CONTRIBUTION OF THE AITAREYA ĀRAṆYAKA TO PHONETICS
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Abstract

The science of phonetics is very important from the scientific point of view. Phonetics is a gift by Indians to the world. Right from the Āgveda, many concepts in phonetics were in making. However, the Aitareya Āraṇyaka could be said to be the first text to deal with them in a more systematic manner. The third chapter of the said text not only refers to the first generation of phoneticians, but also introduces many new terms in phonetics. A beautiful metaphor of divine lute is used to describe the phonetic apparatus. The description is not merely poetic, but scientific. The present paper tries to map contribution of this text in analytic manner.

1.0.0 Introduction:

Ancient Indian contribution to phonetics is well recognized in the field of Indology. Modern phonetics owes a lot to ancient India not only in the context of terminology, but also in the context of analysis. The descriptive techniques of ancient Indian phoneticians were adopted in the modern phonetics. The germs of such thinking could be traced right from the Samhitā literature. Yet the Āraṇyakas and Upanishads show much progress in the science of phonetics. The Aitareya Āraṇyaka (Ait Ār) is an āraṇyaka text belonging to the Rg-Veda. It has introduced many new concepts regarding phonetics and phonology. Therefore it is treated an important landmark in Indian phonetics. It discusses many phonetic and phonological concepts like अनुस्वर, निर्धुंक etc. It also refers to many phoneticians who have contributed to the science of phonetics and phonology. Besides the individual contribution of these scholars the text also describes human phonetic apparatus in a thorough scientific way. The present paper tries to analyze the description of the phonetic apparatus found in the Ait Ār since it is a mark of existence of a developed scientific discipline.

1.1.0: Human Phonetic Apparatus:

The Ait Ar and Sāṅkhāyana Āraṇyaka (Sāṅ Ar) are the two texts describing human phonetic apparatus in detail and in a poetic way. Both the texts call it divine lute and emphasize that the lute designed by human being is based on the divine lute. A comparison of both the texts may lead us to know the mechanism of sound production known to ancient Indians. An attempt is made in the present paper to compare views of both the texts regarding sound mechanism.

2.0.0. A Brief Introduction to the Texts

2.1.0. The Aitareya Āraṇyaka is an Āraṇyaka text belonging to the Rg-Veda. It comprises five chapters also called āraṇyaka. These chapters are further divided into adhyāyas. Out of these five chapters first three are considered to be old and fourth and the fifth are considered to be later. By a careful and arduous study of the style, vocabulary etc Keith (R1995:25) has fixed the date of the text as 700 BCE in general and 550 BCE as that of the third adhyāya in particular.

2.1.1: Subject - matter of the Text

1) The first chapter discusses Mahāvrata ceremony allegorically.

2) The second āraṇyaka has further two divisions:
   a) Adhyāyas 1-3 allegorically discuss uktaha
   b) whereas adhyāyas 4-5 comprise an Upanishad.

3) The third Āraṇyaka is very much important from the point of view of phonetics. Since the present
paper focuses on the third chapter of the text let us discuss its content in detail.

i) It has two adhyāyas. The first adhyāya discusses nature of samhitā and forms of recitation.

ii) The second adhyāya discusses nature of speech.

iii) The discussion takes place among scholars like Sākalya, Maṇḍūkeya, Kauntharavya etc. These discussions throw light on various aspects of aspects of speech. Hence are important. While discussing nature of language a scholar exposes secret of speech (वाचः उपनिषद्). This is the place where we get comparison of human phonetic apparatus with lute.

4) The fourth āranyaka discusses Mahānāmi verses. The discussion forms a part of āranyaka since these verses are to be study in forest.

5) The fifth book discusses Niśkevalya śāstra in a sūtra style. This śāstra is to be recited in the mahāvratā sacrifice, thus it seems as if an appendix to the first āranyaka. Since the style of composition is mismatched with the āranyaka text scholars like Keith (R1995:18) take it as an interpolation by Āśvalāyana to Āranyaka.

