

Diffusion/Projection Terminology *by Scott A. Wyatt*

Formation of syntax:

Understanding sound diffusion/projection requires specific language and an awareness of associated terms, perceptions and simulation procedures. Having had long conversations and discussions among the members of our collaboration, we soon realized that while we were using many of the same terms, each of us had a different understanding of the terms. We found it necessary to take the time to define many of the basics. While we believe we have just begun to scratch the surface of syntax formation, it was a beginning of the development and understanding of our study of diffusion/projection.

We began by defining the following terms:

projection plane - an abstraction of a flat surface whose orientation is defined by eight loudspeakers of a D-8 sound projection system, forming a *front border* (running from Front Left through Front Center to Front Right), a *back border* (running from Back Left through Back Center to Back Right), a *left side border* (running from Front Left through Side Left to Back Left) and a *right side border* (running from Front Right through Side Right to Back Right). Perceived sound sources can be described as having a location in this plane or outside its borders. The purpose of this plane is to describe the perceived motion that takes place within the three dimensional space. Although this motion may be in some way three-dimensional, only two dimensions can be controlled by D-8 sound projection and are therefore the only two discussed.

spatialization - the perception of a sonic environment and/or space This perception can be created through simulation of the reflective properties of a host space, as well as, how a specific sound source is reflected within that environment. (These simulated reflective properties might include: early reflection, reverberation time, and the frequency characteristics of the reflected sound.)

localization - the perception of a sound as having a definite location within an environment. In the case of sound projection, this location can be described in terms of the projection plane and its borders. Localization is created through simulation of distance and direction by manipulation of relative amplitude balance among multiple loudspeakers, relative balance of direct and reflected sound, interaural time differences, and frequency characteristics.

translation - the perceived movement of the location of a sound source, which can be described as a vector in or outside of the projection plane. Translation is accomplished by simulating a change, over time, of the distance or direction of the sound source with respect to the projection plane. Parameters to change might include amplitude, frequency characteristics and balance of direct and reflected sound.

Projection Performance Activities:

pan - the lateral translation of a sound source through or beyond the projection plane. This is accomplished through simulation of changes in relative amplitude balance between two loudspeakers.

roll - the longitudinal translation of a sound source through or beyond the projection plane. This is accomplished through simulation of changes in relative amplitude balance between two loudspeakers.

cross - the diagonal translation of the sound source through or beyond the projection plane. This is accomplished through a process that combines pan and roll.

contouring - the act of performing a translation, amplitude change, timbral shift, or combination of these to a PHRASE/GESTURE in support of the characteristic shape of the phrase/gesture.

ornamenting - the act of supportively embellishing any one or combination of the perceived location, amplitude or timbral characteristics of a GESTURE.

articulating - the act of accentuating a single EVENT by exaggerating its existing location, amplitude, or timbral characteristics.

The compositional elements of an electroacoustic or instrumental/vocal work may be described as having the following hierarchy, where the first listed is the largest element, and the last is the smallest:

electroacoustic works

instrumental/vocal works

composition

composition

section

section

phrase*

phrase

gesture*

motive

event*

note

*The significance and/or character of a phrase, gesture or event must be determined with respect to the contextual characteristics of the composition in question (it is realized that phrase, gesture, and event could have similar or the same meaning depending on context). This is accomplished through critical analysis, understanding and supportive interpretation of the composition by the diffusor/projectionist.
