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Sound Concepts: the Basics Theory of How Sounds Works

In theory, sound is an easy beast to tackle. You bring sound in from a source, called the input, you redirect it through the board, and you send it out to a speaker, the output. Theatre sound could be as simple as a telephone, but along the way people have decided they wanted more flexibility in their ability to bring in sound from a larger variety of inputs and to send it out to a larger variety of outputs. As such, the modern theatre sound board looks like a terrifying sci-fi torture device. In truth, it is more akin to a water pipe system, and as a sound operator, all you are required to do is ensure the flow of sound from the proper source to the proper destination. See, it’s not that bad. Really.

Even if you’re still scared, keep reading. It’s time we introduced you to the k3 Theatre soundboard itself. Don’t worry, it doesn’t bite. You’re going to cover the basic identifications that you will need to run the basic sound operations, which account for well over 90% of all sound operations used by our theatre department. First, notice that despite the multitude of knobs, buttons, and faders, the majority of the board is actually just a lot of repetition. A sound board is composed of many vertical strips, called Channels, which when placed side by side create the illusion of incredible complexity, when in fact if you look at each channel individually, it’s not so bad. In fact, our sound board, which has essentially 38 channels, has only 5 different types of channels. Some of these channels control Input, which is a device which creates sound, while other channels control Output, which are devices which take sound from being electric, to physical. Sounds fancy, but it just means that an Output device is some type of Speaker. Some channels operate in Stereo, meaning the left and right sounds, or signals, work independently, while other channels are Mono, which means the left and right signal is combined on one channel.

Here is a diagram of our actual sound board. Notice the 5 different types of channels and their color coding.
**Stereo Input Channel (White Fader)**

1. **Cut Button** - The first thing to always check before attempting to send a signal. If the red light is on, no matter what you do, the channel will not send any sound anywhere. Many operators feel more comfortable having every channel with the lights engaged, and therefore “cut” except those they are intending to use. Other operators don’t care. In any event, if the light is on, the sound is off. Think of the Matrix. Remember the Woman in Red? She couldn’t talk. It’s like that. If it’s red there is no sound. Admittedly, it does look awfully pretty.

2. **Fader** - The primary volume level control for the channel. This determines the volume at which the signal is being sent from the source. Best sound will be achieved by keeping this near the 0 dB mark, and adjusting output volume on the output channel, though some adjustment on this channel should also be expected.

3. **LED Level Display** - These lights inform the operator of the level of sound on the channel. The lights along the bottom are green, then yellow, then red. Following in the great tradition, green is good, yellow is caution, and Red is Bad. If a signal hits the red, the channel is “clipped,” meaning that it will effectively not send any additional sound above that level. So basically, it sounds Horrible if it clips. Use the fader to adjust the channel level. Do not actively try to adjust this as signal comes in, just get it set to a good level that won’t clip, and let it sit.

4. **Basic Sends** - Once you have an input channel, you now must send it somewhere, or else really, what’s the point. When pressed down, or engaged, these buttons automatically send the channel’s signal to another channel, such as the main MIX, the main MONO, or any of the Groups channels, 1–8. Note that these channels are designed for stereo input, meaning that one full channel would be devoted to the right input while another channel would be devoted to the left channel. They are not required to be used in this manner, but if they are, engage one channel to only one group button (ex: engage 1) and its partner channel to the other corresponding group (ex: engage 2). If the channel is being used for a mono source, send the one channel to both group channels (ex: engage 1 and 2). When signal is sent to the main house speakers, engage both the MIX and MONO buttons.

5. **Pan** - As mentioned earlier, these channels are designed for stereo inputs, meaning that one channel would be devoted to the right signal, while an entirely different channel would handle the left signal. If the channel is being used for a stereo source, roll the pan either to the right or left to determine which signal it will cover. When finished, the two stereo channels should be “panned” to different sides (ex: ch.1—left, ch.2—right). If you are using a mono input on this type of channel, leave the pan set in the middle, so that it distributes the signal evenly to left and right.

