In Search of a Universal Phonetic Alphabet - Theory and Application of an Organic Visible Speech

Hyun-Bok Lee, Seoul National University

Abstracts

Phonetic symbols have an important role to play in phonetics, linguistics, language teaching, speech pathology and speech sciences in general, and linguists and phoneticians have tried to devise appropriate phonetic alphabets. Notable among them are Sweet, Bell, Jespersen, Pike, etc. The most successful and popular phonetic alphabet today is no doubt the International Phonetic Alphabet. The International Korean Phonetic Alphabet (IKPA for short) is a system of phonetic symbols that has been devised by the author on the basis of the articulatory phonetic(organic) principles exploited by the Korean King Sejong in creating the Korean alphabet of 28 letters in 1443. The Korean alphabet is not merely a phonetic alphabet of arbitrary nature but a highly sophisticated system consisting of sets of interrelated organic phonetic symbols, each set representing either the shape of the organs of speech, i.e. lips, tooth and velar etc. or their articulatory action. The Korean alphabet is, in a true sense of the word, a set of phonetic symbols designed to represent the organic visible speech of the human being. The author has applied the organic phonetic principles much more extensively and systematically in devising IKPA than the King had done. Consequently the IKPA symbols are just as systematic, scientific, easy to learn and memorize as the Korean alphabet, quite unlike the IPA counterparts which, having been derived mainly from Roman and Greek letters, are mostly unsystematic and arbitrary. The IKPA symbols visualize or mirror the actual speech organs or their action and thus tell us exactly what sort of an articulatory action is involved in producing sounds. It is in this sense that the IKPA deserves to be called a "Universal Visible Speech", which is to be shared by all.

Biographical Sketch

Education
Dept. of Linguistics, Seoul National Univ. (1955-59)
Dept. of Linguistics, Graduate School, Seoul National Univ.(1959-61)
Dept. of Phonetics, University College London (1962-64)
Summer School at Universite Catholique de Paris (1965)

Career
Librarian at the National Central Library of Korea (1959-62)
British Council Scholar (1962-64)
Lecturer (Phonetics/Korean) at Uppsala and Stockholm Univ.(1965-66)
Fellow at SOAS, London University (1969-70)
Professor of Phonetics & Linguistics, Seoul National Univ. (1970-2002)
Director of Language Research Institute, Seoul National Univ. (1986-88)
Adviser to Korean Broadcasting Station, Ministry of Education, and Ministry of Culture and Sports (1976- )
Founder and President of the Phonetic Society of Korea (1976-2002)
President of the Oriental Society of Korea (1994-2000)
President of the Linguistic Society of Korea (1997-99)
Vice-President of the Korean Language Society (1980-2004)
Visiting Professor at Tokyo Univ. (1977-78), London Univ. (1985-86)
Warsaw Univ.(1990-92), Tokyo Univ.(2000.5-8), Member of PC-ICSLP (2000- )
Honorary Adviser to ICSLP Jeju Organizing Committee (2002- )
Director of the Korean-English Speech Academy (2002- ).
In Search of a Universal Phonetic Alphabet
-Theory and Application of an Organic Visible Speech-

Hyun Bok Lee, CBE, Ph.D.
Professor Emeritus of Phonetics and Linguistics
Seoul National University
hanslee@snu.ac.kr

Abstract

Phonetic symbols have an indispensable role to play in phonetics, linguistics, language teaching, speech pathology and speech sciences in general. And linguists and phoneticians in the east and west have made attempts to devise appropriate phonetic alphabets at one time or another in human history. The most successful and popular phonetic alphabet today is no doubt the International Phonetic Alphabet, which being based mainly on Latin and Greek letters, consists of unsystematic mass of arbitrary symbols.

Hunmin Jeongeum, the original version of the Korean alphabet is a highly sophisticated system consisting of sets of interrelated organic phonetic symbols, each set representing either the shape of the organs of speech or their articulatory movements. The Korean alphabet is, in a true sense of the word, a set of phonetic symbols designed to represent the visible speech sounds of human beings.

