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**Indian Phonetical Theory and the Arab Grammarians**

It is a well acknowledged fact that the Indian culture considerably influenced the development of the Islamic civilization. I even would be inclined to view this influence as participation *sensu stricto*: the Indians not only did influence the Arabic culture, but they actually took an active part in construing one common civilization sometimes called Arabic, sometimes Islamic and mostly—for opportunist reasons—Arabic-Islamic. No doubt that at first the Arabic element was predominant: the Arabs formed and determined the underlying paradigm of the new culture, and their language defined forms of expression and communication within its limits.

In the Islamic period the Arabic language underwent considerable changes. It was no more the language of a small and closed community of Bedouin tribes but it developed into the language of a highly sophisticated civilization. This in turn stimulated profound studies on the structure of the language. The aims of such studies were manifold: they were to codify the structure of the language of Qur'ān, to preserve its original purity, to help foreigners ('Ağam) to learn Arabic in its correct form, shortly—to elaborate a definite norm of the language.

In a hundred years or so, the grammar of Arabic was produced in a form that was to survive for centuries. It was the work of a few generations of grammarians, usually thought to belong to the legendary schools of grammatical research: al-Kūfa and al-Baṣra. Ar-Ru'āsī, al-Kisā'ī, Yūnus Ibn Ḥabīb, al-Ḥalīl Ibn Aḥmad—these are only some of the most prominent scholars of the two schools.

It appears to be hardly possible that the Arabic grammar developed without any external influence, and yet facts proving any impact from the outside are almost non-existent. Theories of Latin<sup>1</sup>, Greek, Syriac<sup>2</sup> and Indian influences were pro-

<sup>1</sup> On the Latin theory cf. J. Weiss, *Die arabische Nationalgrammatik und die Lateiner*, ZDMG 64, pp. 349–390.

<sup>2</sup> It is generally accepted though not proved that Greek logic influenced the development of Arabic grammar. A list of probable elements borrowed from Aristotelian logic was proposed by A. Merx in *Historia artis grammaticae apud Syros*, Leipzig 1889. The study of C. H. M. Versteegh (*Greek Elements in Arabic*



posed, but none seemed plausible enough, especially as far as the first formative period of the Arabic grammar is concerned.

The hypothesis of Indian influence was—and still remains—limited to problems of phonetical character. It was first advanced by K. V o l l e r s<sup>3</sup> who had shown a striking similarity between the arrangement of phonemes in the Arabic and Indian phonetical alphabets. In both cases the sounds were classified according to their articulation from back sounds to the front ones. Vollers came to the conclusion that “we cannot help acknowledging that the Indian origin is probable, or at least possible<sup>4</sup>.” This view was soon adopted by C. B r o c k e l m a n n<sup>5</sup>, but B r o c k e l m a n n’s contention was strongly criticized by the translator of S i b a w a y h i’s *Al-Kitāb*—G. J a h n<sup>6</sup>. Subsequently this caused Brockelmann to change his views and assume a more opportunist attitude<sup>7</sup>. Negative opinion in this matter was also held by A. S c h a a d e<sup>8</sup>. It was only after the Second World War that the problem was reconsidered. The Soviet linguist—V. A. Z v e g i n t s e v in his history of Arabic linguistics has shown quite a number of links existing between the Arabic

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*Linguistic Thinking*, Leiden 1977) proved the existence of Greek influence in later grammatical works (a z - Z a ğ ğ ā ğ ğ i). The author however rejects the hypothesis of A. M e r x.

<sup>3</sup> K. V o l l e r s, *The System of Arabic Sound as Based upon Sibawaih and Ibn Ya’ish*, in: *Transactions of the 9th International Congress of Orientalists*, London 1893, vol. II, pp. 130–154.

<sup>4</sup> Ibid., p. 135.

<sup>5</sup> GAL I, p. 97.