6. **Aux. Sends** - In addition to the basic sends which divert signal to either the groups or the main MIX and MONO, there are 8 additional output sources where you can directly send the signal. These sources are speakers scattered throughout the Stieren Theater (see ch. 4 for location of Aux. Speaker locations). These outputs are most often used for directed sound effects, or to provide additional sound either off-stage for the cast, or to enhance the audio quality of sound in the house.

7. **SENS** - For the most part, you shouldn’t need to be concerned with Sensitivity. This is a way to either boost or lower signal before it gets to your fader. Unless there is a special use, leave it set to 0 and all will be well in the world.

8. **EQ** - Other good knobs not to touch. Just leave this off and unaltered, and everything will balance.
Mono Input Channel (Blue Fader)

1 Cut Button - The first thing to always check before attempting to send a signal. If the red light is on, no matter what you do, the channel will not send any sound anywhere. Many operators feel more comfortable having every channel with the lights engaged, and therefore “cut” except those they are intending to use. Other operators don’t care. In any event, if the light is on, the sound is off. Think of the Matrix. Remember the Woman in Red? She couldn’t talk. It’s like that. If it’s red there is no sound. Admittedly, it does look awfully pretty.

2 Fader - The primary volume level control for the channel. This determines the volume at which the signal is being sent from the source. Best sound will be achieved by keeping this near the 0 dB mark, and adjusting output volume on the output channel, though some adjustment on this channel should also be expected.

3 LED Level Display - These lights inform the operator of the level of sound on the channel. The lights along the bottom are green, then yellow, then red. Following in the great tradition, green is good, yellow is caution, and Red is Bad. If a signal hits the red, the channel is “clipped,” meaning that it will effectively not send any additional sound above that level. So basically, it sounds Horrible if it clips. Use the fader to adjust the channel level. Do not actively try to adjust this as signal comes in, just get it set to a good level that won’t clip before the show, and let it sit.

4 Basic Sends - Once you have an input channel, you now must send it somewhere, or else really, what’s the point. When pressed down, or engaged, these buttons automatically send the channel’s signal to another channel, such as the main MIX, the main MONO, or any of the Groups channels, 1–8. Note that these channels are designed for mono input, meaning that when you send sound from this channel, it will automatically be evenly distributed to both group channels, effectively making it a mono signal. When signal is sent to the main house speakers, engage both the MIX and MONO buttons.

5 Pan - These channels are designed for mono signal, meaning that the channels do not differentiate between left and right signal, so any “panning” of this source will send the entire mono signal to either the left or right output, and will send no signal whatsoever to the other output. This should only be done to accomplish a specific effect. For normal operations, leave the pan set in the middle, so that it distributes the signal evenly left and right.

6 Aux. Sends - In addition to the basic sends which divert signal to either the groups or the main MIX and MONO, there are 8 additional output sources where you can directly send the signal. These sources are speakers scattered throughout the Steieren Theater (see ch. 3 for location of Aux. Speaker locations). These outputs are most often used for directed sound effects, or to provide additional sound either off-stage for the cast, or to enhance the audio quality of sound in the house.

7 SENS - For the most part, you shouldn’t need to be concerned with Gain. This is a way to either boost or lower signal before it gets to your fader. Unless there is a special use, leave it set to 0 and all will be well in the world.

8 EQ - Other good knobs not to touch. Just leave this off and unaltered, and everything will balance.
1 Fader - The primary volume level control for the channel. This determines the volume at which the signal is being sent to the main House Speaker cluster. This is the master volume control for all sound that is played over the main house speakers. For our department, the vast majority of our sound operations will involve this channel for house playback. To reiterate, while many other sound operations are important insofar as they make the show run smoother, this channel is what the audience will hear, and therefore is the most important aspect of the production's sound. Never neglect this channel, it is the real reason you are sitting in that dark booth in the first place.