In an attempt to devise an ideal and universal organic phonetic alphabet the author has applied extensively the organic principle that was exploited by the King Sejong of Korea in 1446 in creating Hunmin Jeongeum. The International Korean Phonetic Alphabet (IKPA for short) is a system of phonetic symbols, which is just as systematic, scientific, easy to learn and memorize as the Korean alphabet. The IKPA symbols visualize or mirror the actual speech organs or their action and thus tell us exactly what sort of an articulatory action is involved in producing speech sounds. It is in this sense that the IKPA is called "A Universal Visible Speech".

1. Introduction

Ladies and gentlemen! I welcome you all to Korea, the land of phonetics. Korea has been known to the outside world as the land of morning calm, or hermit kingdom for centuries. As you can see yourself, there is nothing really calm about Korea nowadays. In fact she has now turned out to be a highly bustling and bustling society armed with IT industry. Believe it or not she is now a leading country in internet and mobile phones. "Korea is engaged", as the weekly magazine Time aptly described on the cover page some time ago to dramatize the popularity of mobile phones in Korea.

More than anything else, however, Korea deserves to be known as "The Land of Phonetics and Spoken Language Processing", for it was here in Korea that the most remarkable phonetic alphabet was invented by the King Sejong in 1443. With the promulgation of Hunmin Jeongeum (Right sounds for teaching the nation), the Korean alphabet of 28 letters by the king in 1446, Korea was turned into the land of phonetics. The Korean alphabet, now known as "HanGul" (Unique and great alphabet) was devised on the basis of articulatory and auditory phonetic principles as well as the modern phonological concepts. It is an "Organic Alphabet", consisting of simple and yet versatile letters reflecting the shape of the articulatory organs in action. Therefore HanGul has rightly earned the reputation of being "the greatest masterpiece of human intellect and a truly universal alphabet". Ladies and gentlemen, you are literally surrounded by organic phonetic symbols and visible speech wherever you are in Korea. Let me tell you what I mean by this.
2. Attempts to Devise Universal Phonetic Alphabets

Serious attempts have been made by phoneticians and linguists in the past and at present to devise universal phonetic alphabets. Notable among the pioneers are Bell, Sweet, Jespersen, etc. Their attempts were highly rewarding and yet their ideas were unfortunately all short-lived. For instance, the Scottish Educationalist, Alexander Melville Bell, father of Alexander Graham Bell, the inventor of the telephone, invented a system of representing the sounds of speech according to the way in which they are articulated, which he called Visible Speech. Henry Sweet a student of Melville Bell had improved upon this and adapted it to become what he called the Organic Alphabet, "based on a physiological analysis of the actions of the organs of speech".

It is highly interesting to remind ourselves on this occasion that Bell and Sweet appear to have to a large extent used the similar principles that the King Sejong of Korea applied in creating the Korean alphabet over five centuries ago. Just as the King Sejong used the symbol ㅏ in Hunmin Jeongeum as a component in the letters for the velar sounds [g] and [k], as resembling the shape of the tongue "blocking the throat", and ㅓ as a component in the letters for the lingua-dental sounds [t, d, n] to represent the tongue "touching the upper jaw", and ㅗ, representing the shape of the lips, in the labial sounds, so Sweet used a full circle 〇 in his Organic Alphabet to represent the open throat in breath, and the symbol ㅏ to represent the narrowed throat with closed vocal cords, as in the production of voice. Sweet's symbol for the teeth for dental consonants (such as English th in "thin") is ㅗ based on the shape of teeth. "Open", i.e., fricative, consonants are represented by a broken circle, stopped consonants by the broken circle closed by a bar. A voiced consonant is represented by adding the voiced "bar" to the corresponding voiceless consonant. Notice that the King Sejong used an additional stroke to derive aspirated plosive and affricate consonant graphemes in Korean alphabet: ㅏ[k] → ㅐ[kʰ], ㅒ[c] → ㅖ[cʰ].

According to E. Henderson, Sweet's organic Alphabet lacked, unfortunately, the royal support which ensured the adoption of Hunmin Jeongeum by the Korean nation, and printing difficulties obliged him in his later writings to use in his phonetic transcriptions the adapted forms of the Roman letters that linguists are familiar with today in the alphabet of the International Phonetic Association.

