MIXING FOR THEATER

Techniques and Tools

LIVE MIXING BASICS

- Priorities in Theatrical Mixing
  - Clarity
  - Balance
  - Intelligibility
  - Managing Feedback

ANALOG MIXER TECHNIQUES

ANALOG LIMITATIONS VS STRENGTHS

Analog consoles offer tactile control and reliability

Their simplicity can be an advantage in fast-paced environments, though they require more manual intervention.

Lack advanced features like scene recall, built-in Dynamics and Effects

MICROPHONES

- In Theater, microphones that are off stage **MUST BE MUTED**
- As a Sound Engineer, I do not want the actors touching the body packs to control Mute, Power or accidentally change the frequency (IT HAPPENS!)
- Actors that mute their own pack, usually forget to turn it back on before they go onstage.
- It is also unrealistic to expect everyone backstage to be quiet.

WHAT DO YOU DO THEN?

- **Analog mixers have 2 ways of achieving this:**
  - **#1 - The MUTE button**
    - Can be problematic depending on the size of the mute button.
    - Sometimes hard to hit between scenes, especially if there are a lot of mic changes and little time.
    - If you are late unmuting the channel, the actor's voice will appear dramatically in the mix. This is noticeable!


13
14
15
16
MUTE
PFL


16
17
18
19
GAIN
COMP
HIGH
MID
LOW
ON
PEAK
SIG
ST
PFL

WHAT DO YOU DO THEN?

- **Analog mixers have 2 ways of achieving this:**
  - **#2 - The Fader**
    - Bring the Fader all the way down when the actor is not on stage (or has no lines in the scene)
    - More movement than just pushing a button
    - If you are late with bringing the channel up, the actor's voice will "Slide" into the mix – not as noticeable rather than just appearing in the mix.

SUBGROUPS

- On larger Analog Mixers, there are usually 4 or 8 Subgroups
- Each channel can be assigned to one or more of the Subgroups
  - In this case, only assign a channel to one Subgroup.
- Create groups such as Lead Females, Lead Males, Chorus Females, Chorus Males, Pit Orchestra, Sound FX, etc.
- Easier to balance out the Females and Males, Leads and Chorus, with just a few faders, rather than 24 or 32 individual faders.
- During an emergency, it is faster to control a Subgroup, then find the individual channel.

DIGITAL MIXER TECHNIQUES

ADVANTAGES OF DIGITAL MIXERS

- Scenes, snapshots, and recall
  Digital consoles allow users to save and recall specific settings for different scenes or songs. This enables rapid changes between acts and ensures consistency throughout the performance.

- Built-in EQ, compression, and effects
  Digital mixers come with integrated equalization, compression, and effects like reverb and delay. These tools help shape the sound, control dynamics, and add creative effects without external hardware.

- DCAs

WHAT IS A DCA?

- **DCA** stands for **Digitally Controlled Amplifier**. On a digital audio mixer, a DCA acts as a remote control for the volume levels of multiple channels at once. Unlike traditional analog subgroups, which sum audio signals together, a DCA does not actually route or process audio. Instead, it allows you to adjust the volume of several assigned channels simultaneously—without changing their individual fader positions.

- Moving the DCA fader up or down will increase or decrease the volume of all assigned channels by the same amount, preserving the relative balance between them.

- No Audio Summing: The audio signals themselves are not combined or processed through the DCA; it simply controls their levels remotely.

KEY DIFFERENCE OF DCA FROM OTHER GROUPS

Subgroups & Mix Groups: Sum audio signals together; you can apply processing (EQ, compression) to the group.

DCAs: Do not sum audio; no processing is applied to the group—just remote level control.

DCA SPILLS

- **DCA Spill** is a feature found on many digital audio mixers that makes working with DCAs even more efficient, especially in live sound environments with lots of channels and mic channels spread out over several fader pages.

  - **Spill Function:** When you activate "DCA Spill" for a particular DCA, the mixer temporarily replaces the visible fader strips on your console with the individual channels assigned to that DCA group.