2 Fader Mode - This is a special feature of the House Output channel. Remember how you were instructed to send all house signals by engaging Both MIX and MONO? This is why. When the tiny Fader Mode button is not engaged (therefore sticking up, and you can see blue in that tiny hole), the Faders (see above) control the left and right signal, and can be used in Stereo, while the lower bass signal associated with the subwoofer will be distributed equally to the left and right speakers. Often in theatre, it is beneficial to be able to control the subwoofer separately, so the standard setup is with the Fader Mode button engaged, or down. This means that the left-most fader, designated L / R controls the combined volumes of the Left and Right channels, while the right-most fader controls the deep MONO level. To change modes, you will need a pen or very small metal rod.

3 LED Level Display - These lights inform the operator of the level of sound on the channel. The lights along the bottom are green, then yellow, then red. Following in the great tradition, green is good, yellow is caution, and Red is Bad. If a signal hits the red, the channel is “clipped,” meaning that it will effectively not send any additional sound above that level. So basically, it sounds Horrible. Use the fader to adjust the channel level. Do not actively try to adjust this as signal comes in, just get it set to a good level that won’t clip before the show, and let it sit. Note that there are LED displays for the Left, Right, and Mono channels. Adjust accordingly.

4 Phones - Though not often used because of the booth’s playback ability, if the sound operator wishes, they may listen to the main mix via headphones. Plug the headphones into the 1/4” jack and raise the volume using the dial. The other buttons can allow the operator to listen to channels other than the main mix, but for our purposes, there is no advantage to doing so.

5 Master Aux. Levels - As mentioned earlier, the Auxiliary sends are additional outputs which the input channels can be directly routed to. The individual input channels have aux. Volume dials which function as the faders for the aux. Channels, and in such a system, think of these as the output faders. These dials are the master output levels for the aux. Channels, and under most circumstances should be left essentially where they are, though some manipulation is permissible if the individual channel aux. Sends are incapable of delivering enough volume to the desired output device.
1 **Cut Button** - The first thing to always check before attempting to send a signal. If the light is on, the sound is off, no question about it.

2 **Fader** - The primary volume level control for the channel. This determines the volume at which the signal is being sent through the group. Group channels are not usually output channels, but operate more as "middlemen." An input signal is sent to the group, and the group then sends it to a different output channel. As such, this fader is just one more opportunity for the sound operator to manipulate the signal level. Best sound will be achieved by keeping this near the 0 dB mark, and adjusting output volume on the output channel, though some adjustment on this channel should also be expected. Notice that these faders are designed to work in pairs (1-2, 3-4, 5-6, 7-8), and are able to accommodate either stereo or mono signal. See ch.3 for suggested group channel assignments.

3 **LED Level Display** - These lights inform the operator of the level of sound on the channel. The lights along the bottom are green, then yellow, then red. Following in the great tradition, green is good, yellow is caution, and Red is Bad. If a signal hits the red, the channel is “clipped,” meaning that it will effectively not send any additional sound above that level. So basically, it sounds Horrible if it clips. Use the fader to adjust the channel level. Notice also that with a LED display for both the right and left channels, the operator has the ability by using the faders to send signal to the left and right output device at different levels, even if the input source is mono. It is important to note that if a signal "clips" at any point in its routing, it will automatically sound like it is clipping, and therefore Horrible, in whatever output device emits it.

4 **Mix Send** - Group channels are primarily designed for signals which are not to be sent to the main house mix, however this crafty little board is all about options. Should you, for whatever reason, want to send a group signal to the main mix, engage the MIX buttons. The STE button determines whether this signal is sent to mix as stereo or mono. If STE is pressed down, it sends stereo, mono if STE is un-pressed. Don’t expect to use this often.
Matrix Output Channels

1 Cut Button - Same as all the others but without the light. If the cut button is down, the channel is effectively dead. In our common applications, there is little reason to use this feature. If you wish not to play signal from a matrix channel, just turn the volume dial all the way to the left, and no signal will escape the speaker’s clutches. Because there is no light, this is an easy thing to overlook, and should therefore be checked before a performance to eliminate any possible confusion during the show.

