-Moon Lee, *op. cit.*, p. 13.
- 11 Ki-Moon Lee, *Geschichte der koreanischen Sprache*, Wiesbaden: Reichert Verlag, 1977, p. 62.
- 12 Ki-baik Lee, *A new history of Korea*, Cambridge, MA: Harvard University Press, 1984, p. 193.

- 13 *The Blue Annals*, ed. and transl. by George N. Roerich, Delhi: Motilal Banarsidass, 1976, p. 212.
- 14 Bernhard Karlgren, Compendium of phonetics in Ancient and Archaic Chinese, in: *Bulletin [of the] Museum of Far Eastern Antiquities* 26, 1954, pp. 215–216.
- 15 Ki-Moon Lee, «The inventor of the Korean alphabet,» in: Young-Key Kim-Renaud, ed., *The Korean alphabet: Its history and structure*, Honolulu: University of Hawaii Press, 1997, p. 27.
- 16 Gari Ledyard, «The international linguistic background of the correct sounds for the instruction of the people,» in: Young-Key Kim-Renaud, ed., *The Korean alphabet: Its history and structure*, Honolulu: University of Hawaii Press, 1997, pp. 33–35.
- 17 Nicholas Poppe, *The Mongolian monuments in hP'ags-pa script*, Göttinger Asia-tische Forschungen 8, Wiesbaden: Harrassowitz, 1957, p. 5.
- 18 Nicholas Poppe, *op. cit.*, p. 3.
- 19 Morris Rossabi, *Khubilai Khan: His life and times*, Berkeley: University of California Press, 1988, p. 155
- 20 «Les lettres dont se servent les Tartares, sont assez semblables à celles des Japonais; & tout les deux ne sont que quelques traits de ceux qui forment les caracteres Chinois. C'est pourquoi ces lettres sont beaucoup plus simples, & plus faciles, à ne contiennent pas tant de mystere de celles de la Chine: Aussi les estime-t'on beaucoup plus que celles de l'Asie, & ceux même de nôtre Europe,» Jean de Palafox, *Histoire de la conquête de la Chine par les Tartares*, Paris 1878, p. 414.
- 21 William Eliot Griffis, *Corea: The Hermit Nation*, 9th (revised and enlarged) ed., New York: Scribner's, 1911, p. 72; Rossabi, *op.cit.*, p. 95.
- 22 Ki-baik Lee, *A new history of Korea*, Cambridge, MA: Harvard University Press, 1984, p. 149.
- 23 William Eliot Griffis, *Corea: The Hermit Nation*, 9th (revised and enlarged) ed., New York: Scribner's, 1911, p. 72.
- 24 Who, according to the *Secret History*, had taken part in the 1218 campaign against the Solanghas, i.e. Koreans.
- 25 Morris Rossabi, *Khubilai Khan: His life and times*, Berkeley: University of California Press, 1988, p. 96.
- 26 Ki-baik Lee, *A new history of Korea*, Cambridge, MA: Harvard University Press, 1984, p. 149.

- 27 Morris Rossabi, *Khubilai Khan: His life and times*, Berkeley: University of California Press, 1988, p. 96.
- 28 Ki-baik Lee, *A new history of Korea*, Cambridge, MA: Harvard University Press, 1984, p. 150.
- 29 Morris Rossabi, *Khubilai Khan: His life and times*, Berkeley: University of California Press, 1988, p. 96.
- 30 C. D'Ohsson, *Histoire des Mongols depuis Tchinguiz khan jusqu'à Timour bey ou Tamerlan*, 1-4, Lettaye et Amsterdam, pp. 361–365.
- 31 «Known in Chinese as Hu-tu-lu Chieh-li-mi-shih,» Rossabi, *op.cit.*, p. 97. The first of these names is apparently Qutulun. Rashid al-Din names the King of Korea as one of Khubilai's four sons-in-law, cf. John Andrew Boyle, *The successors of Genghis Khan*, New York & London, 1971, p. 287.
- 32 As Griffis does when he says, «The Mongol civilization, so-called, seems to have had little influence on Corea,» *Corea: The Hermit Nation*, p. 74.