<sup>6</sup> G. J a h n, *Sibawaihi’s Buch über Grammatik*, vol. II, pt. Ia, p. XV, footnote 2. G. J a h n’s opinion is expressed in rather harsh words: “Wenn ein jünger Arabist in seiner s.g. arabischen Literaturgeschichte diese Ansicht [d.h. diejenige von J a h n, der die Abhängigkeit der ältesten arabischen Grammatiker von den Griechen bezweifelte — J.D.] als „gar zu naiv“ bezeichnet und in gänzlich unbewiesener Weise Abhängigkeit nicht bloss von den Griechen, sondern auch von den Indern statuiert und behauptet, Merx habe die Abhängigkeit von den Griechen bewiesen, so leugne ich das Letztere auf das Entschiedenste und werde es an anderer Stelle beweisen; über den Ton aber, in welchem dieser junge Mann einem älteren Gelehrten gegenüber aufzutreten sich herausnimmt, mögen Andere urtheilen“.

<sup>7</sup> In GALS C. B r o c k e l m a n n admits: „Andere Einflüsse, etwa gar der lateinischen oder der indischen Grammatik, sind dagegen nicht nachzuweisen“ (GALS I, p. 156).

<sup>8</sup> *Sibawayhi’s Lautlehre*, Leiden 1911. A. S c h a a d e stated there: „Da ich kein Sanskrit verstehe, konnte ich nicht näher auf die Frage eingehen, ob die Araber sich ihre Phonetik selbst geschaffen oder von den Indern entlehnt haben. Immerhin glaube ich gegen letztere Annahme eine Stelle aus dem Rgvedaprātisākhya ins Feld führen zu können, die Herr Geheimrat Professor Hillebrandt (Breslau) so freundlich war mir nachzuweisen. In diesem Buche ist nämlich ... vom „Öffnen und Schliessen der Kehlritze“ die Rede, wodurch der Wind (d.h. der Atem) zu Hauch oder Ton werde ... Von der Stimmritze haben die arabischen Phonetiker, die doch Schüler der indischen sein sollen, nichts gewusst!“ For the truth’s sake it should be added, however, that the Indian phoneticians were not at all aware of the existence of the glottis: they used a very vague term *kaṇṭhasya khāḥ*—opening of the throat.



and Indian methods of analysing the phonetical system of language<sup>9</sup>. Concluding his analysis Zvegintsev stated: "Consequently, it is quite natural to assume that there was an Indian influence to be observed in the formation of Arabic phonetics; and this influence may account for a number of similarities between the classification of phonetical elements in both languages"<sup>10</sup>. Zvegintsev has not, however, proved the authenticity of his views; neither did for that matter Stefan Wild who in his *Das Kitāb al-'Ain und die arabische Lexikographie* had shown four principal similarities between the two systems<sup>11</sup>, and even strongly affirmed the possible influence: "... das von Ḥalīl im Kitāb al-'Ain verwandte Lautordnungssystem wie auch das von Ḥalīl abhängige Sībawayhi's seine Idee und zum Teil seine konkrete Erscheinungsform Impulsen aus der indischen Sprachwissenschaft verdankt"<sup>12</sup>. This view was hardly ever accepted by the Arabists who tended to ignore it or criticize it. M. Bravmann strongly rejected it<sup>13</sup>, although in his *Materialien und Untersuchungen zu den phonetischen Lehren der Araber* (Göttingen 1934) he did not even mention the problem. The French specialist on Sībawayhi—Gérard Troupeau—spoke very carefully of the Indian hypothesis<sup>14</sup>. Kamāl Bišr, although accepted the similarity between both systems, did not see sufficient grounds for speaking of Indian influences<sup>15</sup>, the more so that his main subject was the study of Ibn Ġinnī's work. In general, the Arab scholars seem reticent in accepting the Indian hypothesis. Ḥusayn Naṣṣār regards the problem as difficult and impossible to solve<sup>16</sup>. Ibrāhīm al-Ibyārī on the other hand accepted the possibility of Indian influences<sup>17</sup>, and 'Abd al-Ḥamīd aš-Šalqānī stated: وإذا كان علماء الهند قد عانوا بهذه

<sup>18</sup> الدراسة كجزء من عنايتهم بكتابهم المقدس فإن تأثر العرب — بهم في بعض دراساتهم — اللغوية فرض قريب.