TECHNIQUES FOR MIXING – FROM SIMPLE TO MORE ADVANCED

Simplest

- Run a digital mixer the same way you would with an analog mixer. Simple, but you are missing out on the advanced features a digital mixer offers.

- Disadvantage – Most digital mixers have the mic inputs on multiple pages, so there will be a lot of flipping through pages to find the mics you need

- Assign Inputs to DCAs – Using the DCAs as Subgroups similar to Analog Mixers
  - Inputs can be assigned to DCAs which act as master faders for groups of channels. This simplifies control and allows for quick adjustments to entire groups.
  - Group main groups together – Lead Females, Lead Males, Chorus Females, Chorus Males, Pit Orchestra, Sound FX, etc.
  - Use the "Scene" feature to save which mics are muted and unmuted throughout the show – similar to a light board.
    - TIP – only save mute settings. Use the channel parameter "Safes" to only save the mute status. This will allow Volume and EQ settings to remain throughout the show.

ADVANCED – DCA MIXING

- Line by Line Mixing
  - **DCA mixing (line by line)** is a technique used in professional live theater sound where the engineer uses DCAs to control groups of microphones, and actively mixes by bringing up only the microphones of performers who are speaking or singing at any given moment.
  - This approach is essential in musical theater, where many actors wear sensitive omnidirectional microphones that can pick up unwanted ambient sound and cause phase issues if left open unnecessarily.

URINETOWN - ACT 1 FINALE

HOW DOES LINE BY LINE MIXING WORK?

Script-Driven: The mixer follows the script closely, anticipating who will speak or sing next, and only unmutes or raises the fader for that performer's mic at the right moment.

DCA Groups: Actors' mics are assigned to DCA groups (e.g., leads, ensemble, chorus). The engineer uses DCA faders to quickly control the overall level of these groups.

Active Mixing: As the show progresses, the engineer "rides" the DCA faders and individual mics, ensuring only the necessary mics are open for each line or song.

Scene Changes: Many digital mixers allow programming scenes or snapshots, so DCA assignments and levels can change automatically for each scene, matching who is on stage.

REAL WORLD INSIGHTS

- This method is standard for Broadway and professional musical theater, where precision and clarity are critical.
- Goal is to reduce the noise floor and maximize “Gain Before Feedback”
- The approach is different from band mixing, where most mics are left open throughout the performance