Of the phonetic alphabets so far devised, the IPA is no doubt the most widely used and at the same time, highly successful phonetic alphabet today. However, the IPA symbols, based mainly on Roman and Greek letters, have some serious disadvantages and drawbacks:

Roman [a, i, e, o, u, p, t, k, s, z, l, x] etc; Greek [φ, β, θ, χ] etc; Modified [o, ε, ω, ι, ν, ζ] etc.

For one thing, the IPA symbols do not represent or reflect the shapes or movements of the organs of speech in the manner that the Korean letters do. Notice the formal resemblance of the shape of the back of the tongue blocking the soft palate to the Korean letter for the velar plosive sound ㅏ. Moreover, unlike in Korean alphabet, no formal interrelationship can be found in IPA between the phonetic symbols representing homorganic sounds such as p/b, t/d, k/g, s/z, f/v, etc. They are simply arbitrary and totally unrelated in shape. Notice the formal similarity among the three homorganic consonant letters in Korean in comparison to the formal dissimilarity between IPA [k] and [q].

Kor. ㅏ[k] → ㅓ[kʰ] → ㅗ[k’] →IPA. ㅏ[k] → ㅓ[kʰ] → ㅗ[k’]

Consequently IPA symbols are much harder for beginners to learn and use than Korean letters.

3. Characteristics and Advantages of the Korean Alphabet

The Korean alphabet is unique in many respects and it certainly deserves to be more widely known and understood. The most characteristic features of Korean alphabet are as follows.

3.1 Phonetically Oriented

1) Consonant letters. The shape of the basic letters was modelled on the actual shape of the articulatory organs involved in pronouncing the sound represented by the letters. The five basic consonant letters are created by the Korean King as follows:

- ㅏ[k] represents the velar sound since it resembles the shape of the tongue blocking the throat.
- ㅓ[n] represents the lingua-dental/dental/alveolar sound in modern phonetic terminology; once it resembles the tongue touching 'the upper jaw', i.e., upper teeth or teeth ridge.
<u> [m] represents the labial sound since it resembles the shape of the lips.
<θ> [s] represents the dental sound since it resembles the shape of the teeth.
<o> represents the throat sound since it resembles the shape of the throat: [o/ɔ].

As pointed out by Henderson this was exactly what Bell and Sweet had in mind when they tried to devise Organic and Visible Speech about five centuries later.

2) Vowel letters. Vowel letters were devised on the traditional oriental philosophical principles of In(negative) and Yang(positive). The King devised three basic letters <·>, <---> and <1>, symbolizing respectively 'heaven', 'earth' and 'man' and assigning phonetic values to them as follows:

Three Basic Vowel Letters:
<·> [o] - "symbolizing heaven(round)"
<---> [eu] - "symbolizing earth(flat)"
<1> [i] - "symbolizing man"(upright)

3.2 Systematic Derivation of Symbols

Most Korean graphemes are derived systematically from the basic consonant and vowel letters by addition of extra diacritical marks. For instance the twelve remaining consonant letters were derived by adding to each of the five basic letters one or more additional strokes or symbols which indicated other relevant phonetic features or different manners of articulation at homorganic points of articulation.

e.g. <l> + <·> + <1> + <·> + <1> + [n] + [d] + <t> + <t>

It is interesting to note that the basic letter <l> + [n] symbolizing dental/alveolar articulation is shared by all of the derived homorganic letters. Likewise, the remaining eight vowel letters were derived by different combinations of the three basic letters:

<1> [a] ← <·> + <1> + <·>
<1> [ia] ← <·> + <1> + <·> + <·>
<1> [a] ← <·> + <1> + <·>
<1> [o] ← <·> + <1> + <·>
<1> [t] ← <·> + <1> + <·> + <·> + etc.

