

FUNDAMENTALS OF PHONOLOGICAL ANALYSIS

Sheon Gi Gim

1. Ever since de Saussure pointed out that *Linearity* was the Second Principle in his CLG (p.103) the students of Linguistics have been paying great attention to this principle, but it seems to me that we have not paid enough attention to his following words:

"Cependant il est fondamental et les conséquences en sont incalculables."

This one dimensional arrangement of the speech sounds is the fundamental basis upon which we build up all other linguistic systems and structures.

2. First of all this linearity gives rise to the Positional Relations, Initial, Medial and Final. Every speech sound must occur at a definite position. This importance of the Positional Relations seems to have been recognized by the Court Scholars who helped the creation of Hangeur (The Korean Alphabets). They set up the tradition of marking even the absence of a certain final consonant by the symbol /o/. This is also a kind of recognition of the zero phoneme.

3. By Initial position we understand the position between Silence and other sounds, by Medial the position between the two sounds and by Final the position between the other sounds and Silence. The most simple realization of this positional relations can be shown by the mono-syllabic words, e.g. /bil:/ /pil/ (bill: pill); /bul:/ /pul/ (bull: pull).

4. If we compare them /bil/ and /pil/, we find that these two words are distinguished by the first elements /b/ and /p/ and the remaining sounds remain all the same. Right here we have to recognize strange facts. The phoneme /b/ and /p/ are contradistinguished even though they are both bi-labial and plosive sounds. They are only contradistinguished by the presence or absence of either voice or aspiration.

5. These initial sounds have the distinguishing power forming two different words. In phonological analysis we call the study of all these contradistinctions and inter-distinctions *Paradigmatics*. When we compare the two words /bil/ and /bul/ we find some slight

differences between /b/ of /bil/ and /b/ of /bul/. The lip positions in pronouncing /b/ of /bil/ and /b/ of /bul/ can not be the same, since we just pronounce the vowel /i/ with the spread lips whereas /u/ with the protruded lips, however slight the differences may be. These differences are called the *Micro-differences*, that is, *Micro-Allophonic differences*. Differences coming from the different contextual relations are studied in Paradigmatics. With the Korean phoneme /b/ we find some interesting facts. In the initial position it is pronounced as /p'/ or /bh/ whereas when it occurs intervocalically it is pronounced /b/ and at the final position as /p,/. They are distinctly different, so they are called *Macro-allophones*.

6. According to the positional relations we have come to recognize two different kinds of phonological analysis coming into being. In Paradigmatics we study all kinds of distinguishing facts whereas in Syntagmatics we study all kinds of integration of allophones into phonemes. It may be convenient, sometimes, to call the paradigmatic study the study of alterants or it may be also called the study of differentials whereas it may be also advisable to call the syntagmatics the study of integrals or study of unification. The unchanging part as contrasted with the alterants may be also called Constants. Heterogeneity and Homogeneity are two mental directions of workings of our mind. After all language is nothing but the vehicle of our mind and its fundamental functions are differentiation and integration.

7. From the positionality of speech sounds we can see dimensionality of the nature of speech sounds in the studies of Paradigmatics and Syntagmatics. The positional relations are also very important in view of the fact that according to the position only certain sounds occur at a definite position. In Korean at the initial position only 17 consonants occur and at the medial 20 consonants and at final only 7 consonants. Consequently in the Korean Unified Orthography the principal allophone at the intervocalic position is given the representative power over other allophones since at the medial position the maximum number of alterants occur.

8. At the final position of the Korean language only occur the following seven consonants: /b, d, g, m, n, ŋ, r/; /bab/"cooked rice", /bad/"field", /bag/"guard", /bam/"night", /ban/"class", /ban/"room", /bar/"foot". In English at the final position /b/:/p/, /d/:/t/, /g/:/k/ occur; e.g. /nib/:/nip/, /bid/:/bit/, /dog/:/dock/, not to mention all other fricatives occurring at the final position; /əv/:/əf/,

/bei /:/ba: /; /hiz:/his/. In Korean not a single fricative consonant occurs at the final position. That is why we find it a great difficulty to pronounce them properly. In Paradigmatics we have to find out all the possible contra- and inter-distinctions at all different positions. Sounds of different categories show different differentiating system. As we have seen already the Korean plosives have triple interdistinction systems, but the fricatives have only contrastive distinction, e.g. /sar:/shar/. /sar/ is in English "rice", but /shar/ is "flesh". In English even though they occur they are not two phonemes but two allophones of one phoneme. The allophone[s] occurs at the initial position before the vowels whereas the allophone [sh] occurs as the initial sound in such a word /spein/. The difference between these two allophones seems to be very hard to hear to the English ears.