<sup>9</sup> B. A. Звегинцев, *История арабского языкознания*, Москва 1958.

<sup>10</sup> Ibid., pp. 19–20 (the translation is my own).

<sup>11</sup> Wiesbaden 1965

<sup>12</sup> Ibid., pp. 39–40

<sup>13</sup> M. M. Bravmann, *Notes on Ḥalīl b. Aḥmad's Kitāb al-'Ain*, „Der Islam“ 1971 47, pp. 218–244.

<sup>14</sup> G. Troupeau, *Lexique-index du Kitāb de Sībawayhi*, Paris 1976, p. 14: "Toutefois, la consultation de l'ouvrage de L. Renou (*Terminologie grammaticale du sanskrit*, Paris 1942) ne permet pas de conclure une influence de la terminologie sanskrite sur celle de Sībawayhi, en dépit de certaines ressemblances".

<sup>15</sup> Kamāl Bišr, *Ġuhūd al-'Arab fī ad-dirāsāt aš-ṣawtiyya*, "At-Taḳāfa al-'arabiyya" (Ṭarābulus, Libya), April 1975, p. 48:

هذا التشابه في المنهج بين الفريقين — العرب و الهند — لا يعنى بالضرورة أن العرب قد اقتفوا آثارهم و قدوةهم في عملهم هذا جملة و تفصيلاً. أضف الى ذلك أن دراسة التفصيلات و الجزئيات اللاتى عرض لها هؤلاء و اولئك تشير بوضوح الى وجود اختلافات كثيرة بين فريقين في المنهج و طريق البحث. وربما يظهر ذلك بصفة خاصة في تعريف كل من المدرستين — الهندية و العربية — لتلك الاصوات الموسومة بالحركات قد جاء تعريفها عند العرب مخالفاً في الاساس لتحديدتها عند الهندوس.

<sup>16</sup> Ḥusayn Naṣṣār, *Al-Mu'ḡam al-'arabī. Naṣ'atuhu wa-tatawwuruhu*, pp. 200–201. His opinion that the *Encyclopaedia of Islam* solved this problem in favour of the Indian influence is not substantiated. Cf. EI, s.v. al-Khalīl b. Aḥmad.

<sup>17</sup> Ibrāhīm al-Ibyārī, *Al-'Ayn li-l-Ḥalīl Ibn Aḥmad*, "Turāt al-insāniyya", vol. I, no. 11, p. 894.

<sup>18</sup> 'Abd al-Ḥamīd aš-Šalqānī, *Riwāyat al-luḡa*, Cairo 1971, p. 64



Thus it results that the problem of Indian elements in Arabic phonetical theory remains unresolved and still requires a thorough study.

The primary question is whether such influences were possible or feasible. Were there any contacts between the Arabs and the Indians as early as the beginning of the 8th century? The Arabs reached India during the reign of al-Walīd I (705–715), and it was mainly al-Ḥaḡḡāḡ Ibn Yūsuf who was responsible for the conquest of Northern India. But at that time the contacts were rather feeble and only during the Ghaznavid conquests of the 11th century Islam really came into contact with Indian culture. In the classical sources there can hardly be found sufficient information indicating how the Indian science and culture were transferred to the Arabs.

At the beginnings of the 'Abbāsīd caliphate the Islamic world borrowed Indian astronomy and what was called *ḥisāb al-Hind* (or *al-ḥisāb al-hindī*). Ibn an-Nadīm informs of Indian astronomers paying visit at al-Manṣūr's court and helping to translate into Arabic Brahmagupta's *Brahmasphuṭasiddhānta* (the so-called *Kitāb as-sind-hind*); not much later al-Ḥuwarizmī reveals an excellent knowledge of the Indian arithmetical system.