3.3 Functioning as Phonemic Symbols

Korean alphabet(Hunnin Jeongeum), although formulated on a purely phonetic basis, was a phonemic alphabet in its actual application. And there is sufficient evidence(e.g., the recognition of three positions, initial, medial and final, in the syllable and the statements concerning the distribution of sounds at the three positions of a syllable, etc.) that the king had completed some kind of preliminary phonological analysis of Korean according to the phonemic principle not far removed from that of modern linguistics, even though he did not actually use the term 'Phoneme' as against 'Phone' or 'Sound'.

3.4 Syllable Block Writing

Another important characteristic of Korean alphabet is found in the spelling principle decreed by the king, according to which letters were to be combined, in accordance with the prescribed rule, into syllable blocks and not in a linear succession as in European languages. In other words, graphemes are arranged syllabically in such a way that each syllable has a distinct geometrical shape. For instance, syllable like <mak>'curtain' and <nun> 'eye' would be arranged in actual writing as follows:

<mak> : ㎡ ← <u> [m], 乏力 [a], 亡 [k]>
<nun> : ㎡ ← <u> [n], 亡 [u], 亡 [n]>

With the three characteristics of Hunmin Jeongeum taken into consideration, the Korean alphabet of the fifteenth century may be defined as a phonemic alphabet based on phonetic principles and spell syllabically.
4. HanGeul: An Organic Alphabet of Distinctive Features

It is worth noting that the Korean alphabet HanGeul has a kind of distinctive theory incorporated in it. In fact one can see that Hunmir Jeongeum of 1446 was created on the basis of practically the same kind of distinctive theory that was initiated and developed in twentieth century by Jakobson, Chomsky and Halle in the 20th century. The notion of distinctive feature and binary opposition is clearly demonstrated by the articulatory and auditory(acoustic) description given in Hunmir Jeongeum of the phonetic value of the three basic vowels, which may be tabulated as follows(cf. table 1):

<table>
<thead>
<tr>
<th>Features</th>
<th>Vowels</th>
<th>&lt;1&gt;</th>
<th>&lt;---&gt;</th>
<th>&lt;·&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Articulatory</td>
<td>Retraction</td>
<td>-</td>
<td>-</td>
<td>+</td>
</tr>
<tr>
<td>(Tongue)</td>
<td>Advance</td>
<td>+</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Auditory</td>
<td>Shallow</td>
<td>+</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>(Voice)</td>
<td>Deep</td>
<td>-</td>
<td>-</td>
<td>+</td>
</tr>
</tbody>
</table>

Notice that the two distinctive features "tongue retraction", which refers to the tongue movement articulatory) and "voice deep"(dark and deep vocal quality as against bright and acute one), which relates to the auditory (acoustical) impression are shown to interact to characterize and define the vocalic quality of each of the three vowels as well as the phonetic relations among them.

4.1. The Korean Alphabet and the Prosodic Analysis

The current Korean alphabet, and to an even greater extent, fifteenth-century Hunmir Jeongeum, is not a haphazard collection of isolated letters. It is, in a sense, not only a phonetic alphabet based exclusively on detailed phonetic observations of the articulatory organs, but also a remarkably neat system composed of interrelated elements (letters). In particular, it is interesting to note the striking similarity between the manner in which the Korean alphabet is systematized and the theoretical tenet of the 'Prosodic Analysis' as initiated and developed by the London School, namely, a multidimensional approach characterized by the establishment of phonematic units on the one hand, and the abstraction and assignment of prosodic features to and over the phonematic units on the other. This can be exemplified by the Korean consonant letters. Of the 19 consonant letters, the following 17 letters are chosen for the purpose of this discussion(cf. Table 2):

