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## Sound Production

TYPE: **Production**

KEYWORDS: sound , audio, music, tech, tech theatre, recording, instruments, crew, backstage

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### Overview

Sound is a part of almost every live performance, and the technicalities of preparing, operating and maintaining a sound system so that all the performers and music sound their best is a demanding task. Audio engineers or sound operators work within venues to provide this technical expertise.

Depending on the size and type of production, an audio engineer may work directly with the director of a show, a technical director, a sound designer, or all three. As a result, audio engineers are members of a team supporting an overall creative vision for a show. A large production (such as a Broadway musical) might employ an audio engineer specifically for a production run, but in many cases audio engineers are employed full-time by a theatre or a venue. The audio engineer is expected to have an in-depth knowledge of all of the equipment which they use to produce the sound for a given show and - in the case of an engineer employed by a venue - all of the particulars of the way the sound system works in the space.

During load-in, audio engineers will assist the creative team with safely setting up, rigging and cabling the sound system for the show. They will have a good understanding of the audio equipment available at the venue, and know which speakers and microphones to use to produce the best results. For example, condenser, dynamic, and wireless lavalier and headset mics each have different strengths and weaknesses and should be used for different types of sound.

In addition to setting up the sound system to the sound designer and director's taste, audio engineers must also be careful to avoid any feedback, hissing or excessive noise in the venue. The most common cause of feedback is a "looped signal" in the sound system, usually because a speaker has been placed in front of a microphone. An audio engineer might correct this problem by rearranging the speakers and mics, or by changing the type of microphone that is being used to reduce its sensitivity. Hissing, buzzing and other undesirable noise in the audio is often the result of bad cabling, or mixing problems that can be corrected on the board. An audio engineer is expected to be able to proactively identify and correct issues in the sound system with confidence and speed.

Once a show begins, the audio engineer is responsible for the critical task of mixing live and recorded sound during the performance. Mixing refers to the process of balancing all of the different sounds that the audience will hear, so that each part shines. Without proper mixing, music begins to sound "muddy;" the audience may not be able to make out the lyrics of a song, or the music may not be clear. In the case of a musical, pre-recorded backing tracks may need to be mixed with live singing or instrumentation. In order to mix, audio engineers use mixing boards or consoles. Similar to an amplifier in a home stereo system, a mixing board receives various audio signals - such as a recorded CD, a performer's microphone, or an electric guitar - and allows the operator to independently control the volume, pan, and effects on each by sorting them into channels with separate faders and dials. Today, mixing boards come in both analog and digital varieties, and can have up to 96 channels (that is, they can receive signals from up to 96 different sources at once). Professional audio engineers have the base knowledge necessary to use all types of mixing boards, whether analog or digital, and no matter how small or large.

Audio engineering is essential in all live performance venues, and engineers who are interested in live performance can usually find plenty of work. However, their technical skills are also in demand in the film, television and radio industries, allowing people working in sound production to pursue a variety of different types of work throughout their careers.

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