

Questions and Answers about:

*Spaces Speak, Are You Listening? Experiencing
Aural Architecture*

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What is aural architecture and how does it differ from acoustic architecture?

Aural architecture is that aspect of real and virtual spaces that produces an emotional, behavioral, and visceral response in inhabitants. A space can produce feelings of intimacy, anxiety, isolation, connectedness, warmth, as well as a mystical sense of spirituality. Such responses parallel those of visual architecture, except that the space is experienced by listening rather than seeing. Musical spaces are the most obvious applications of aural architecture where the space and musical instruments are intimately fused. In contrast to aural architecture, acoustic architecture is the physical properties of the space described in scientific language of sound physics. Consider an analogy: an automobile can be experienced as sexy and exhilarating, but it can also be described by its horsepower and acceleration, experiential versus physical.

Can you give us some examples of good and bad aural architecture and how both can affect us?

The most frequent examples of bad aural architecture are those elegant restaurants that are designed to create a pampered sense of elegance using visual decorations. Dinners expect intimacy. However, the aural architecture may create a noise level that shrinks the range of social connection. Sitting across the table from each other diners cannot establish an emotional relationship because they are functionally deaf. Because hearing is the means by which we connect to activities in the environment, an automobile without the appropriate aural architecture can produce the feeling that the road and other vehicles are very close, a potential source of anxiety. In contrast, with good design, the inhabitants feel safe and isolated from the dangers outside.

Can you tell us about the evidence that early humans were aware of aural space?

Acoustic archeologists suggest that the Paleolithic art found in the caves of Lascaux and Font-de-Gaume were influenced by the acoustic character of the chambers in which they were drawn. Pictures of ungulates, bulls, bison, and deer were more likely to be found in chambers with strong echoes, spaces whose acoustics created percussive sounds similar to the hoof beats of a stampeding herd. Cave art may well have incorporated echoes as a supernatural phenomenon that brought life into visual images. Archeologists speculate that multi-sensory art was part of the hunter's rituals to summon game. Extensive observations of ancient sites support the notion that wall art and acoustics were deliberately related rather than accidents.

Does the space where music is performed influence the development and evolution of that particular music?

Music and space have been locked in a tight embrace for thousands of years because the space is part of the music. The grand cathedral, whose size and acoustics results from religious needs, produced an aural architecture in which only Gregorian chants would work. In contrast, the smaller Protestant churches, with a greatly reduced size and softened interior design, allowed Bach to create a new genre of music. This pattern continues in modern popular music, which could not exist without the artificial reverberators and spatial simulators that are part of every recording studio. Although space and music are tightly coupled each comes about in response to the other. With few exceptions they were never created at the same time. A composer writes for a specific type of space, such as chamber music in the royal palaces, and architects design for specific musical genres, such as the Boston Symphony Hall.

How are social relationships affected by aural architecture?

One of the best examples is the French villages in the 19th century. Citizenship was based on the ability of an individual to hear the bells of the town, and the distance was controlled by nature's aural architecture of the environment. The bells were essentially the only form of long distance communications. If you could not hear the bells, you were not part of the town. A similar pattern occurs in modern life, if the acoustics allow you to participate in a dialog with others, then you feel connected. In fact, hearing is the dominant sensory means of emotional connection because it is the means of broadcasting emotions and attitude, not just the linguistic information in the words. Social cohesion versus social isolation is controlled by aural architecture.

Are bats and dolphins unique in their use of echolocation for creating an image of the environment for navigation?

A large number of species, including humans, use their ears for sensing objects and geometries. Bats and dolphins are super experts, but other species use it as a supplement for vision in darkness, including rats, shrews, hamsters, and some species of birds. Some blind people have also become experts at navigating a space without using a cane or seeing-eye dog. In his biography, Ray Charles describes how he wanted to function normally every after he lost his sight. Ved Mehta, the Indian writer blind from childhood, described how he learned to jump from banister to banister, from roof to roof, and rode his bicycle through unfamiliar places. In 1749, Diderot described the amazing ability of some blind individuals to perceive objects and their distances. But unlike these experts, we can all sense space by listening: we hear low ceilings and open doors. While most of us do not have these heightened abilities we all sense space by listening. A simple example is that we can hear low ceilings and open doors.

Your insights into auditory spatial awareness come from many disciplines—including architecture, music, acoustics, evolution, anthropology, cognitive psychology, and audio engineering—how do these varied disciplines inform your discussion of aural architecture?

I start with the premise that a phenomenon like auditory spatial awareness cannot be examined directly. Every discipline has its methods, which act as a filter, showing some aspect of the phenomenon's shadows. When I merged all the shadows from all the relevant disciplines, I gained a much better understanding to the object that cast all the shadows. While some intellectuals fight over which shadow is true and which is false, I take the position that the important task is to reconcile the differences by examining the assumptions in each discipline. Someone with red-colored glasses never sees the same scene as someone with blue-colored glasses. Why argue if the object is red or blue? For example, the laboratory results of perceptual scientists can be merged with the anecdotal reports from anthropologists. Each of the dozen disciplines contributed a brick of knowledge so that I could construct the concept of aural architecture. The bricks are old, the building is new.