<table>
<thead>
<tr>
<th>Features</th>
<th>Voiceless unaspirated</th>
<th>Voiceless aspirated</th>
<th>Voiceless glottalized</th>
<th>Voiced nasal</th>
</tr>
</thead>
<tbody>
<tr>
<td>bi-labial plosives</td>
<td>/p/</td>
<td>/pʰ/</td>
<td>/pʰ/</td>
<td>/m/</td>
</tr>
<tr>
<td>alveolar plosives</td>
<td>/t/</td>
<td>/tʰ/</td>
<td>/tʰ/</td>
<td>/n/</td>
</tr>
<tr>
<td>velar plosives</td>
<td>/k/</td>
<td>/kʰ/</td>
<td>/kʰ/</td>
<td>/g/</td>
</tr>
<tr>
<td>affricates</td>
<td>/c/</td>
<td>/cʰ/</td>
<td>/cʰ/</td>
<td>/s/</td>
</tr>
<tr>
<td>alveolar fricatives</td>
<td>/s/</td>
<td>/sʰ/</td>
<td>/sʰ/</td>
<td>/ upholstery</td>
</tr>
</tbody>
</table>

These 17 consonant letters can be described in prosodic terms as composed of five phonematic units, each representing a different place of articulation: (i) bi labial, (ii) alveolar, (iii) velar, (iv) post-alveolar(affricate) and (v) alveolar(fricative), and four prosodic features, (i) voiceless unaspirated, (ii) voiceless aspirated, (iii) voiceless glottalized, and (iv) voiced nasal. The analysis can be simplified considerably by symbolizing the phonematic units by the 'voiceless unaspirated' letters <H, T, K, X, >, thereby reducing the number of prosodies from four to three. With the prosody 'voiceless unaspirated' treated as an unmarked term automatically ascribable to the five phonematic units. Symbolizing, by superscripts, the three prosodies as: [H] — 'aspiration prosody'; [q] — 'glottal prosody'; [n] —
'nasal prosody', the 17 consonant letters may be represented as consisting of five phonematic unit and a zero or one of the three prosodies as follows (cf. Table 3):

<table>
<thead>
<tr>
<th>Prosody</th>
<th>Zero</th>
<th>Aspiration</th>
<th>Glottal</th>
<th>Nasal</th>
</tr>
</thead>
<tbody>
<tr>
<td>bi-labial plosive</td>
<td>/p/</td>
<td>/pʰ/</td>
<td>/p/</td>
<td>/m/</td>
</tr>
<tr>
<td>alveolar plosive</td>
<td>/t/</td>
<td>/tʰ/</td>
<td>/t/</td>
<td>/n/</td>
</tr>
<tr>
<td>velar plosive</td>
<td>/k/</td>
<td>/kʰ/</td>
<td>/k/</td>
<td>/ŋ/</td>
</tr>
<tr>
<td>affricates</td>
<td>/ts/</td>
<td>/tsʰ/</td>
<td>/ts/</td>
<td>/ts̚/</td>
</tr>
<tr>
<td>fricatives</td>
<td>/s/</td>
<td>/s/</td>
<td>/s/</td>
<td>/s̚/</td>
</tr>
</tbody>
</table>

In due respect to this kind of intricate internal structure of Korean consonant graphemes that is effected by distinctive features like "aspiration" and "glottalization", British linguist Sampson has coined a new term "Featural (Writing) System" for the Korean alphabet. According to Sampson, therefore, the Korean alphabet is to be classified as forming a unique type of alphabetic system, quite distinct from the ordinary alphabetic systems such as Itoman or Cyrillic.

4.2. Limitation of HanGeul as Phonetic Symbols

Although the Korean alphabet has been widely acclaimed by phonicians and linguists as an excellent phonetic writing system and no doubt a highly successful writing system for the Korean language, it leaves much to be desired before it can be utilized as a truly international phonetic alphabet capable of representing minute phonetic differences of human speech sounds. For instance, there is no way to represent the voiced/voiceless distinction or to distinguish labial and labio-dental articulation by Korean letters. Thus the following pairs of English words are indistinguishable in the HanGeul writing:

\[
\begin{align*}
/p/ & \text{ fine/pine } \rightarrow \text{ 파인 [pain]} ; \\
/v/ & \text{ vote/boat } \rightarrow \text{ 보우트 [bout]} ; \\
/z/ & \text{ leisure/ledger } \rightarrow \text{ 레저 [ledej]} ; \\
/n/ & \text{ they/day } \rightarrow \text{ 데이 [deil]} ; \\
/s/ & \text{ lice/rice } \rightarrow \text{ 라이스 [rais]} .
\end{align*}
\]

