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Soundscapes in Architecture

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Abstract:*We are aware of what our environment looks like .Even people have strong memories associated with smell or odor. But sound is a much ignored element in Architectural experience. There is a lack of enlightenment at the front of soundscapes in Architecture, regarding caring about sound. Humans do not flourish under sensory deprivation. All our senses including our hearing need positive stimulation .Architects do not design visually silent environments. Visually colors lighting and textures are used to enhance the space. Our sonic environment should enhance life enjoyment too.The scope of this paper is to sensitize our perception to the subtler realms and expressions of the manifold sonic vibrations and their frequencies within and around us*

Keywords:*Soundscapes ,Sonic Landscapes, Acoustical Environment, Aural architecture, Architectural aesthetics.*

Introduction

Architecture is an experiential journey of our built environment. Architecture has the potential to acknowledge the feeling, the desire and pleasurable capacities of the people. Multisensory architecture finds its relevance in this context. Most of the architecture created is ocular centric in design, keeping in mind its visual appreciation. But our perception of architectural space is always perceived by the senses. Traditionally there are 5 main sense - the sense of sight,hearing , touch taste and sense of smell. Architecture is the formation of vastu energies and sound is the expression of vastu energies. Through sound vastu energies become sensory preceptive. The auditory experience is much neglected element in architectural design,which needs to be integrated into the design process.

Sound as element of space

The soundscape or Sonic landscape, or the acoustic environment, as it may be termed, can be perceived by human being in varied range. It may range from urban design to wildlife ecology .The Acoustical environment is the combination of all the acoustical resources of a given area i.e., a natural sound and human caused sound – as modified by the environment. The study of soundscape includes natural animal vocalizations, sound of weather, sounds of natural elements and environment and sounds created by humans for example- musical composition and human activities such as conversation, work and sound of mechanical origin resulting from use of industrial technology.

Fig.1 Natural Sound

Gradually the term soundscape also includes the listener's perception of sound heard as acoustical environment.Disturbance of these acoustical environment results in noise pollution

Fig.2 Natural Sound+Humansound+Mechanical sound

Table 1: Physical/Psycho-acoustic properties of Sound

Basic Physical Properties	**Components**	**Psycho-acoustic measurements**
Frequency	Frequency	Pitch
Spectrum	Frequency/Volume	Tone/Timbre
Duration	Time	Duration
Envelope	Frequency/Volu	Envelope

	me/Time	
Reverbs/Delays	Frequency/Volume/Time	Reverberation/Echo
Sound Pressure Level	Volume	Volume/Loudness/Intensity
Dynamic	Volume/Time	Dynamic/Expression
Directivity	Directivity	Directivity/Stereo/Spatial feelings
Fluctuations/ Grain	Time/Volume	Texture
Distance	Frequency/Volume	Presence
Reverberation Time, Spectrum	Frequency/Volume	Clarity

Table 2- A rough structure of Schafer's catalogue of classification of sounds according to referential aspects

Natural Sounds	Sounds of Water	Oceans, Seas and Lakes
		Rain
		Rivers and Brooks
		Steam
		Ice and Snow…
	Sounds of Air	Wind
	Sounds of Earth	Trees…
	Sounds of Birds	Sparrow…
	Sounds of Inspects	Files…
	Sounds of Seasons…	Spring…
Human Sounds	Sounds of Voice, Body…	Speaking…
Sounds & Society	Town, Urban, Factories, Domestic Sounds, Parks…	
Mechanical Sounds	Machines, Aircraft, Constructions…	
Silence and Quiet	-	
Sound as Indicators	Bells, Horns, Telephones…	

Table 3.**Some sound samples with different classifications of basic properties**

		Telephone Bell	Car Horn	Bird-Song	Kettle Boiling
Acoust	Intensity (SPL)	75dB	90dB	60dB	60dB
	Distance	3 meters	100 meters	10 meters	1 meters
	Distinguish ability	Heard distinctly	Heard distinctly	Heard distinctly	Indistinctly
ics	Ambiance	Hi-Fi, human	Hi-Fi, technological	Hi-Fi, natural	Lo-Fi, Human
	Repetition	Repeated	Isolated	Part of extended song	Stead-state
	Reverberation	No	No	No	No
	Frequency	≈2k Hz	≈500 Hz	≈5k Hz	Narrow band 8k +Hz
Semantics		Telephone Signal	"Get out of my way!" "I've just married!"	Clear day, morning	Tea is on.
Aesthetics		Not very pleasant	Annoying, unpleasant, Festive, exciting	Pleasant, beautiful, Festive	Pleasing

Table 4: **Keynote, signals and soundmarks**

	Definition	Psychological	Examples	
Keynote Sound (Background)	They are not listened to consciously; They are overheard but cannot be overlooked.	Ground	Water, Wind, Forest, Plains, Birds,	
Signals (Foreground)	They can be listened to consciously.		Figure	Train Whistles, Ship Whistles, Bell, Horns..
Soundmarks (Most noticeable)	They are sounds that is specially regarded or noticed by the people in a certain community.		Landmark	Virtuoso drumming of the Austrian bureaucrats with their long handled rubber stamps.

Components of our Soundscapes:

Cocophony, Geophony, Biophony, Anthophony are the terminologies used for the elements of our soundscapes. The earth sounds connects people to the environment.