Undoubtedly a positive role in transferring the Indian heritage to the caliphate was played by the Barmakid viziers. To my mind they can be regarded as the main link between India and the Islamic world. Of Persian, or rather "Iranian" origin, they came from the Buddhist centre of Balh in Sogdiana where flourished a Buddhist monastery called *naubihār* (scil. *navavihāra*—'the new monastery'). Even the etymology of the name of the Barmakids is often linked with the Sanskrit *pālaka* ('guardian')<sup>19</sup>. In short, during the Barmakid reign a number of Sanskrit works might have been, and actually were translated into Arabic<sup>20</sup>. At the same period Arabic grammarians formed an important group within the learned entourage of the Barmakids. The well-known dispute between Sībawayhi and al-Kisā'i (died ca. 805) concerning the so-called *mas'ala zunburiyya* took place in the presence of Yaḥyā Ibn Hālid al-Barmakī<sup>21</sup>. If one considers that Sībawayhi was the first to introduce phonetical analysis to the Arabic grammatical studies, the probability of the Indian impact on his ideas is highly probable<sup>22</sup>.

<sup>19</sup> Cf. Bailey, BSOS IX, 1943, 3.

<sup>20</sup> Almost all classical Arabic bibliographies quote a number of Sanskrit works. Ibn Abī Uṣaybi'a (*Uyūn al-anbā'*, vol. II, p. 32 sq.) included in his work a special chapter entitled *Tabaqāt al-aṭibbā' allādīna kānū min al-Hind*. Al-Bīrūnī (*Al-Hind*, p. 76) says: *wa-lahum kitāb yu'raf bi-ṣāḥibihi Ḥaraka ... wa-naqala ḥadā al-kitāb al-Barāmika ilā al-'arabī*. Cf. also: M. Steinschneider, *Zur Geschichte der Übersetzungen aus dem Indischen ins Arabische*, ZDMG 24 and 25, 1870 and 1871.

<sup>21</sup> This dispute is related by A. Fischer in his article *Die mas'ala zunbūrīja*, in: *A Volume of Oriental Studies Presented to E. G. Browne*, pp. 150–156. Cf. also: az-Zaḡḡāḡī, *Maḡālīs al-'ulamā'*, pp. 8–10, *al-Qiftī*, *Inbāḥ ar-ruwāt*, vol. II, p. 348.

<sup>22</sup> In my opinion the so-called theory of al-Ḥalīl Ibn Aḥmad is much



Not only the direct Indian influence must be accounted for as far as the "making" of the Islamic civilization is concerned. It has to be remembered that the Iranian mediation has also contributed to enrich the new civilization with elements of the Indian heritage. In the Hellenistic epoch contacts between Persia and India were developing: classical Indian literature had been translated into pahlavi (*Pañcatantra*), in Ġundayšāpūr Indian medicine was taught<sup>23</sup>.

In short, there is indeed no doubt that the Indian phonetical theories could have easily been adopted by the Arab grammarians as early as the second half of the 8th century.

In India phonetical knowledge reached a level unknown anywhere else in the Ancient or Classical East or West. The Greek and Latin phonetical teachings never extended beyond the level of confusing signs (letters) and sounds. On the other hand, the Chinese studies were handicapped by the complicated nature of the Chinese system of writing. The Indians at the very beginning of their studies clearly differentiated between sounds and their notation. Since from the religious point of view recitation was of capital importance, phonetics (and one may as well add phonology) was one of the best developed branches of philology. The method of transcribing *saṃhitāpāṭha* (texts with sandhi preserved) into *padapāṭha* (texts with words in their absolute form) resulted in evolving the so-called *prātiśākhya* schools, one for each of the Vēdās<sup>24</sup>. In an immediate relation to the Vēdās remained manuals of practical phonetics, the *śikṣās*<sup>25</sup>. They are especially interesting as possible source of the practical phonetical knowledge gained by the Arab grammarians. The *śikṣās* contained practical classification of Sanskrit sounds, their pronunciation, articulation places, etc. These manuals are probably the oldest extant works on phonetics, since they are dated as far back as the 8th century B.C. First *prātiśākhyas* were composed ca.

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later in origin than that of Sībawayhi, and hence its authorship is rather doubtful. Cf. my *Early Arabic Phonetical Theory. Phonetics of al-Halīl Ibn Aḥmad and Sībawayhi*, RO XXXIX, 2, pp. 51–56. The phonetical chapters of *Al-Kitāb* are composed in the form of an appendice to the already written book. These chapters easily could have been annexed during Sībawayhi's sojourn in Baghdad at the court of the Barmakids.