- 33 Mo. *aǰırça* > MKor. *acilkeymel* 'stallion'; Mo. *aγta* > MKor. *aktay* > Kor. *āktay* 'castrated animal; steer, ox'; MMo. *je'erde* > MKor. *cyeltamel* > Kor. *celtta* 'red (sorrel, bay) horse'; Mo. *qalǰan* > MKor. *kancyamel* > Kor. *kanca mal* 'horse with red forehead and cheeks'; MMo. *qara* > MKor. *kalamel* > Kor. *kala mal* 'all-black horse'; MMo. *qula* > MKor. *kolamel* > Kor. *kola* 'brownish horse with black back'; Mo. *küreng* > MKor. *kulengmel* 'bay, sorrel, chestnut (horse)'; Mo. *qudurça* > MKor. *kotelkay* > Kor. *kotilkay* 'horse bell; throat latch'; MMo. *olang* > MKor. *olang* 'saddle-girth'; MMo. *qarčiyai* > MKor. *kalcikay* 'yellow hawk' > Kor. *kal-cikay* 'year old hawk'; Mo. *kögsin* > MKor. *kuekcin* 'old wild falcon'; Mo. *načın* > MKor. *nachin* 'sparrow hawk'; Mo. *boro* > MKor. *polamav* 'purple hawk' > Kor. *pola may* 'hawk trained before it is a year old' (but cf. *pola* 'purple' in *polas pic* 'lavender'; *pola co* 'purple candle'); Mo. *songqor* > MKor. *syongkol* > Kor. *songkol mäy* 'peregrine falcon, duck hawk'; MMo. *turimtai* > MKor. *tolongthay* > Kor. *tolongthay* 'Asiatic sparrow hawk'; Mo. *tuiγun* > MKor. *thuikon* 'white gerfalcon'; MMo. *γodoli* > MKor. *kotoli* > Kor. *kotuli* 'blunt-headed arrow for shooting small birds'; Mo. *onu* > MKor. *ono* > Kor. *onıy* 'notch of an arrow, nock'; Mo. *baγudal* > MKor. *paotal* 'camp'; MMo. *sa'uri* > MKor. *saoli* 'stool'; Mo. *terlig* > MKor. *thyellik* > Kor. *chellik* 'official coat worn by government officials'; and Mo. *čurači* > MKor. *chyulachi* > Kor. *cula* 'conch shell painted red and used as a trumpet' (examples taken from Ki-Moon Lee, *Geschichte der koreanischen Sprache*, pp. 115–116, with addition of forms from Modern Korean).
- 34 The original text of which is lost but which survives in its Korean adaptation, *Saseng-thonggo*, cf. Ki-Moon Lee, *Geschichte der koreanischen Sprache*, p. 162.
- 35 According to Peter Ladefoged, *Preliminaries to linguistic phonetics*, Chicago:

- University of Chicago Press, 1971, pp. 21, 24, produced with tense voice with voicing immediately after; these consonants are strongly pronounced and to a speaker of English they sound explosive and they do sound voiced.
- 36 G. J. Ramstedt, *Korean Grammar*, Mémoires de la Société Finno-Ougrienne 82, Helsinki, pp. 11–16.
- 37 Ki-Moon Lee, *Geschichte der koreanischen Sprache*, Wiesbaden: Reichert Verlag, 1977, p. 153.
- 38 Ki-Moon Lee, *op cit.*, p. 162.
- 39 Ki-Moon Lee, *op cit.*, 60–62.
- 40 Wang Li-chu (王力著), *Han-yü Yin-yün Hsüeh* (漢語音韻學), Shanghai: Zhonghua Shuju, 1956, pp. 50–52; 579–534.
- 41 The Korean letters with their values, the values of the corresponding *tzu-mu*, and the example Chinese characters with their reconstructed sounds in Middle Chinese and their spellings in the *Meng-ku Tzu-yün* are given in Table 2 of Gari Ledyard, «The international linguistic background of the correct sounds for the instruction of the people,» in: Young-Key Kim-Renaud, ed., *The Korean alphabet: Its history and structure*, Honolulu: University of Hawaii Press, 1997, p. 45.