2.1.2: Commentaries

It has a chain of partial commentaries by Śaṅkara, Anandatirtha and Viśveśvaratirtha. It is also survived with the most important and complete commentary by Śayanaścārya.

2.2.0: The Sākhāyana Āranyaka: The text is very much important as it shares the same subject-matter as that of the Ait Ār, yet in a different wording and with more explanation. Therefore, it helps to a great extent to interpret the difficult passages of the Ait Ār. It has fifteen adhyāyas. The seventh and eight adhyāyas are entitled as sarhitiopanisād and correspond to that of the Ait Ār.

3.0.0: Diagram of Human Phonetic Apparatus
- Vide Appendix - 1

4.0.0: Human Phonetic apparatus described in the Aitareya Āranyaka

4.1.0: Text: अथ खल्लिच्छं सर्वसौ नाट्यपरिष्ठ । सर्वसौ ब्रह्मा

4.2.0: Translation

Indeed this is divine lute. This lute fashioned by human being has been modeled after it. As this divine lute has head in the same way the human lute has head. As this has belly similarly the other one has resonator. As it has tongue likewise the other has bow. As this has strings (vocal-folds) similarly the other one has fingers. As this produces vowels similarly the other one produces consonants. As this contains sound and has holes similarly the other one produces sound and has holes. As this is covered with hairy skin similarly the other one is covered with hairy skin. In ancient days indeed they used to cover a lute with hairy skin. One who knows this divine lute is certainly know by his mouth everywhere. His fame spreads all over the earth. People know him there wherever the Aryan languages are spoken. Here is a spell from Vāyasa. This verse should be recited in a place if person is not liked in an assembly while
either studying or speaking. "The Nalkül lute that is covered by lips surrounded by teeth and is swift: and masters over all types of speeches. Let it make me speak splendid." This is Vāyasa.

5.0.0: Human phonetic apparatus Described in the Śānkhyāyana Āraṇyaka

5.1.0: Text: अथ खलिचं देवी वीणा भवति तदनुकृतिसौ मानुषी वीणा भवति तथेऽयं शालवतिः त्वरतिः भवत्वेवावसैं शालवती त्वरतिः भवत्ति तद्याहस्य। शिर एवममुखः। शिरस्तम्भाः स्वयं एवममुखः नद्युद्यवाहाः स्वयं एवममुखम् अमृतस्य ब्रह्माण्यकेत क्षेत्रवाहाः। पञ्चायत तद्याहस्य अहूरम् एवममुखानस्य जिविनभवत वा देवाः। तद्याहस्य न्यायः एवममुखम्भवत वा देवाः। तद्याहस्य न्यायः एवममुखानस्य जिविनभवत वा देवाः। तद्याहस्य न्यायः एवममुखानस्य जिविनभवत वा देवाः। तद्याहस्य न्यायः एवममुखानस्य जिविनभवत वा देवाः। तद्याहस्य न्यायः एवममुखानस्य जिविनभवत वा देवाः। तद्याहस्य न्यायः एवममुखानस्य जिविनभवत वा देवाः। तद्याहस्य न्यायः एवममुखानस्य जिविनभवत वा देवाः। तद्याहस्य न्यायः एवममुखानस्य जिविनभवत वा देवाः। तद्याहस्य न्यायः एवममुखानस्य जिविनभवत वा देवाः। तद्याहस्य न्यायः एवममुखानस्य जिविनभवत वा देवाः। तद्याहस्य न्यायः एवममुखानस्य जिविनभवत वा देवाः। तद्याहस्य न्यायः एवममुखानस्य जिविनभवत वा देवाः। तद्याहस्य न्यायः एवममुखानस्य जिविनभवत वा देवाः। तद्याहस्य न्यायः एवममुखानस्य जिविनभवत वा देवाः। तद्याहस्य न्यायः

Then says Tāndavindra. "The complete purpose of the lute is not fulfilled; if it is struck by an unskilled person. Similarly if an unskilled orator stars speaking, he cannot fulfill the completely the purpose of speech. When a skilled person strikes the lute, the complete purpose of the lute is fulfilled similarly a skilled orator starts speaking, the complete purpose of speech is fulfilled. "The grandeur of this lute is the samhita" says Jātukarnya, son of Kātyāyani.

