

Excerpts from “Composing Electronic Music” by Curtis Roads

Page 240:

To project in space is to choreograph sound: directing sources and animating movement. Recorded sounds articulate the space in which they were captured, but we can also compose virtual spatial characteristics for sounds. Immersing sound in deep reverberation, we bathe listeners in its lush ambience. With increasing use of *pluriphonic* or multichannel/multi-loudspeaker sound systems, we can articulate points, lines, chords (geometric forms), and spatial clouds in physical space (Roads et al. 2013).

Reasoning about spatial relationships is fundamental to human intelligence (Piaget and Inhelder 1967). Spatial perception is tightly integrated with both thought and action (Blauert 1997; Kendall 2010). Our body moves in space and must be aware at all times of its position in accordance with everything around it. We manipulate physical objects in space. Our mind needs to be able to recall (through spatial memory) the location of innumerable things, whether in physical space (e.g., our home) or virtual space (e.g., the location of a file). We plan and organize the spatial arrangement of objects in our home and in our garden.

We not only memorize and reason spatially, we feel it. Spatial experiences can be emotionally moving, including “breathtaking views,” but also looking over a cliff or parachuting out of an airplane. To enter the Roman Pantheon or any sacred space can be an emotional experience. The sensations of intimate and vast spaces are especially powerful, as Denis Smalley (1991) observed:

Our attitude to sounds which emerge into, intrude on, break into, close in on, or comfortably inhabit our space can create divergent emotional experiences: confrontation, threat, solace, and so on. If, on the other hand, the listener feels drawn outwards into an environment beyond the immediate listening space . . . then a further set of affective responses is activated: for example, distance and spaciousness can invoke feelings of insignificance faced with vastness, loneliness, peace-of-mind, calm, etc.

Page 242 (paraphrase of Henry Brant):

Spatial separation clarifies the texture; this is particularly important if the music consists of several different layers located in the same pitch register.

Spatial separation is equivalent to the separation by register or timbre. That is, just as one can hear separately layers of music that are located in different registers, one can also differentiate layers that originate from different points in space.

Spatial separation facilitates greater complexity in the music; more unrelated elements can be heard simultaneously.

Excerpts from “Spatio-Musical Composition Strategies” (2002)
Natasha Barrett

On boundaries:

“Throughout our life we develop expectations that help us interpret our environment, and sound is one source of information we use to explain space. When we no longer hear distant sound through the roar of the traffic, we aurally re-define the expanse of the landscape. Imagine sitting in a quiet park, full of trees, bushes, flowers, birds, insects, a person kicking a ball, another walking a dog. The sounds around you give little clue to the expanse of the space, and visual obstacles gradually obscure the sight line. The park has a physical boundary fence, but no sonic boundary, and so the space extends beyond the fence in your imagination. Next, place a busy main road about 500 metres away. You can’t see the road because it is obscured by trees and bushes, but the sound from the road now places a clear perimeter on our previously expansive idea of the space. Finally, overhead add a low flying helicopter and a more distant passenger plane. Although sound is not as directional as light, you are nevertheless completely enclosed within a sound space. The idea that our spatial sound environment and changes to that environment affect our psychology is not new.”

Intrinsic vs. extrinsic properties:

“In a reductionist approach to electroacoustic music, there can be considered two main categories of material and structure: the intrinsic and the extrinsic. This holds true on all temporal scales, and when considering both the isolated sound and the relationship between materials. The ‘intrinsic’ is the spectrum, its morphology, and the structural organisation concerning the spectral evolution solely as a series of frequencies and articulations, however complex. The ‘extrinsic’ is the sound’s capacity to imply, to refer, or to associate with something other than that empirically present in the spectrum. Our memory plays with the ‘extrinsic’, bringing forth associations we have with the sound. Extrinsic and intrinsic properties are not mutually exclusive. They interact as our perception finds or loses connections through the act of listening. From an extrinsic standpoint, when neither source nor causality are clearly recognisable, we find ways to place the sound into the context of our knowledge of the world.”

Reverb and proximity:

“Clues to the characteristics of the space are provided by surface reflections forming the reverberant field. Clues to the proximity of the sound to the listener are gained from the mixture of early and late reflections, and from the mixture of the direct and reverberant field combined with low-pass filter characteristics.

Low vs. high frequencies:

“Because our aural perception can locate higher frequencies and texturally varying material more easily than lower frequencies and static material, the intrinsic nature of the sound will play an important part in the composer’s choice of material.”