2 Channel Dial Ups - What is the Matrix? Control. The matrix is a feature of the soundboard designed to allow the sound operator an enormous amount of flexibility. Each of these 6 dials actually is a double-dial, with both a small fader dial on top, and a larger one on bottom. Despite taking up virtually the same space, these two are not in any way directly connected. Each of the 8 numbers corresponds to a Group channel (red faders). The Matrix channels are Output channels, and are hardwired into various playback devices. See below or Ch. 3 for more information about Matrix Channel ID’s. To send signal from a group channel, turn up that corresponding number on the matrix.

3 Matrix Master Volume - As with other Output channels, the Matrix channels have master volume control dials. When a matrix is not in use, this dial should be turned all the way to the left, thus negating any signal.

Note - These three components make up one full Matrix output channel. For this diagram we put the entire strip of board for clarity. In actuality, these are 4 independent Matrix channels, giving the board a grand total of 8 such channels, marked 1a-1d, and 2a-2d. See below for a map of the various Matrix output devices.

Matrix Map

<table>
<thead>
<tr>
<th>1D</th>
<th>Sound Booth (left)</th>
<th>2D</th>
<th>unassigned</th>
</tr>
</thead>
<tbody>
<tr>
<td>1C</td>
<td>Sound Booth (right)</td>
<td>2C</td>
<td>unassigned</td>
</tr>
<tr>
<td>1B</td>
<td>Clear Comm</td>
<td>2B</td>
<td>Orchestra Pit (left)</td>
</tr>
<tr>
<td>1A</td>
<td>Lobby/ Asst. Listening</td>
<td>2A</td>
<td>Orchestra Pit (right)</td>
</tr>
</tbody>
</table>
Theatre Sound for the (initially) Unprepared

This section of the manual is not designed to make you, the sound operator for the prestigious Trinity University Department of Speech and Drama, feel stupid. For whatever reasons, the majority of sound operators on Trinity’s Drama productions have little or no experience with sound equipment, much less the very advanced k3 theatre sound board. As such, this section of the handbook goes through the most common sound operations in a step-by-step manner designed such that it can be followed by anyone, regardless of prior experience, or lack thereof. Honestly, we expect anyone running sound operations to be able to exceed the limitations of this handbook, but everyone needs somewhere to start. Assuming you can make it all the way through this sound handbook, and are willing to gain the necessary experience, there is no reason anyone couldn’t be a fully qualified theatre sound technician. It only takes time, lots of black clothes, and a willingness to submerge yourself in a downward spiral of techy-ism.

Or you could just follow the directions and leave a normal human being.

It’s really up to you.

<table>
<thead>
<tr>
<th>Input Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>All the procedures listed in this chapter deal with sending signal from an input device, or Source, to an output device. It is therefore important to at least be passably familiar with the Sources available. Within the Stieren sound booth, you have the following possible signal sources:</td>
</tr>
<tr>
<td>? Overhead Mics</td>
</tr>
<tr>
<td>? Mini Disc</td>
</tr>
<tr>
<td>? Cassette 1</td>
</tr>
<tr>
<td>? Cassette 2</td>
</tr>
<tr>
<td>? A / V Computer</td>
</tr>
</tbody>
</table>

Chapter 2 - Basic Sound Operations

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Main House Playback

Purpose: To take signal from an input device and play it for the audience over the main house speakers, located in the speaker cluster above stage center. This is the most basic and most often called for theatrical sound operation.

Procedure:

1.- **Turn Power on for input device.** Most of these power switches are located on the tower to the left of the sound board. If a button is lit up, you’re probably in good shape.

2.- **Turn Power on for FX 2.** While not actually doing any fancy Effects, for basic house playback the signal will be routed through an AMP using FX2, so it must be turned on. Use the metal bracket to keep the on button compressed at all times.

3.- **Raise Fader on input channel.** You should sound check before the performance so that you know to what level you should raise the fader.

