Mantras to Music: Acoustics in Hinduism

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Introduction:

Acoustics has played important roles in all cultures and religions of the world. This is natural as acoustics deals with sound, one of the senses of perception. In Hinduism, acoustics is of major importance in various aspects of life namely spirituality, religion, culture, science, art etc. In this paper four aspects of acoustics in Hinduism are briefly described with video samples. They are: 1) Chanting of mantras from the Vedas, 2) Sounds from Conch-shells, 3) Music (percussion instrument) and 4) Musical tones from pillars.

Vedas, the revealed literature of Hinduism is an infinitely large collection of mantras (chants). These mantras describe the various facets of knowledge dealing with life and cosmos. It is through precise oral tradition from antiquity to present times that these mantras are taught by teacher (Vedic pundits) to disciples. This transfer of knowledge through recitation requires pure mind with precision in intonation and pronunciation for both teacher and disciples.

Chanting of Veda Mantras :

The language of Veda mantras is called Chandas and is quite similar to current Sanskrit language with some differences in grammar. Sounds of the Veda mantras carry the listeners to spiritual experiences. The acoustical characteristics, in addition to the clear phonetic articulation of chants, have deep impact on the listeners. It is shown by the author with Dr. T.V. Ananthapadmanabha and Dr. K. Silvermann that the intrinsic pitch difference effects can be overridden in Vedic chanting. The video clip attached below is from a Vedic school "Sri Sarvaraya Veda Pathasala" in Kapileswaram, Andhra Pradesh, India. In the segment shown, both teachers and disciples

are chanting in a practice session. The sitting arrangement is in two rows to facilitate alternate chanting.

VedicChants.WMV

[-Video clip of Chants-]
http://www.durvasula.com/Taranga/VedicChants.WMV

<u>Sounds of Conch-shells and Bells:</u>

The chants from Vedas are extensively used in worship and sacrament rituals at homes and temples. In Hindu temples, sounds from conch-shells, bells and musical instruments are used along with worship rituals. It is interesting to note that sound from conch-shell has sharp tonal quality that can be recognized while listening. It has a very high Q-factor. The video clip below shows the ending of a ritual in which a lamp is waved as an offering to the deity and then brought to devotees to receive the light of God. The conch-shells are blown and bells are rung in addition to the chanting by priests during the waving of lamp. This video clip is from the Hindu Temple and Cultural Society in Bridgewater, New Jersey.

ConchShell.WMV

[-Conch-shell Video-]
http://www.durvasula.com/Taranga/ConchShell.WMV
<u>Music and Hinduism:</u>

In addition to the communication and entertainment , the Vedic literature emphasizes that speech and music have a spiritual role. Speech connects the abstract thoughts and physical actions. The phonetics and grammar of Sanskrit language bring out the spiritual effects through prayers, chants, etc. The sacred role of speech is emphasized in the unison of thought-speech-action as a spiritual goal.

The classical music according to Hinduism has divine origin and is a medium primarily for spiritual experiences. There are two types of classical music of India namely Carnatic and Hindustani. Music is also a driving force for dance. Music transforms the listeners. In the words of yogi-seer Sriranga Sadguru, "Music should become the bridge that takes the listeners from sensual level to spiritual level of Atman". The classical vocal and instrumental music of Hindu culture synthesize both art and science of acoustics. In particular the

sounds from the percussion instruments Mridangam and Tabla are melodious to hear in addition to their rhythms. The Nobel laureate Sir C.V. Raman has shown (in 1920) that the melody in Tabla and Mridangam is due to their special design in achieving harmonic relationship in first five natural frequencies. The video clip attached below is a sample of melodious rhythm played by the maestro Zakir Hussain.

Tabla.wmv

[-Video clip of Tabla-] http://www.durvasula.com/Taranga/Tabla.wmv

Musical Pillars of Hindu Temples:

Acoustics plays a very important role in Vedic metaphysics. An evolutionary order is given for the five elements of nature. The Vedic evolutionary order is from the subtle to gross i.e. space, air, fire, water and earth. This order of elements is matched with senses of perception as shown in the table below.

Element	Senses of Perception
Space	Sound (hear)
Air	Touch and Sound
Fire	See, Touch and Sound
Water	Taste, See, Touch and Sound
Earth	Smell, Taste, See, Touch and Sound

The Vedic metaphysics emphasizes that sound is the only descriptor of space but also can be used in sensing other four elements. Hence acoustics has received primary importance in Vedic Hinduism. In ancient India, the Hindu temples played important roles in all aspects of life such as for worship, a space for art performance, and for

education. The video clip attached below shows a musical performance from granite pillars. This special hall, called Purandhara Mantapa, was built in the 16th century during the time of Vijayanagara Empire in Hampe, Karnataka, India.

Pillars.wmv

[-Pillars-]http://www.durvasula.com/Taranga/Pillars.wmv

Concluding Remarks:

Thus, it is seen that acoustics plays a major role in Vedic Hinduism from Mantras to Music. Acoustics for Hindu sages was not only a tool of science, but also a spiritual medium to understand life in all its aspects. The above video samples are provided as an experience of the various roles of sound and its environments. A visit to a traditional Hindu temple during rituals and an Indian music or dance concert will provide more in-depth experience of acoustics in Hinduism.

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