

## THE PRESENT AND FUTURE OF AUDIO IN THE THEATRE

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*Editor's note: With extensive experience in the design of sound for theatre productions, Rick Thomas, Sound Designer and T. A. Professional at Purdue University's Theatre Sound Design Department, shares his perspective on the present and future trends of theatre sound. His talents have been utilized in educational and commercial theatres throughout the United States.*

"Before the lights have even dimmed to signal the start of the play, the sound person is busy at work at the console, located about three-fourths of the way back from the stage dead center. One would hardly recognize this console--so different is the console from the old massive array of knobs and switches and flashing lights, noisy tape recorders, turntables and intercoms. Instead, one finds a CRT, a keypad, and an 88-event (note) wooden keyboard. The action on stage begins. Although the sound in this performance has been pre-recorded, it is performed by the sound person, who shapes and blends it with every nuance of the performance. The classic charge that recorded sound cannot respond to every nuance of the performance to the same degree that a film-score composer can, "ipso facto", has not only been met--it has been exceeded. For in this environment not only can the sound score respond to the performers--but the performers can respond to the sound--in a unique and different way every performance."

This description suggests a futuristic theatre of the 21st century. The truth is that the technology to accomplish these things exists today. A quick survey of products commercially available gives an indication of the degree to which a sound score can be controlled in our theatre: computerized consoles can control virtually any number of sources routed to any number of outputs at any loudness level, spatial panning and movement; 88-note wooden keyboard controllers allow maximum flexibility in playing the score; digital sampling machines record any and all sound effects needed in a production and assign them to any designated keys on the keyboard. The same machines can sample any instruments in an orchestra, or any other instrument for that matter. Computer sequencing programs sequence the orchestral colors, notes, durations, etc. in a rhythm track. The tempo of the rhythm track can be manually controlled with a 'sync box' that allows the sound person to tap out the tempo of the music to the tempo of the live performance. Orchestra colors that need to be synced (performed in real time to specific actions in the performance) are assigned to the keyboard. All of these items combine to produce a flexibility, responsiveness and vitality in sound that is not only unprecedented, but (unfortunately at present) unheard in our theatre.

There are good reasons for this: first, but not foremost, is cost. Although systems to accomplish the above are not cheap, they are economically feasible for many theatres. Second, but again, not foremost, is the technology. Developing, interfacing, and installing such a system is generally beyond the scope of traditional consultants and theatre staffs.

The third and most important reason why such state-of-the-art systems are not heard today lies in the nature of our 20th century theatre itself. The remainder of this paper will explore how theatre is evolving towards more responsive, flexible and vital use of sound.

Art has always evolved in fits and starts, each new idea setting off a whole era. The Renaissance, Romanticism, and Realism are all artistic movements that reflect the way man has evolved. Change is inevitable as society becomes dissatisfied with the current practice and seeks to extend itself into new areas of expression. Predictably, artists become dissatisfied with the status quo of sound in the theatre. This certainly seems to be the case with sound in theatre today. The works of Robert Wilson, Phillip Glass, Meredith Monk, Twyla Tharp, Michel LeMieux, Ping Chong, and Laurie Anderson (among others) all strain against the status quo of theatre technology.

In the same way, modern playwrights such as Peter Schaeffer, Arthur Kopit, Tom Stoppard, and Sam Shepard are beginning to consider the immense possibilities of sound in theatre. New plays present increasingly sophisticated and complex examples of sound, as playwrights and directors try to better orchestrate the aural experience of the audience. Even classical playwrights, such as Shakespeare, are being given a new breath of life through the use of sophisticated sound tracks. Twenty years ago fifty sound cues represented a 'heavy' sound show. Today 150-200 cues per show have rapidly become common. As audiophiles are slowly beginning to bid adieu to the turntable and the tape recorder, playwrights and composers will most assuredly bid a fond farewell to this equipment as well.

The theatre audience also continues to evolve. Theatre has great potential to undergo a renaissance in this country due to the increasing availability of better quality productions in nearly every major city. Theatre may indeed replace the movies for the average American family's typical night out. While increasing sophistication of home video systems steals the patrons from the film houses, there is no substitute for live theatre.

However, the theatre cannot afford to be complacent: the needs of the theatre audience must be addressed to keep our theatre alive. Most importantly, the artists themselves must address the cultural needs of the population at large, not just a fringe avant garde element. Additionally, theatres must address an audience weaned on high-fidelity sound. Sound in theatre must technically surpass in both performance and quality that which is available at home. As audience sophistication evolves, so does the attitude towards theatre sound.