<sup>23</sup> Cf. A. Christensen, *L'Iran sous les Sassanides*, p. 417 sq. The Ġundayšāpūr school is described in: В. А. Эберман, *Медицинская школа в Джундшапуре*, „Записки коллегии востоковедов при Азиатском музее", Ленинград 1925, pp. 47–72; Muḥammad Yaḥyā al-Ḥāšimī, *Dawr Ġundayšābūr fī at-taqāfa al-'ara-biyya*, in: "Dirāsāt adabiyya", no. 2, 1960 (Teheran).

<sup>24</sup> There existed the following *pratiśākhyas* schools: 1. *Rk-prātiśākhyā* (related to the *Rg-vēdā*) 2. *Rk-tantra-vyākaraṇa* (*Sāma-vēdā*) 3. *Taittirīya-prātiśākhyā* (*Black Yajur-vēdā*) 4. *Kātyāyanīya-prātiśākhyā* and *Vājasaneyi-prātiśākhyā* (*White Yajur-vēdā*) 5. *Atharva-prātiśākhyā* (*Atharva-vēdā*).

<sup>25</sup> The *śikṣās* formed one of the six branches of the *Vēdas* (*vēdāṅga*) which included, besides the *śikṣās*, also *chandas* (metrics), *jyōtiṣa* (astronomy), *kalpa* (sacrifice rituals), *vyākaraṇa* (grammar) and *nirukta* (etymology). To the best known *śikṣas* belong: *Vyāsa-śikṣā*, *Pāṇinīya-śikṣā* and others.



the 5th century B.C. At the time of contacts with the Arabic world and Islamic civilization, these schools of phonetics practically formed a part, and a very important one, of the formal education in India<sup>26</sup>.

One of the most important oppositions discovered by the Indian phoneticians was the fundamental correlation between voiced and voiceless phonemes<sup>27</sup>. Voiced phonemes (*ghoṣavān*) are produced during a process in which the breath (*prāṇa*) overcomes (an unspecified) hindrance in the larynx (*kaṇṭha*). This results in creation of voiced sounds (*nāda*). This process is defined in the Indian phonetics by a special term, the so-called *prayatna* — phonatory (resp. articulatory)<sup>28</sup> effort.

The Arab grammarians also differentiated between voiced (*mağhūra*) and voiceless (*mahmūsa*) sounds. Moreover, the description of sound production (phonation) shows a great deal of similarity in both the Indian and Arabic phonetical theories. The *Rk-prātiśākhya* describes phonation in the following way: *vāyuh, prāṇaḥ koṣṭhyam anupradānam kaṇṭhasya khe vivṛte samvṛte vā āpadyate śvāsatām nādatām vā vaktrī-hāyām* (scil. the air, respiration or pulmonic emission, at times of vocal activity becomes breath (*śvāsa*) or voice (*nāda*) according as the glottis is open or closed)<sup>29</sup>.

Sībawayhi formulated the same process as follows: *fa-al-mağhūra ḥarf uṣbi'a al-'timād fi mawḍi'ihī wa-mana'a an-nafas and yağriya ma'ahu ḥattā yuqtaḍa al-i'timād 'alayhī wa-yağriya aṣ-ṣawt* (voiced is a phoneme in the articulation place of which the effort is satiated and the breath cannot flow with it until the *i'timād* stops and the voice comes out). The voiceless sounds are produced as follows: *wa-ammā al-mahmūsa fa-ḥarf uḍ'ifa al-i'timād fi mawḍi'ihī ḥattā ġarā an-nafas ma'ahū* (i.e.: voiceless is a phoneme in the articulation place of which the effort is weakened so that the breath can flow with it)<sup>30</sup>.

