

Sibawaihi calls the first al-ji:m allati: kal-ka:f, literally translated as "the j which sounds like k; i.e. the voiced counterpart of k." On examination, one can see that j is "voiced" and that j agrees with k in that both are stops. [g] has no symbol of its own, and has no accurate name of its own. As for [p], it is called: al-ba:ʔ allati: kal-fa:ʔ, literally "the ba:ʔ which is like fa:ʔ "; i.e. "b which has the characteristics of f." One can see that the common feature between p and f is the lacking of voicing in both of them. Sibawaihi does not give any examples for the various non-basic units he mentions in his book. However, it is not impossible to reconstruct the sounds he is referring to from the fairly accurate description he makes in al-Kitāb.

We now turn to the second concept which underlies Sibawaihi's analysis of the Arabic sounds. That is, his description on the basis of "Feature" analysis. It seems to me that this is the area which is least understood of Sibawaihi's analysis. Later Arab phoneticians as well as Arabists have overlooked the underlying principles upon which Sibawaihi's description is based. One of the main principles is that he considers each unit as a bundle of phonetic features. In other words, he does not regard the unit as an indivisible whole; it is a whole which consists of various parts. Another important principle underlying Sibawaihi's statements is that Arabic has certain phonetic features; varied combinations of which make up the various units of the language. The third principle is that vowels as well as consonants may share some of the phonetic features. Thus a:, the ʔalif, is classified amongst the majhu:r sounds. It is to be noted that wa:w in Sibawaihi's classification means both the semivowel w and the vowel u:, and that ya:ʔ refers to both y and i:. This discrepancy is understandable, since w and u: are normally written with one letter, and y and i: are represented as a single letter.

at the point of articulation only. The aforementioned four consonants have two places of constriction as displayed earlier."

There are also other divisions which will be touched upon shortly.

In retrospect, Sibawaihi appears to study the Arabic sounds from at least two main angles. On the one hand he looks on these sounds as independent units (Nuru:f); on the other he regards each sound as a complex of phonetic features (ʔifa:t). Concerning the concept of ʔarf (pl. ʔuru:f), Sibawaihi as well as the Arab phoneticians considers that each sound-unit or ʔarf has at least three properties:

- a. the phonic property, i.e. how the unit is phonetically actualized.
- b. the pictorial or visual property, i.e. how this unit is conventionally written or symbolized;
- c. and the nomenclature property, i.e. the naming of each unit; e.g. ka:f, ʔa:ʔ, etc.

It is very difficult to know precisely the exact relations among these properties as conceived by Sibawaihi and even later Arab phoneticians. As for the basic units (ʔaʔl ʔuru:f-il-ʔarabiyyah), which are 29 in number as listed earlier, one can see that each of them possesses the three properties. Thus k, for instance, has certain phonetic qualities, certain written shapes, and a certain name ka:f. Another example is a:. It is a vowel (ʔarf madd wa li:n) with certain phonetic characteristics, certain graphic patterns besides the name ʔalif. These properties seem to underlie Sibawaihi's analysis of the basic sound-units of Arabic. As for the non-basic units, they may lack one or more of the above-mentioned properties. To exemplify, let us take [g] and [p], which are not used in Classical or Standard Arabic.

He considers ʕ as both ʕadi:d and raxw. In modern analysis it is a fricative consonant. Some modern phoneticians have recognized the fact that ʕ is produced with a marked, though not complete, constriction of the throat and perhaps with some glottalic friction. It is clear from this point that voicing is not the only distinguishing factor between ʕ and ʔ.

Furthermore, Sibawaihi divides the sounds into muṭbaq and munfatih. These terms have been rendered in Arabic phonetics as velarized and non velarized. He is aware of the fact that the raising of the back of the tongue towards the upper palate as a secondary articulation (al-Kitāb, II, p. 406). The division may be displayed as follows:

| <u>muṭbaq</u> | <u>munfatih</u>        |
|---------------|------------------------|
| ḥ             |                        |
| ḍ             |                        |
| ẓ             |                        |
| ḏ             |                        |
|               | the rest of the sounds |

It is surprising, at this juncture, that he does not mention ʔ (la:m mufaxxamah) among the velarized consonants. Sibawaihi's statement with regard to this division is worth citing here. He says:

"Sounds are either muṭbaqah or munfatihah. The muṭbaqah are: ḥ, ḍ, ẓ, and ḏ. The munfatihah are the rest of the sounds. They are called so because you do not raise your tongue towards the upper palate. When articulating those four consonants, you raise your tongue to the upper palate. In this case the air (sawt, probably hawa:ʔ-ul-sawt) is modified (manṣur) in both the place where the tongue is raised for ʔiṭba:q, and the main point of articulation (mawḏiʕ -ul-Muru:f). As for ḍ and ẓ, etc. the air is modified

Another major division of sounds is to fadi:d and raxw. (=rixw).  
fadi:d is rendered as "stop", raxw as "fricative or spirant".  
 According to Sibawaihi, fadi:d is the sound in which the air  
 (sawt, probably hawa: 2-ul-sawt) is interrupted, whereas the  
raxw is the sound in which the air issues without complete  
 interruption, as displayed below:

fadi:d

ʔ

q

k

j

ʧ

t

d

b

raxw

h

ħ

γ, x

ʃ

ʂ

ʈ

ʐ

ʂ

ʈ

ʐ

ʂ

ʈ

His definition of majhu:r and mahmu:s has puzzled scores of Arab phoneticians and Arabists because of its apparent vagueness.

Majhu:r has been rendered as "voiced, sonorous" and mahmu:s as "voiceless, muffled, etc." Curiously enough the terms are clearer than their definitions. A large section of Arabic scholars render them as voiced and voiceless, respectively. This can be supported by the text only if it is interpreted in a certain way. Let us translate the relevant text (al-Kitāb, II, pp. 405):

"As for the majhu:r, it is the sound in which the contact (in the larynx) is made and the breath (nafas) is not at all involved during the voicing (sawt). This is the state of the throat and mouth in the articulation of majhu:r sounds.

As for mahmu:s, it is the sound in which the contact (in the larynx) is not made and the breath issues through the mouth during its articulation."

If this interpretation is correct than we can assume that Sibawaihi was aware of the states of the vocal cords during the enunciation of the voiced and non-voiced sounds, or at least the effect of these states. The latter explanation is understood from the terms chosen; namely majhu:r (derived from j-h-r denoting loudness, clarity, sonority) and mahmu:s (from h-m-s denoting voicelessness). If we take the first interpretation that assumes his awareness of the states of the vocal cords, we can then explain why he considers 2 as majhu:r. That is to say, the vocal cords are close or drawn up together, somehow similar to the state of voicing. Whatever the case may be, the fact remains that almost all the majhu:r sounds are voiced in modern Arabic and all the mahmu:s sounds are voiceless.