On the other hand, the Korean alphabet has a definite advantage over IPA in that it has basic letters available for representing the unaspirated, slightly aspirated and strongly aspirated consonants separately in Korean such as \(/m/\) (voiceless unaspirated), \(/h/\) (voiceless slightly aspirated) and \(/\mathfrak{m}/\) (voiceless strongly aspirated). The IPA would need to utilize additional diacritical marks to represent the relevant distinction:

\[
\begin{align*}
\text{e.g. Korean : } & \langle \mathfrak{m} \rangle - \langle h \rangle - \langle \mathfrak{m} \rangle \\
\text{IPA : } & \langle p' \rangle - \langle p \rangle - \langle p' \rangle .
\end{align*}
\]

It is necessary, therefore, to implement the current Korean alphabet to make it a really versatile international phonetic alphabet.

5. Principles of the International Korean Phonetic Alphabet

The International Korean Phonetic Alphabet, first published in 1971 was devised by the present writer by applying the organic principle much more extensively than King Sejong had done. Accordingly, the IKPA symbols are just as simple and easy to learn and memorize as the Korean alphabet, but at the same time they are much more consistent and logical than the IPA symbols which are unsystematic and arbitrary except in one respect, i.e., retroflex symbols, which are consistently marked by a hook attached to the relevant letters. The organic principles applied in devising the International Korean Phonetic Alphabet can be summarized as follows.

1) Mobilizing All HanGeul Letters. All HanGeul letters are mobilized in the making of the Korean Phonetic Alphabet except those representing diphthongs such as \(<\u0101>[va], <\u0103>[wa], <\u0104>[we], <\u0105>[wu]>. In addition, the 4 extinct letters of Hurmir Jeongeum of the 15th century
have all been revived and given definite phonetic values. For instance, the triangle is introduced as a symbol representing voiced alveolar fricative [z].

2) Devising Indispensable Symbols. New symbols have been devised by adding one or more of the following marks to the relevant basic letters, consistent with the principles of Hunmin Jeongeum. Some new symbols are derived by deleting a stroke from relevant HanGul letters.

(1) Adding the voice bar [ / ] , [ - ] or [ \ ] to derive voiced symbols from voiceless ones.
   e.g. < ꝰ > + [ \ ] –→ < ꝱ > [ a ] .
(2) Adding a <철> -shaped hook symbolizing the front of the tongue bunching up to derive palatalized symbols from non-palatalized ones.
   e.g. < ꝲ > + [ j ] –→ < ꝳ > [ j ] .
(3) Adding <철> -shaped hook symbolizing the tongue tip curling upward to derive retroflex symbols from non-retroflex ones.
   e.g. < ꝱ > + [ j ] = < ꝲ > [ t ] .
(4) Adding a small circle under or over a letter to derive fricative symbols from homorganic plosives.
   e.g. < ꝲ > + [ s ] = < ꝳ > [ x ] .
(5) Adding a small hook to derive uvular symbols from velars.
   e.g. < ꝲ > + [ r ] = < ꝳ > [ q ] .
(6) Deleting a stroke from plosives to derive homorganic fricative symbols.
   e.g. < ꜠ > - [ - ] = < ꜰ > [ f ] .
(7) Adding a stroke to trill symbols to derive homorganic lateral symbols.
   e.g. < ꜠ > + [ i ] = < ꜰ > [ l ] .
(8) Deleting and adding strokes to derive fricative symbols from plosives.
   e.g. < ꜠ > - [ - ] + [ \ ] –→ < ꜰ > [ v ] .
(9) Vowel symbols are also derived from the basic letters by applying the same principles as shown in the derivation of consonant symbols(cf. IKPA chart).
(10) Two semi-vowel symbols are derived from the relevant vowels by modifying their shape(cf. IKPA chart).