The terms *anupradāna* ('external effort' — synonymous with *bāhya-prayatna*) and *i'timād* (leaning on) appear in this context as identical and highly specialized notions. I think that the articulation effort is a very specific one, and no doubt of Indian origin: most likely it was borrowed by the Arab phoneticians. Of course it underwent considerable semantical change, on the whole, however, it corresponds with the original Indian notion.

Very much the same may be said of the method of describing phonation process in both systems: the Arabic definition again seems less sophisticated. Moreover

<sup>26</sup> The best study of Indian phonetics, its history and accomplishments, was published by W. S. Allen: *Phonetics in Ancient India*, London 1961.

<sup>27</sup> It is worth remembering, that European phoneticians were able to define this opposition only in the late 19th century.

<sup>28</sup> I differentiate between phonation and articulation in accordance with J. C. Catford's postulates; cf. J. C. Catford, *The Articulatory Possibilities of Man*, in: B. Malmberg (ed.), *Manual of Phonetics*, Amsterdam 1970, pp. 309–333.

<sup>29</sup> *Rk-prātiśākhya*, XIII, 1–2; cf. W. S. Allen, op. cit., pp. 33–34 (the translation is Allen's). Nb. there is no Indian term for glottis, *Rk-prātiśākhya* uses the term "opening of the larynx", cf. note 8.

<sup>30</sup> Sībawayhi, *Al-Kitāb* (ed. Derenbourg), p. 453.



the long disputed problem of what the terms *maḡhūra* and *mahmūsa* mean is easily solved, or rather the old idea that they are representing voiced and voiceless sounds is corroborated<sup>31</sup>.

Quite a number of parallellisms may be found by comparing articulation processes in both systems. In Indian phonetics articulation is accompanied by the participation of active and passive articulators. The passive articulator is synonymous with the place of articulation, and it is called *sthāna* ('place'). In Sībawayhi's *Al-Kitāb*<sup>4</sup> the parallel term *mahraḡ* literally means 'point of emission'. Active articulator in Indian phonetics is called *karana* ('instrument'). Its counterpart in *Al-Kitāb* is called *mawḍi'* — 'the point of placing'. This is not exactly the same as *karana*, but the fact remains that Sībawayhi uses two different terms in two different contexts to define place of articulation<sup>32</sup>.

Another problem arises by comparing how articulation places are defined in both theories. There is an evident divergence between them. The Indian theory distinguishes six places: *kaṇṭha*—'pharynx', *hanu-mūla* and *tālu*—'palate', *murdhanya*—a term defining cerebral articulation, *danta*—'teeth', *oṣṭhya*—'lips'. The Arabic classification of Sībawayhi is a little more complicated: the number of articulation places is greater, although in reality they all can be reduced to the six original articulation places, as they are described relationally, i.e. in relation to the original, or basic articulations. E.g. in the case of the pharyngeal phonemes the Arabic system distinguishes three articulation places all of which are described relationally. Pharynx was not known by the Indian phoneticians, since no sounds of Sanskrit or Ancient Indian are produced that far back. The Arabic sound system is exceptionally rich in back phonemes. Sibawayhi defines the three *mahraḡs* in the *ḥalq* (= *kaṇṭha*) region as follows: *aqṣā al-ḥalq* for ' and *h*, *wasat al-ḥalq* for ' and *ḥ* and *adnāhā min al-fam*: *ḡ* and *h*. All the articulation places are described in relation to the *ḥalq* (*fam* in the last case), although there are three distinctly different points: larynx, pharynx and uvula. Why should an original Arabic theory use basic notions quite foreign to the very nature of the Arabic phonetical system? All this indicates that the Arabic theory derives its origin from external sources.

There is also a group of notions and definitions related to the articulation of sounds. The Indian theory classifies the articulation processes according to the

<sup>31</sup> This opposition for quite a long time has been the object of a fervent discussion, finally solved by H. Fleisch in: *Maḡhūra, mahmūsa, examen critique*, "Mélanges Université Saint-Joseph" 1958, XXX, pp. 193–210.