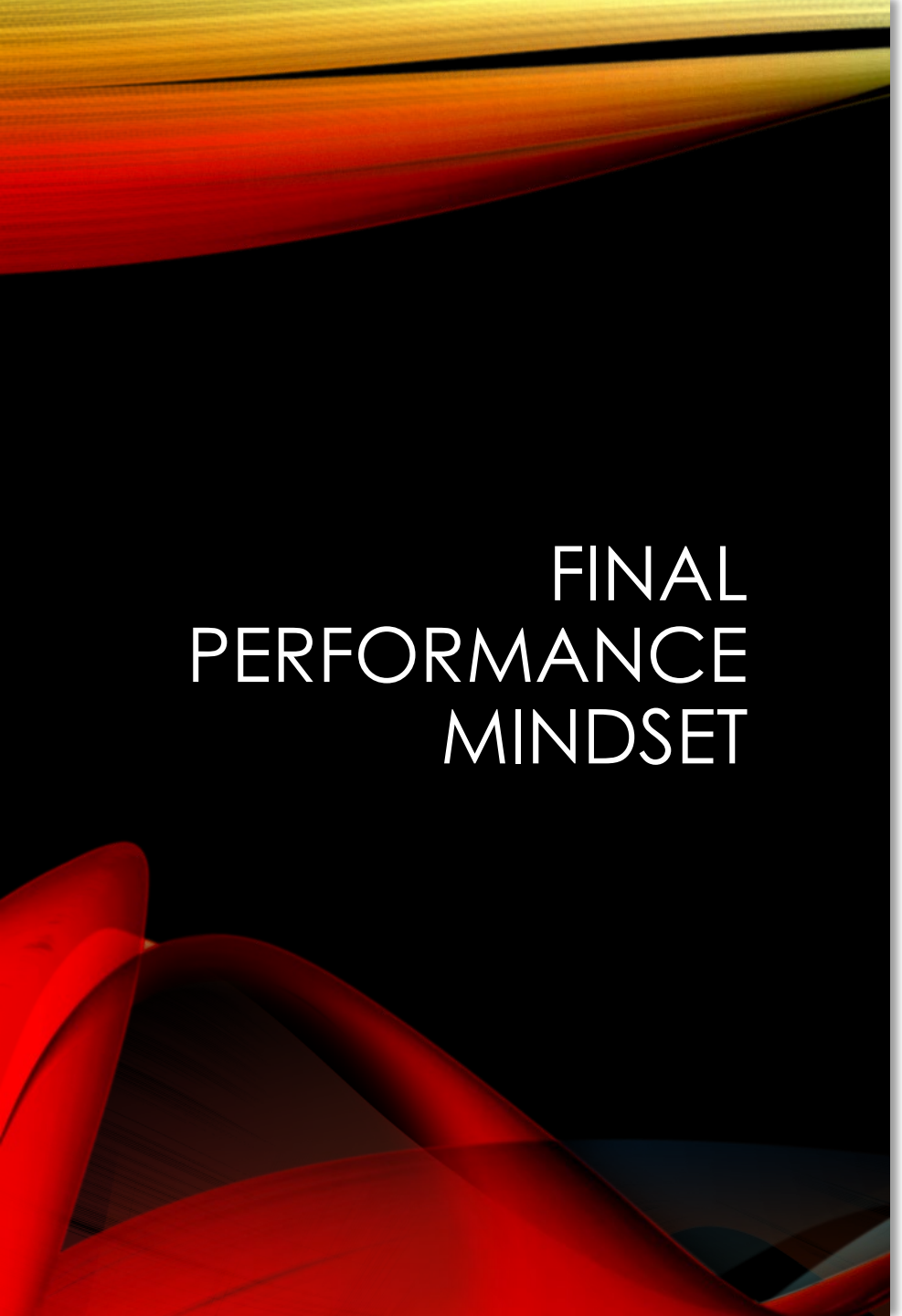
SOFTWARE

Engineers often use specialized software (like TheatreMix) to automate DCA programming for each scene.

Larger, more expensive Digital Mixers have this software built-in

The Snow Queen - basic, no positions

Cue	Text	DCA 1	DCA 2	DCA 3	DCA 4	DCA 5	DCA 6	DCA 7
0	*Line Checks*							
1	Scene 1	Jack	Fairy	Black Ice				
2	I'll Be There For You	Fairy	Kai	Gerda	Snow Queen	Black Ice	Male	Female
3	Scene 2 / Love Is Easy / Brave	Granny	Kai	Gerda	Fairy	Jack		
4	Scene 3 / Bad Romance	Snow Queen	Kai	Michelle		Booth	Male	Female
5	Scene 3b / Scene 4	Snow Queen	Kai	Hammer	Tongs	Black Ice	Troll	Granny
6	Eye Of The Tiger					Booth	Male	Female
7	Scene 4b	Jack	Gerda	Troll				
8	Scene 5 / Titanium	Jack	Gerda	Crowman	Granny	Booth	Male	Female
9	Scene 6	Hammer	Tongs	Jack	Gerda	Troll	Granny	
10	You Will Be Found	Kai	Gerda	Granny	Jack		Male	Female
11	You Will Be Found 2	Nicole	Daniel	Anna	Troll		Male	Female
12	*Interval*							
13	Cold As Ice	Kai	Snow Queen				Male	Female



- Staying alert and proactive
- Anticipating mic cues with the script
- Using reverb/delay for spatial effects without muddying vocals
- Communication with stage management
- Troubleshooting on the fly (mic failures, pops, interference)

LINKS:

- Copies of the PowerPoint Presentations
- Basic Sound Guides
- Links to Helpful Web Sites