Biophony: Biophony is the music created by organisms like frog and birds, For example the dawn and dusk chorus of birds are the characteristic of a certain location. Biophony is that component of soundscape related to naturally occurring biological origin audio signal sources coming from marine or terrestrial habitat and aerial origin.

Fig.3 singing of frogs.

Geophony: Geophony is a hallmark of any landscape too. The soundscape created by strong winds moving through trees, raging rivers audible from faraway, intense tropical rain showers, burbling brooks, breaking waves and the – whistling winds are the examples of Geophony. Geophony from the Greek prefix, geo, meaning earth related and phon, meaning sound, is one of three components of the soundscape, that relates to the naturally occurring nonor coming from marine terrestrial, habitat.biological origin audio signal sources

Fig.4 Music of rain drops.

Anthrophony: Anthrophony is that component of soundscape related to the conglomeration of noise from humans and their habitat. This includes human

conversation, sounds of festivals, audio signal sources from planes, trains, auto mobile, machinery, industries etc.

Cocophony: The soundscape created by the mix of Biophony, Geophony and Anthrophony is termed as Cocophony. Cocophony can become characteristic for a particular soundscape or could at a larger intensity become sound pollution

Sound andperception of architectural spaces

The auditory experience: - Vison is directional while sound is Omnidirectional. Thus sight isolated while sound is Omni directional.Acoustical character of a space can lend intimacy or monumentality, invitation or rejection, hospitality or hostility ; for example an echo created in a narrow street or inside an empty cathedral yields the space its own identity and connects us to the space, by creating specific memories. The form the volume and the material, contributes to the sound generation in its interior and exterior spaces.

Soundscapes and Sacred Architecture

Any religion is closely associated to its Aural environment.The unique Aural environment of religious spaces acquires symbolic meaning.This is evident in various faith traditions including temples,mosques and churches

Templebells

Ringing bells,chanting mantras,recitation of aarti and strotram are characteristic to soundscape of temples.In every Indian temple different kinds of bells have been used since time immemorial.There is a similarity between the sound of the bell and the sound of “Aum”; in fact there is some inner relationship. The sound of the bell continues charging the temple all the day long and the sound of “Aum” also charges the temple with its vibrations .Temples are designed and constructed in such a way that sound can reverberate inside.These direct and reverberating soundinteract with our frequencies within ,thus making us aware of vibrational nature of our existence.

People who are visiting the templeshould ring the bell when entering the temple. The bell is made in such a way that whenthey produce a sound it creates a unity in the Left and Right parts of our brains. The momentwe ring the bell, it produces a sharp and enduring sound which lasts for minimum of 7seconds in echo mode. The duration of echo is good enough to activate all the seven healingcenters in our body. This results in emptying our brain from all negative thoughts. This bellsound is also absorbed by the idol and vibrated within the Garbhagriha (inner sanctum) for acertain period of time.

The ringing of the bell in temple produces what is regarded as an auspicious sound. Itproduces the sound **Om**, the universal name of the Lord. There should be auspiciousnesswithin and without, to gain the vision of the Lord who is all-auspiciousness.Even while doing the

ritualistic *aarati*, we ring the bell. It is sometimesaccompanied by the auspicious sounds of the conch and other musical instruments. Anadded significance of ringing the bell, conch and other instruments is that they helpdrowned any inauspicious or irrelevant noises and comments that might disturb ordistract the worshippers in their devotional ardour, concentration and inner peace.

When the conch is blown, the primordial sound of **Om** emanates. **Om** is anauspicious sound that was chanted by the Lord before creating the world. It represents theworld and the Truth behind it.Ancient India lived inher villages. Each village was presided over by a primarytemple and several small ones. During the *aarati*performed after all-important poojasand on sacred occasions, the conch used to be blown. Since villages were generally small,the sound of the conch would be heard all over the village. People who could not make itto the temple were reminded to stop whatever they were doing, at least for a few seconds,and mentally bow to the Lord. The conch sound served to briefly elevate people's mindsto a prayerful attitude even in the middle of their busy daily routine.

Mantra and Stotram

Mantra is a projection of cosmic sound.Mantra is the principal of vibration, born out of conjunction of Shiva and Shakti.Mantra is the primordial energy,which is the latent within the mantras of mystic syllables.Mantras is a mystic sound combination composed of sanskritletters.A simple mantra consists of atomic monosyllabic sounds such as "Krim", "Hrim", "Shrim", "Aim" and more complex mantras are composed of a sequence of such syllables.

Application of Soundscapes

Soundscape element can be successes fully employed to strengthen the construction of architectural spaces .The audible attributes of physical spacehave always contributed to the fabric of human culture, as demonstrated by prehistoricmultimedia cave paintings, classical Greekopen-air theaters, Gothic cathedrals, acousticgeography of French villages, modern musicreproduction, and virtual spaces in hometheaters. Auditory spatial awareness is a prismthat reveals a culture's attitudes towardhearing and space. Some listeners can learn to"see" objects with their ears, for example, we can all hear spatial geometry suchas an open door or low ceiling.

Conclusion

Designer should understand the significance of soundscapes or Aural environment as avery effective tool for expression of architectural spaces. Soundscape elements can successfully employed to strengthen the experience of our built environment. Designers typically consider only the visual parameters which are included in the fundamentals of basic design , but the aural component is missing.Aural architecture should be considered as indispensible component of basic design fundamentals, because sound and hearing influences the quality of space design.

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