3) Representing Homorganic Sounds Systematically. The symbols of homorganic sounds that are articulated at the same place of articulation are designed in such a way that they are all marked by a basic articulatory phonetic feature. This will no doubt have mnemonic value for learners and readers.
   e.g. ꝱ [k] → ꜰ[k'] → ꝳ [k']

4) Devising Diacritical Marks to Enrich the Phonetic Representation A number of diacritical marks have been devised to represent various shades of speech sounds such as voicing, palatalization, retroflexion, etc.

6. Conclusion and Illustration

6.1 The advantages of the International Korean Phonetic Alphabet can be summarized as follows:

1) IKPA represents the shape and/or articulating movement of the organs of speech, i.e., organic phonetic alphabet.
2) IKPA represents the place and manner of articulation in a consistent and systematic manner.
3) Homorganic symbols share the common elements in IKPA.
4) IKPA is easy to learn, teach and memorize.
5) IKPA may serve as a universal phonetic alphabet for all human beings.

In sum, IKPA is more than a mere phonetic alphabet consisting of arbitrary symbols. The IKPA symbols visualize or mirror the actual speech organs or their action and thus tell us exactly what sort of an articulatory action is involved in producing sounds. IKPA is in reality the articulatory phonetic theory itself, which is self-explanatory for specialists and laymen alike. It is in this sense that the IKPA is rightly called "A Universal Visible Speech".
6.2 Illustration of IKPA

1) Korean: ㅋ킬리그치다 ㅋ킬리그치다 ㅋ킬리그치다 [k'ok'ilige kanda]
4) Japanese: 你好？ 你好？ 你好？ “Narita to Haneda’’
5) French: Bon jour, ma cheri”
6) Thai: สวัสดีครับ [sawadi k(rl)ap]
7) Lahu: นักมาลีก้ามี นักมาลีก้ามี นักมาลีก้ามี [nak kaulib qaiqe jo]