- 42 (四聲通告) «Notice on the Four Tones».
- 43 By J. S. Gale, in the *Transactions of the Asiatic Society of Korea*, 4 (1912), pp. 13–61; by K. Shiratori, in the *Shigaku Zasshi*, Tokyo; by M. Courant, *Systèmes d'écriture en Corée*, presumably published also in the *Transactions of the Asiatic Society of Korea*; and by Hattori Shirō in his *Genchōhishi-no Mōkogo-wo arawasu kanji-no kenkyū* «Study of the Chinese characters used to represent the Mongolian language in the *Secret History of the Mongols*», all cited by Nakano in her *Phonological Study*, footnote 67, p. 20.
- 44 It is misleading to claim, as Nakano does, that «it has long been recognized that the letter shape of Onmun [the Korean alphabet] was influenced by the 'Phags-pa script,» *op.cit.*, p. 20, when the works she cites were either in Japanese or published in Korea and thus not generally accessible.
- 45 «Letter shapes in the Korean Onmun and Mongol *hP'*ags-pa alphabets,» *Oriens* 10, pp. 150–159.
- 46 Gari Ledyard, «The international linguistic background of the correct sounds for the instruction of the people,» in: Young-Key Kim-Renaud, ed., *The Korean alphabet: Its history and structure*, Honolulu: University of Hawaii Press, 1997, p. 56.
- 47 Bernhard Karlgren, Compendium of phonetics in Ancient and Archaic Chinese, in:

- Bulletin [of the] Museum of Far Eastern Antiquities* 26, 1954, pp. 228–229.
- 48 Wang Li-chu (王力著), *Han-yü Yin-yün Hsüeh* (漢語音韻學), Shanghai: Zhonghua Shuju, 1956, p. 580.
- 49 Bernhard Karlgren, Compendium of phonetics in Ancient and Archaic Chinese, in: *Bulletin [of the] Museum of Far Eastern Antiquities* 26, 1954, pp. 228
- 50 Bernhard Karlgren, *op. cit.*, pp. 226–227.
- 51 See Roland A. Lange, *The phonology of eighth-century Japanese: A reconstruction based upon written records*, Tokyo: Sophia University, 1973, pp. 118–124 and observations on p. 80.
- 52 Gari Ledyard, *op.cit.*; Pyong-Hi Ahn, «The principles underlying the invention of the Korean alphabet»; Young-Key Kim-Renaud, «The phonological analysis reflected in the Korean writing system»; all in Young-Key Kim-Renaud, ed., *The Korean alphabet: Its history and structure*, Honolulu: University of Hawaii Press, 1997.
- 53 Gari Ledyard, *op.cit.*, pp. 39–40; Young-Key Kim-Renaud, ed., *The Korean Alphabet*, Appendix, p. 279.
- 54 Gari Ledyard, «The Korean language reform of 1446,» p. 233, adapted and quoted in Ledyard, *op.cit.*, p. 61.
- 55 Ledyard, *op.cit.*, pp. 57, 63.
- 56 Ki-baik Lee, *A new history of Korea*, Cambridge, MA: Harvard University Press, 1984, p. 193.
- 57 The last monuments in *hP'ags-pa* script date from 1351 and 1352, just sixteen years before the collapse of the Yüan Dynasty. Poppe points out the fact that the *hP'ags-pa* script «persisted for about eighty years after the death of the founder of the Yüan Dynasty,» in 1294 (*The Mongolian Monuments*, p. 7), and it is not odd that his grandson and great-grandsons, and his grandson's great-grandson should use the *hP'ags-pa* script occasionally to continue the traditions of the dynasty, but judging by the paucity of examples dating from after Khubilai's death the script by then was moribund.
- 58 Nicholas Poppe, *The Mongolian monuments in hP'ags-pa script*, Göttinger Asia-tische Forschungen 8, Wiesbaden: Harrassowitz, 1957, p. 5.