6.0.0: Analysis

Both the texts compare human phonetic apparatus with lute. Lute was a popular musical instrument in Vedic times. The comparison may look very ordinary since humans speak i.e. make sound and even any lute makes sound. However, the comparison is based on certain principles of sound mechanism of sound. For sound production three major elements are necessary.

1) Source of Energy: In case of human beings sound is produced in larynx. Larynx is made of vocal folds. The vocal folds are set to vibration because of air stream that comes out of lungs. Thus, in case of human sound production pulmonic air is source of energy. In the passage quoted above though no specific mention of air stream mechanism is made still in many other passages we get such references.

2) Oscillation: Oscillation means to and fro movement. Such a movement is caused by fingers in case of a lute and by vocal chords in the context of human phonetic apparatus. The Ait Ār rightly observes the fact. This particular sentence bears a testimony of knowledge of vocal cords to ancient
Indians. Scholars like Allen had doubted its knowledge on part of Indians. To quote Allen (1953:33), "...in a recent paper however, Dr. A.A. Bake has pointed out that this interpretation is unfounded and that 'strange to say, there is no trace of the knowledge of the existence of the vocal cords in the texts on the theory of music.' The sentence of the Ait Ār runs as follows: यथा अस्याः: तन्यः एवं अनुमाणः: अज्ञातः:।

In the text the word 'asyāḥ' refers to human phonetic apparatus and word 'amusyāḥ' refers to lute designed by humans. Here the word 'tantryāḥ' is uttered along with asyāḥ. Thus, the author of the text intends the strings of divine lute. The strings in human phonetic apparatus are certainly the vocal folds.

Like vocal folds, tongue is also an important organ that carries out oscillation. Therefore, the Śān Ār say तद्वायसैं जिह्वा एवममुण्या वादनम्. Tongue is referred to as an important organ in sound production even in the Ait Ār. The description therein is very vivid. To quote:

ोष्णपिधना नकुली दत्तै: परिब्रता पवित्रै।
सर्वस्या वाच ईशाना चारु मामिह वादवेदै॥

The verse describes tongue as covered with lips. Therefore it is called ओष्णपिधना. Since it is an important organ of sound production it is called nakūli is a name of lute quite popular in the Vedic times. The third adjective of tongue is दत्तै: परिब्रता i.e. surrounded with teeth. The word 'pavīḥ' has two meanings. It means 'having blades' i.e. sides of the tongue are very much important in producing certain sounds. Another meaning of the word 'pavīḥ' is 'swift'. The tongue is considered as active articulator in phonetics. It moves in the oral cavity and various sounds are produced. It approaches towards places of articulation. Further it is called 'mistress of all speech' since no speech is produced because of tongue. This is how the vocal folds and tongue produce oscillation which is very much essential in sound production.

3) Resonance: The sound produced resonates in the air column. Both the texts use the word 'ambhana' for cavity. The word is retained in regional languages with slight change. It is called 'ambhavā' in old Marathi. Keith derives the Sanskrit word from the root anu + bhana to mean 'to speak after'. The sound produced resonates in the cavities. According to the Taśṭirīya Prātiśākhya resonance takes place in five places. To quote: tasya prātiśruti-bhāvanāyurā, kāṇṭhāh, śīrah, mukham, nāsike iti 2.3.

(Tr) The chest, throat, head, oral cavity, nasal cavity are the resonators of the sound. Mark the word 'prātiśruti' used in the text. It is derived from rukta the root 'prati + śru to hear immediately after.

7.0.0: Conclusion

Thus with the help of the beautiful metaphor of lute the speech has shown deep insight in mechanism of sound production. The comparison of lute with organs of speech is not at all at random, but based on thorough scientific principles. The principle of oscillation and resonance are directly uttered in the passage whereas air as source of energy is mentioned elsewhere.

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