<sup>32</sup> For example the term *mahraḡ* is used by Sībawayhi in the following context: *li-ḥurūf 'arabiyya sittata 'ašara mahraḡan* (*Al-Kitāb*, p. 454)—"the Arabic letters (i.e. phonemes) have 16 articulation places". Here *mahraḡ* is a term defining the general region where sounds are articulated. The term *mawḍi'* is used in contexts indicating the participation of active articulator as in the following context: *li-anna ṭaraf al-lisān lā yataḡafā 'an mawḍi'ihī* (ibid.) or: *wa-al-lisān lāzim li-mawḍi' al-ḥarf* (ibid.). Other sources, usually later than Sībawayhi's *Al-Kitāb* include some supplementary terms, such as *ḥayyiz*, *madraḡa*, *maqṭa'*, *maḡrā*. Cf. Ibn Ya'īš, *Commentary to Al-Mufaṣṣal*, vol. II, p. 1459 and Ibn Durayd, *Gamharat al-luḡa*, vol. I, p. 8.



grade of opening of the articulators. The Indian phoneticians distinguish the following groups of articulatory processes :

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| 1. <i>spṛṣṭa</i> — contact (closure)   | 3. <i>īśad-vivṛta</i> — slight opening |
| 2. <i>īśat-spṛṣṭa</i> — slight contact | 4. <i>vivṛta</i> — opening             |

In contact position of the articulators (*karāṇa spṛṣṭa*) stop consonants (*sparṣa* = stop) are produced. Fricatives appear by the *īśat-spṛṣṭa* position, and are called *ūṣman* ('hot, boiling'—very much an onomatopoeic association). Semi-vowels are produced at the *īśad-vivṛta* position, vowels—at *vivṛta* position of the articulators.

In Arabic, i.e. in *Sībawayhi*'s system the main opposition in classifying articulation of the phonemes is limited to *ṣadīda* and *riḥwa*. *Ṣadīda* are roughly put stop consonants, although *ğ* (= *g* ?) and *m*, *n*, *r*, and *l* are also classified as *ṣadīda*. *Riḥwa* cover all the Arabic fricatives. Parallel to *īśad-vivṛta* are *layyina* sounds, i.e. the semi-vowels *w* and *y*. They are defined as having *lin*—softness in pronunciation, a term corresponding with the Indian notion *laghu* used in the same context.

The phoneme *a* is classified as *hāwī*, and it is the only vowel included in the Arabic system, the rest is reserved for consonants. Probably the Arabic system of notation (which always formed an essential part of any philological study, because the text—and not the word as in India—was essential for study) influenced the phoneticians, who simply ignored vowels as unimportant. Therefore the *ḥarakāt*s not very much unlike the Indian *varṇas* (colourings) never could have been treated seriously, as too elusive.

Nevertheless there are a number of parallel phenomena in description of articulatory processes to be observed ; it is however difficult to trace any direct influence.

If one considers the whole system of Indian and Arabic phonetics, no doubt should arise about the dependence of the Arabic teachings upon the Indian. But as it always was the case with the Arabic borrowings that they were creative. They could not be regarded as a simple application of an already existing system to the given raw material of the language but it was a revaluation and supplementation within the process of borrowing.

Some later Arabic phonetical studies tended to develop the conceptions introduced by *Sībawayhi*. The pseudo-al-Halīl as recorded in al-Azharī's *Tahdīb al-luġa* proposed a more sophisticated system (for that reason I call it pseudo-al-Halīl's : it could not be earlier than *Sībawayhi*'s system which is less elaborated). Interesting, though still remaining to be analysed is the system of al-Mubarra(i)d in his *Al-Muqtaḍab*, Ibn Durayd's theory<sup>33</sup> and Ibn Ğinnī's recorded in *Sirr ṣinā'at al-i'rāb*. The comparatively simple system of *Sībawayhi* was later developed and enlarged by a number of detailed studies; still in all of them many elements of the original Indian thought are easily traced in them.

<sup>33</sup> Described in: Halīl Ibrāhīm al-'Aṭiyya, *Al-Fikr aṣ-ṣawtī 'inda Ibn Durayd*, "Mağallat Kulliyyat al-adab fī Ğāmi'at al-Baṣra," no. 16, pp. 173–194.