4.- **Disengage Cut Button.** If the Cut light is not on, you’re done, if it is on, press down on the Cut Button. When you release, it will disengage and the light will go off.

5.- **On the input channel, Engage MIX and MONO send buttons by pressing them down.** This sends the input signal to the main house mix.

6.- **Raise Yellow Main Mix Output faders.** This will set the volume at which the house speakers will play the signal to the house.

7.- **on the Input channel, Raise the Aux. 7 and 8 dials.** This will set the volume at which the channel will send signal to the house overhead speakers.

8.- **on the Yellow House channel, Raise the Master Aux. 7 and 8 dials.** This will set the volume at which the house overhead speakers will play the signal.

9.- **Press Play on Input Device.** This is not a function of the sound board itself, but may be accomplished either by pressing play on the input device itself, or through the use of the wired remotes sitting on the sound board.
Sound Booth Playback

Purpose: To take signal from an input device and play it for the sound booth, usually as a means to either preview sounds intended for later audience play, or to send signal from the overhead mics into the soundproof booth to help the crew hear the action on stage.

Procedure:

1. **Turn Power on for input device.** Most of these power switches are located on the tower to the left of the sound board. If a button is lit up, you’re probably in good shape.

2. **Raise Fader on input channel.** You should sound check before the performance so that you know to what level you should raise the fader.

3. **Disengage Cut Button.** If the Cut light is not on, you’re done, if it is on, press down on the Cut Button. When you release, it will disengage and the light will go off.

4. **On the input channel, Engage Group Sends 1 - 2 by pressing them down.** This sends the input signal to Group Channels 1 and 2 (red faders).

5. **Raise Red Group Mix faders 1 - 2.** This will set the volume at which the group will send the signal elsewhere.

6. **on the Matrix Channel 1D, Raise the Group 1 dial.** This will set the volume at which the left booth monitor will receive the signal.

7. **on the Matrix Channel 1C, Raise the Group 2 dial.** This will set the volume at which the right booth monitor will receive the signal.

8. **on the both Matrix Channel 1C and 1D, Raise the Matrix Master dial.** This will set the volume at which the booth monitor will play back the signal.

9. **Press Play on Input Device.** This is not a function of the sound board itself, but may be accomplished either by pressing play on the input device itself, or through the use of the wired remotes sitting on the sound board.
Lobby Playback

**Purpose:** To take signal from an input device and play it for the Lobby, usually for simple pre-show, intermission, or after-show music. Can also be used with Overhead mics in the even that the audience exceeds our capacity.

**Procedure:**

1. **Turn Power on for input device.** Most of these power switches are located on the tower to the left of the sound board. If a button is lit up, you’re probably in good shape.

2. **Turn Power on the ASM Console.** This power switch is located on the ASM console, which is located in the downstage right wing. If this console is not on, you get no sound.

3. **Raise Fader on input channel.** You should sound check before the performance so that you know to what level you should raise the fader.

4. **Disengage Cut Button.** If the Cut light is not on, you’re done, if it is on, press down on the Cut Button. When you release, it will disengage and the light will go off.

5. **On the input channel, Engage Group Sends 3 - 4 by pressing them down.** This sends the input signal to Group Channels 3 and 4 (red faders).

6. **Raise Red Group Mix faders 3 - 4.** This will set the volume at which the group will send the signal elsewhere.

7. **on the Matrix Channel 1A, Raise the Group 3 and 4 dial.** This will set the volume at which the matrix will receive the signal.

8. **on the both Matrix Channel 1A, Raise the Matrix Master dial.** This will set the volume at which the Lobby Speakers will play the signal.

9. **Press Play on Input Device.** This is not a function of the sound board itself, but may be accomplished either by pressing play on the input device itself, or through the use of the wired remotes sitting on the sound board.
VCR Recording

Purpose: To take signal from the overhead mics and mix it onto a video recording of the production. This is not designed to be a studio-quality sound recording, just a means of archiving the various Trinity productions.