The physical space of theatres themselves must also evolve. Acousticians should consider the challenges offered by the legitimate theatre. Traditionally, intelligibility has been the chief acoustic requirement, and the appropriateness of the reverberant field has been ignored. However, when the house lights dim, the theatre visually goes away and the audience becomes immersed in the dramatic scene. This is not true for the acoustic space. What looks like a drawing room sounds like a theatre.

To provide maximum control and flexibility for productions, theatres must be limited in size. Although it is not necessary to deliver the same spatial

information to every seat in the house, there does need to be some uniformity of perception. This can best be accomplished in houses seating less than 600 people. Ideally, theatres should provide total control over the apparent size and shape of the space. This means less and less reverberant spaces so reverberation character and quality can be provided artificially. Only in these environments will naturalistic sounds and spaces be acoustically viable.

The sound console has already begun its inevitable migration to the location that insures maximum audibility--in the house, unhampered by the booth window. To place the sound person in a position where the show cannot be heard is akin to boarding up the light booth window. This migration has been slowed for the sound designer by the clackety-clack of tape recorders signaling the onset of another cue. However the tape recorder will inevitably give way to the compact disc with its superior fidelity, cueability, programmability, and quiet operation. Beyond a simple storage medium lies even more impressive capabilities through computer control.

The ability to do multiple tasks at the same time with sufficiently high speeds will be a basic requirement of theatre sound, and the computer will be the workhorse. The tasks will be arranged in a form similar to modern cue sheets. For each cue the computer will load the proper sounds into the samplers, synthesizers, etc. It will assign sounds that are to be performed live to delegated sections of the keyboard. It will load the sequencing program for the rest of the sounds. It will choose the speaker combination, spatial positioning, relative volumes, and reverberation characteristics required for the sounds loaded. All of this will be 'pre-set' automatically or can be loaded manually with a couple of keystrokes. The screen will display only the information the sound person needs to perform the cue. A push of a button will start the cue operating and automatically load the next cue. Once the cue is underway the sound board operator not only has control over the keyboard, but has the option of using pedals, thumb wheels and breath controllers to control any relevant parameters of the sound--including color, mass, line, rhythm, texture, and space.

In this process, sound will tend to be treated more and more as another character in the play. Upon casting, the sound designer will begin to research the role. This phase will include the traditional research of the script, period, music, and audience, as well as the collection of raw sounds. These sounds will then be loaded into sampling machines and made ready for playback over a keyboard and computer system. During the rehearsal the designer may simply load a piano sound into the computer and improvise (perform music) under scenes. These improvisations can be recorded, printed out on sheet music and modified later. As the music takes shape the piano arrangements can be simply orchestrated by assigning different sampled colors to the different elements of the orchestration. In this manner the score for the production will evolve as the rehearsal processes. The end result will be a score that is an integral element of the organic unity of the play itself.

The development of the Sound Designer's role is another part of this evolution. Once the bastard child of the properties department, the complexities of the job have outgrown the simple title 'Sound Designer'. The future will undoubtedly see less use of the broad term 'Sound Designer' and more specific titles such as Sound

Reinforcement Designer, Music Designer (Composer), Sound Effects Designer, etc. Ultimately there may be as many designers hired to create the auditory component of the performance as exist today in the visual elements (e.g., scenic, costume, lighting designers vs. music, reinforcement, effects designers). An even more dramatic change will come as attitudes towards the sound board operator change. Given the potential system outlined in this paper, the sound board operator will come to be viewed more and more as the conductor of an orchestra, cueing the various entrances of instruments and controlling the dynamics of the performance. This "conductor" will need to be as proficient musically as technically. The ultimate responsibility of making the dramatic organism come to life each night rests here and requires a good deal of musical skill.

It is this team of people starting with the architect, acoustician, and sound system designer and ending with the sound board operator, cast, and audience that will tackle the evolution of theatre sound. Universities such as Purdue have already begun to experiment with some possible solutions, while theatre consultants and managers are simultaneously applying proven techniques to new installations such as the Old Globe in San Diego.

And that is what this evolution is all about: to find better and better ways to invent, develop, refine and execute sound in a production that is as much alive and integrated as the characters and ideas themselves. Sound designers have always aspired to this lofty ambition--to blend in flawlessly to the whole, as the ear is to the mind. The difference today is that they are on the threshold of a whole new era of accomplishing it.