Reference

국제 한글음성문자

International Korean Phonetic Alphabet

**당소리/Consonants**

<table>
<thead>
<tr>
<th>Place</th>
<th>Bilabial</th>
<th>Labio-dental</th>
<th>Dental and Alveolar</th>
<th>Retroflex</th>
<th>Post-alveolar</th>
<th>Alveolo-Palatal</th>
<th>Palatal</th>
<th>Velar</th>
<th>Uvular</th>
<th>Pharyngeal</th>
<th>Glottal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plosive</td>
<td>냥 냥 뿌 뿌</td>
<td>둥 둥 둥 둥</td>
<td>둥 둥 둥 둥</td>
<td>둥 둥 둥 둥</td>
<td>둥 둥 둥 둥</td>
<td>둥 둥 둥 둥</td>
<td>둥 둥 둥 둥</td>
<td>둥 둥 둥 둥</td>
<td>둥 둥 둥 둥</td>
<td>둥 둥 둥 둥</td>
<td>둥 둥 둥 둥</td>
</tr>
<tr>
<td>Affricate</td>
<td>냥 냥 뿌 뿌</td>
<td>둥 둥 둥 둥</td>
<td>둥 둥 둥 둥</td>
<td>둥 둥 둥 둥</td>
<td>둥 둥 둥 둥</td>
<td>둥 둥 둥 둥</td>
<td>둥 둥 둥 둥</td>
<td>둥 둥 둥 둥</td>
<td>둥 둥 둥 둥</td>
<td>둥 둥 둥 둥</td>
<td>둥 둥 둥 둥</td>
</tr>
<tr>
<td>Fricative</td>
<td>냥 냥 뿌 뿌</td>
<td>둥 둥 둥 둥</td>
<td>둥 둥 둥 둥</td>
<td>둥 둥 둥 둥</td>
<td>둥 둥 둥 둥</td>
<td>둥 둥 둥 둥</td>
<td>둥 둥 둥 둥</td>
<td>둥 둥 둥 둥</td>
<td>둥 둥 둥 둥</td>
<td>둥 둥 둥 둥</td>
<td>둥 둥 둥 둥</td>
</tr>
<tr>
<td>Nasal</td>
<td>둥 둥 둥 둥</td>
<td>둥 둥 둥 둥</td>
<td>둥 둥 둥 둥</td>
<td>둥 둥 둥 둥</td>
<td>둥 둥 둥 둥</td>
<td>둥 둥 둥 둥</td>
<td>둥 둥 둥 둥</td>
<td>둥 둥 둥 둥</td>
<td>둥 둥 둥 둥</td>
<td>둥 둥 둥 둥</td>
<td>둥 둥 둥 둥</td>
</tr>
<tr>
<td>Lateral</td>
<td>둥 둥 둥 둥</td>
<td>둥 둥 둥 둥</td>
<td>둥 둥 둥 둥</td>
<td>둥 둥 둥 둥</td>
<td>둥 둥 둥 둥</td>
<td>둥 둥 둥 둥</td>
<td>둥 둥 둥 둥</td>
<td>둥 둥 둥 둥</td>
<td>둥 둥 둥 둥</td>
<td>둥 둥 둥 둥</td>
<td>둥 둥 둥 둥</td>
</tr>
<tr>
<td>Rolled</td>
<td>둥 둥 둥 둥</td>
<td>둥 둥 둥 둥</td>
<td>둥 둥 둥 둥</td>
<td>둥 둥 둥 둥</td>
<td>둥 둥 둥 둥</td>
<td>둥 둥 둥 둥</td>
<td>둥 둥 둥 둥</td>
<td>둥 둥 둥 둥</td>
<td>둥 둥 둥 둥</td>
<td>둥 둥 둥 둥</td>
<td>둥 둥 둥 둥</td>
</tr>
<tr>
<td>Flapped</td>
<td>둥 둥 둥 둥</td>
<td>둥 둥 둥 둥</td>
<td>둥 둥 둥 둥</td>
<td>둥 둥 둥 둥</td>
<td>둥 둥 둥 둥</td>
<td>둥 둥 둥 둥</td>
<td>둥 둥 둥 둥</td>
<td>둥 둥 둥 둥</td>
<td>둥 둥 둥 둥</td>
<td>둥 둥 둥 둥</td>
<td>둥 둥 둥 둥</td>
</tr>
<tr>
<td>Approximant</td>
<td>둥 둥 둥 둥</td>
<td>둥 둥 둥 둥</td>
<td>둥 둥 둥 둥</td>
<td>둥 둥 둥 둥</td>
<td>둥 둥 둥 둥</td>
<td>둥 둥 둥 둥</td>
<td>둥 둥 둥 둥</td>
<td>둥 둥 둥 둥</td>
<td>둥 둥 둥 둥</td>
<td>둥 둥 둥 둥</td>
<td>둥 둥 둥 둥</td>
</tr>
</tbody>
</table>

**홍소리/Vowels**

<table>
<thead>
<tr>
<th>Vowels</th>
<th>Rounded</th>
<th>Front</th>
<th>Central</th>
<th>Back</th>
</tr>
</thead>
<tbody>
<tr>
<td>닫힌(Close)</td>
<td>ㄱ ㅏ ㅏ ㅏ</td>
<td>ㅣ ㅣ ㅏ ㅏ</td>
<td>ㅏ ㅏ ㅏ</td>
<td>ㅏ ㅏ ㅏ</td>
</tr>
<tr>
<td>반닫힌(Half-close)</td>
<td>ㅅ ㅗ ㅗ ㅗ</td>
<td>ㅐ ㅐ ㅐ ㅐ</td>
<td>ㅏ ㅏ ㅏ</td>
<td>ㅏ ㅏ ㅏ</td>
</tr>
<tr>
<td>반열린(Half-open)</td>
<td>ㄴ ㅔ ㅔ ㅔ</td>
<td>ㅗ ㅗ ㅗ ㅗ</td>
<td>ㅏ ㅏ ㅏ</td>
<td>ㅏ ㅏ ㅏ</td>
</tr>
<tr>
<td>열린(Open)</td>
<td>ㄹ ㅓ ㅓ ㅓ</td>
<td>ㅏ ㅏ ㅏ ㅏ</td>
<td>ㅏ ㅏ ㅏ</td>
<td>ㅏ ㅏ ㅏ</td>
</tr>
</tbody>
</table>

Devised by H.B.Lee (1971~)