9. The ways of classifying speech sounds vary from one scholar to other. de Saussure classified upon the criterion of degrees of "aperture". The degrees of aperture are classified into seven degrees, namely, zero, 1, 2, 3, 4, 5, 6. According to him all Plosives belong to the zero degree and the Fricatives or Sonants to the degree 1. All the Nasals to degree 3; Close Vowels to the degree 4; Half-open Vowels to degree 5; Open Vowels to degree 6.

10. Otto Jespersen adopted another criterion, that is, Sonority in his LBPH. He classified into 8 degrees according to sonority as follows.

- | | | |
|---------------|---------------------|--------------|
| 1) Stimmlose | a) Verschlusslaute: | /p, t, k/ |
| | b) Engelaute: | /f, s, ç, x/ |
| 2) Stimmhafte | Verschlusslaute | /b, d, g/ |
| 3) " | Engelaute | /v, z/ |
| 4) " | a) Nasale: | /m, n, ŋ/ |
| | b) Seetenlaute: | /l/ |
| 5) " | r-Laute | |
| 6) | hohe Vokale: | /y, u, i/ |
| 7) | mittelhohe Vokale: | /ø, o, e/ |
| 8) | niedrige Vokale: | /ɔ, æ, a/ |

Strangely enough Jespersen's classification is not far from de Saussure's.

11. Daniel Jones classified simply into two categories, Vowels and Consonants. His classification is practical and simple. According to him a vowel (normal speech) is defined as a voiced sound in forming of which the air issues in a continuous stream through the pharynx and mouth, there being no obstruction and no narrowing such as would cause audible friction. And all other sounds (in normal

speech) are called Consonants. His system has been widely used.

12. Antoine Meillet in his *Introduction à l'étude comparative des langues indo-européennes* uses trichotomy instead of dichotomy, namely Vowels, Sonants and Consonants. The so-called Sonants are the consonants which sometimes do the function of forming syllabic consonants. The sonants play the double role according to the position in which they occur, sometimes as consonants and sometimes as vowels forming a syllable. It is absurd to push forcibly Sonants to either side of them. In Korean phonology if you treat the Liquids as consonants only you will fall into a pitfall, not knowing how to explain, for instance, /bar-ro/"by foot". If you treat the phoneme as a consonant the sound /r/ can not come directly after a consonant. We have to put the binding vowel /u/ before the sound /r/. No wonder, in the ancient phonetics of India they classed the Liquids as *svara*, that is, a vowel. This way of classification of the speech sounds makes easy the explanation of the theory of formation of syllables.

13. The explanation as to the formation of vowels by Daniel Jones is truly simple and practical. However, it seems to me that his way of defining might mislead the students of Phonology and Phonetics. When we form the so-called Front Vowels by raising the front part of the tongue actually two resonant boxes are involved. As a matter of fact the back resonant box plays the main role and the front resonant box the secondary role. Therefore, actually speaking, the so-called front vowels are back vowels and the back vowels the front vowels. In forming the vowels the organs of speech function just as an oboe. If you give a kind of percussion to the organs of speech ready to form a vowel sound it will ring a certain vowel you intend to pronounce. Judging by this fact you will realize that the accepted theory of vowel formation is apt to blur the lucidity of understanding the fact mentioned above.

14. Speech is a sort of symphony in which the vowels play the role of pipe instruments and the spirants the string instruments and the plosives the instruments of percussion, thus forming a symphony. Keen aesthetic values come thence. When the speech sounds are viewed from meaning, speech carries not only the Intellectual values, but also the Aesthetic values.

15. Up to now we have paid our attention to the timbre differences, but from now on let us pay our attention to other aspects of speech sounds, that is, the musical elements of rhythm, melody and stress. Laymen understand these elements as *accentuation*. It is also advisable to use the term *Prosodeme*, the science of which may be

called prosodics. The term phonemics and prosodics are contrastive.

16. The most basic musical elements of the speech sounds lie in rhythmical progress of the speech sounds, each of which necessarily occupies a definite amount of time. For instance, the poetic form of meters regulates the rhythm. Iambic pentameter consists of ten syllables, two syllables forming one meter, with the first syllable unstressed and the second syllable stressed. Every thing in motion in the universe is rhythmical. Our heart beats normally sixty times a minute and we breathe about sixteen times. All these are nothing but the rhythmical movements. All planetary movements are also rhythmical. That is why we have twelve months in a year, four seasons, spring, summer, autumn and winter. Every person has temper, so he also has his own tempo of speech. This tempo is the regulator of the rhythmical movement of speech sounds.