Procedure:

1.- Turn Power on for VCR. Big surprise, it’s the button on the VCR labeled “Power.”

2.- Raise Fader on Overhead Mic input channel. You should sound check before the performance so that you know to what level you should raise the fader.

3.- Disengage Cut Button. If the Cut light is not on, you’re done, if it is on, press down on the Cut Button. When you release, it will disengage and the light will go off.

4.- On the input channel, Engage Group Sends 5 - 6 by pressing them down. This sends the input signal to Group Channels 5 and 6 (red faders).

5.- Raise Red Group Mix faders 5 - 6. This will set the volume at which the group will send the signal directly to the VCR. Group channels 5 and 6 are your only way to set the recording levels, so don’t let it Clip.

6.- on the VCR input channels (white), engage the Cut button by pressing down. The amber Cut light should come on. Keep these faders at zero. The LED might light up, but that’s okay, so long as it is CUT.

7.- Press Record on VCR. If you’ve ever taped Jeopardy, Buffy, or Star Trek, you know how this works.
Theatre Sound for the Brave (or Prepared)

So, you think you’re ready to run with the big kids. Play some theatric-sound Hardball. You want to be all you can be, see the world, and become an audio Army of One. Well my friend, now we shall see if you have what it takes. Unfortunately, if you’re Really looking for a challenge, you’ll either have to skip to chapter 4, light the sound board on fire, or put this handbook away, because the truth is, we’ve thought this through. You already have what it takes, and that’s a little something called the Sound Booth Handbook.

This section will deal with the more advanced, and therefore less often required, sound operations of Trinity’s Drama Department. None of these operations are as simple as those described earlier, but in truth, it’s not all that hard, especially if you set things up before hand. The true measure of a skilled sound operator is not their ability to change things around during a show, though sometimes this is necessary, but a truly wonderful operator can setup the board in advance such that a minimal amount of in-show adjustment is necessary. As such, all the following procedures should be setup and tested well before any performance, and should be double-checked before each show, whether it be opening night or closing. The odds of a mischievous Theater Fairy sneaking into the sound booth the change your settings is small, but it takes very little mischief to cause serious sound problems. Check everything. Test everything. Check again.

And when all else fails, just follow through the steps in this chapter. That’s what we’re here for.
Assisted Listening

Purpose: To play show audio in the Assisted Listening system, a radio signal transmitted in-house to the assisted listening wireless headphones. This system is designed to help those audience members with either hearing impairities or occasionally those requiring translation services. This feature may not be required at every show, but it should always be ready, as a courtesy to our audience. Before every show, ask the House Manager or the Ticket Booth if Assisted Listening is required for that show.

Procedure:

1. Raise Faders on Overhead Mic input channels. You should sound check before the show so that you know to what level you should raise the faders.

2. Turn Power on the ASM Console. This power switch is located on the ASM console, which is located in the downstage right wing. If this console is not on, you get no sound.

3. Disengage Cut Buttons. If the Cut lights are not on, you’re done, if they are on, press down on the Cut Buttons. When you release, it will disengage and the lights will go off.

4. On the Overhead Mic channels, Engage Group Sends 3 - 4 by pressing them down. This sends the input signal to Group Channels 3 and 4 (red faders).

5. Raise Red Group Mix faders 3 - 4. This will set the volume at which the group will send the signal elsewhere.

6. on the Matrix Channel 1A, Raise the Group 3 and 4 dial. This will set the volume at which the matrix will receive the signal.

Note 1 - This is virtually the exact same process as Lobby playback because, for whatever reason, at the time this handbook was printed, the Lobby Speakers were hardwired into the same Matrix channel as Assisted Listening. Because of this, as sound operator you will need to be more aware of what is going on. Before the show, at intermission, and after the show, make sure to lower the Overhead Mic faders so that stage sound is not sent into the Lobby at these times.

Note 2 - While it is technically the House Manager’s duty to distribute the Assisted Listening headphones as the audience arrives, as sound operator, it is your duty to ensure that those headphones work before they are distributed. Test each headset you intend on using before the show by transmitting signal to Assisted Listening, then take the headsets out into the house and turn each one on and listen. The headsets Will Not work in the sound booth. See Ch.4 for a diagram on the Assisted Listening’s optimum locations. If a headset doesn’t work, it probably just needs a new battery. If it still doesn’t work after getting a new battery, mark that headset in some way, and report it to the Technical Director, Tim Francis.
Orchestra Pit Playback

Purpose: To take signal from an input device, usually but not always the Overhead Mics, and play it back in the Orchestra Pit. This operation is used most often during musical productions when a conductor in the pit needs to hear the action on stage, though other uses do exist.

Procedure:

1. Install Effect Speakers in the Pit. There are Effects speakers stored on the stage right apron wing, and these will need to be setup in the Pit before the performance.

2. Turn Power on for input device, if the desired input devices are the Overhead Mics, there is no power button to press.

3. Raise Fader on input channels. You should sound check before the performance so that you know to what level you should raise the fader.

4. Disengage Cut Buttons. If the Cut lights are not on, you’re done, if they are on, press down on the Cut Buttons. When you release, they will disengage and the light will go off.

5. On the input channel, Engage Group Sends 7 - 8 by pressing them down. This sends the input signal to Group Channels 7 and 8 (red faders).

6. Raise Red Group Mix faders 7 - 8. This will set the volume at which the group will send the signal elsewhere.

7. on the Matrix Channel 2A, Raise the Group 7 dial. This will set the volume at which the left booth monitor will receive the signal.

8. on the Matrix Channel 2B, Raise the Group 8 dial. This will set the volume at which the Right booth monitor will receive the signal.

9. on the both Matrix Channel 2A and 2B, Raise the Matrix Master dial. This will set the volume at which the Orchestra Pit speakers will play the signal.

10. Press Play on Input Device. If you are using the Overhead Mics, they are live whenever you have their channel faders turned up. If you wish not to send signal, either turn the Overhead channels down, the Group 7 - 8 channels down, or the 2A and 2B Matrix Master dial down.

Note - Be certain to sound check all these levels before the show, and keep the Orchestra Pit volume low. It must be loud enough for the conductor to hear, but unless the director is creating a special sound effect, the audience should not be allowed to hear this signal. The level may need to be adjusted during the show depending on Orchestra volume and stage action.
Clear Comm Playback

Purpose: To take signal from an input device, usually the Overhead Mics, and play it over the Clear Comm system to help cast and crew follow the progress of the show.

Procedure:

1. Turn Power on for input device. If the desired input device are the Overhead Mics, the power is always on, and the mics are always live if the Cut light is not on.

2. Raise Fader on input channels. You should sound check before the performance so that you know to what level you should raise the fader.

3. Disengage Cut Buttons. If the Cut light is not on, you’re done, if it is on, press down on the Cut Button.

4. On the input channel, Engage Group Sends 3 - 4 by pressing them down. This sends the input signal to Group Channels 3 and 4 (red faders).

5. Raise Red Group Mix faders 3 - 4. This will set the volume at which the group will send the signal elsewhere.

6. on the Matrix Channel 1B, Raise the Group 3 and 4 dial. This will set the volume at which the matrix will receive the signal.

7. on the both Matrix Channel 1B, Raise the Matrix Master dial. This will set the volume at which the Clear Comm system will play the signal.

9. Press Play on Input Device. For Overhead Mics, this is not necessary.
**On-Stage Effects Speaker Playback**

**Purpose:** To take signal from an input device and play it from specially-placed on-stage effects speakers. This operation can be used either to give the off-stage cast a means of hearing show audio, or it can be used to enhance the house sound, or to play special directed sounds or sound effects.

**Procedure:**

1. **Install Effect Speakers in desired locations.** There are Effects speakers stored on the stage right apron wing, and these will need to be setup in the desired location prior to the show. Please note that speaker location and direction are important. To determine which Aux. Channel you will be using for that speaker location, see Chapter 4, or read the # on the speaker plug along the wall. This number corresponds to the Aux. #.