17. Every speech sound has its own pitch, the frequency of vibration, both absolute and relative, and each syllable carries its tone. And the distribution of the tones in a sentence is called Tune. The tonal distribution of the speech forms its Melody, that is, the sing-song of the speech. Vowels are musical in its intrinsic nature as compared with consonants. That is the reason why vowels form the peak of the syllable. Vowels have the quality of stronger carrying power than consonants. In other words they have stronger cognitive power from the hearer's point of view.

18. Stresses arise from the relative breath forces distributed in the syllables. In a word made of five syllables such as /representative/ the primary stress falls on the third syllable /sen/ and the secondary stress on the first syllable and the tertiary stress on the remaining syllables.

19. Functions of prosodemes are of three kinds; lexical, morphological and syntactical. Daniel Jones had good reasons to have given the separate names, chroneme, toneme and stroneme. All of them play the role of distinguishing the meanings of different words. /li:v/ and /liv/ are two separate words where the relative length of the vowel plays such an important role. In Korean as well as in English the relative length of vowel as in /si:t/ and /sit/ belong to two different parts of speech, the former being a noun and the latter a verb. /giri/ and /gi:ri/ are of two different parts of speech in Korean, a noun and an adverb. In emphatic style of speech the longer vowels can be much prolonged, so that the word /gi:ri/ will be /giiiiri/. It carries a syntactic function of emphasizing.

20. The same thing may be said as to Tonemes and Stronemes. In tonal languages such as Chinese we are quite familiar with the relative tonal differences in differentiating lexical meanings. The phonetic form /ma/ may differ according to the tonal changes. /ma/ with level tone means "mother", with rising tone "hemp", with fall-rise tone "horse" and with falling tone "scold". From this single fact we can imagine how important it is to distinguish the differences of tones. If you mispronounce the word "lord" (ju³) with a wrong tone it can easily become "swine"(level tone). If you commit such a blunder you are bound to be a mocking stock.

21. All of us Koreans are all well aware of the importance of stronemes in learning English. The word "conflict", when it is pronounced with the first syllable stressed, is a noun whereas with the stress on the second syllable it functions as a verb. This is the morphological function. As stated above the shifts of the primary and secondary stresses are quite free in spoken English. In Korean the lexical element comes in most cases as the first syllable, so naturally the primary stresses come upon the first syllable. This discrepancy between Korean and English gives us hardship in learning the stresses.

22. As stated above language being the vehicle of our mind it reflects most faithfully the workings of our mind. Laws of differentiation and laws of integration are in other words laws of heterogeneity and homogeneity. First of all the differentiation of silence and sounds is the First Law. The Second Law is to distinguish Phonemes and Prosodemes. The Third Law is to distinguish Vowels, Consonants and Sonants. The Fourth Law is to distinguish differences of vowels into two categories, Monophthongs and Polyphthongs. The Fifth Law is to distinguish Monophthongs into three main categories, namely front, medial and back, and according to the height of the tongue positions high, mid-high, mid-low and low. According to the presence and absence of the lip-rounding, spread, neutral and rounded. The Sixth Law is to differentiate Diphthongs into level, falling, rising and other mixed tones.

23. Consonants give rise to a number of other laws of differentiations. The Seventh Law is to differentiate cavity difference, i.e., buccal, nasal and laryngeal or glottal. The Eighth Law is to differentiate consonants according to the modes of articulation, plosives, fricatives and affricates. The Ninth Law is to differentiate consonants according to the articulating points, bi-labial, labiodental, alveolar, palatal, velar and uvular. All the consonants are differentiated in accordance with the secondary functions of the glottal working, voicing, aspirating and glottal stopping.

24. The Tenth Law is to differentiate sonants. There are three

glottal working, voicing, aspirating and glottal stopping.

24. The Tenth Law is to differentiate sonants. There are three kinds of sonants, Nasals, Liquids and Semi-vowels. Nasals often tinge neighbouring vowels, which is called Nasalization. It is a kind of assimilation, but as in French nasal vowels exist independently. There are two kinds of liquids, /l/ and /r/. Liquids also tend to colour neighbouring vowels. Semi-vowels /w/ and /j/ are of double functions, sometimes consonantal and sometimes vocal.

25. The Eleventh Law is the chronemic differentiation and the Twelfth Law the tonemic differentiation. The Thirteenth Law is differentiation of stronemes.

26. In the above statements I have tried to show the workings of our mind are reflected in the mechanism of the speech sounds, since language is nothing but the vehicle of our mind. The greatest miracle of the world is to see that man build up six hundred thousand words out of only twenty six letters. C.K. Ogden and I.A. Richards have proved for us that with only 850 words we can build more than four hundred thousand words of different meanings.

¶ ¶ ¶ ¶ ¶

< Former Professor of Phonetics & Linguistics
and Head of the Department of Linguistics
Seoul National University, and founder
of the Linguistic Society of Korea
in 1956 >