2. **Turn Power on for input device.** Most of these power switches are located on the tower to the left of the sound board. If a button is lit up, you’re probably in good shape.

3. **Turn Power on for FX 2.** While not actually doing any fancy Effects, for basic house playback the signal will be routed through an AMP using FX2, so it must be turned on. Use the metal bracket to keep the on button compressed at all times.

4. **Raise Fader on input channel.** You should sound check before the performance so that you know to what level you should raise the fader.

5. **Disengage Cut Button.** If the Cut light is not on, you’re done, if it is on, press down on the Cut Button. When you release, it will disengage and the light will go off.

6. **Raise the desired Aux. Channel, 1 through 6.** See Ch.4 for a complete listing and theatre map of the location for these 6 speaker outputs.

7. **Press Play on Input Device.** If the desired input devices are the Overhead Mics, they do not need to be turned on, but are on as soon as their faders are raised.
Lavalier / Mic Input to Playback

**Purpose:** To take signal from an on-stage mic, either wired or wireless (lavalier) and play it back to the desired output device. This page will demonstrate how to get mic signal to the house speakers, but mic signal can be directed virtually anywhere. For directions on sending mic signal to other outputs, follow the first 4 steps on this page, then find the desired operation elsewhere in the handbook and substitute “Mic” for “input device.”

**Procedure:**

1. **Turn Power on for input device.** If using the wired mics, which correspond to white stereo input channels 3 through 8, no power is required. If you’re using either lavalier, which corresponds to white stereo input channels 1 and 2, turn on the Lavalier power buttons on the tower console to the left of the sound board.

2. **Turn Power on for FX 2.** While not actually doing any fancy Effects, for basic house playback the signal will be routed through an AMP using FX2, so it must be turned on. Use the metal bracket to keep the on button compressed at all times.

3. **Raise Fader on input channel.** Again, these will be one of the White Stereo Input Channels (1 through 8) located on the far left of the sound board. You should sound check before the performance so that you know to what level you should raise the fader.

4. **Disengage Cut Button.** If the Cut light is not on, you’re done, if it is on, press down on the Cut Button. When you release, it will disengage and the light will go off.

5. **On the input channel, Engage MIX and MONO send buttons by pressing them down.** This sends the input signal to the main house mix.

6. **Raise Yellow Main Mix Output faders.** This will set the volume at which the house speakers will play the signal to the house.

7. **on the Input channel, Raise the Aux. 7 and 8 dials.** This will set the volume at which the house overhead speakers will play the signal.

**Note** - Mic Signal can be directed to any other output device, the sound booth speakers, the lobby speakers, the VCR, effects speakers, or any other device. However, if you direct signal to on-stage effects speakers make sure not to point those speakers at the microphone, as this will generate feedback. Feedback is Bad. This may also be a problem if a Lavalier is taken into the audience, rather than remaining on stage. If a channel feeds back, lower its fader immediately, and move the microphone to a better location.
FX Machine Playback

Purpose: To take signal from an input device, usually a microphone, though any input device would work, and send it through the FX machine and then to the house speakers for a special sound effect. Such effects are most often played through the main MIX house speakers, though they can also be played by on-stage effects speakers, or by any other output device. These directions cover playback to the house speakers, but if other playback is desired, take the first 9 steps on this page, and then find the instructions elsewhere in the handbook for routing to the desired output device.

Procedure:

1 - Turn Power on for input device. If the desired input device is a wired microphone, it will not require any power buttons.

2 - Turn Power on for FX 1. If power is not on, this will effectively kill your signal. Also, at this time make sure the desired sound effect is activated on FX1. This should be set for you well before show time, just double check it.

3 - Raise Fader on input channel. You should sound check before the performance so that you know to what level you should raise the fader.

4 - Disengage Cut Button. If the Cut light is not on, you’re done, if it is on, press down on the Cut Button. When you release, it will disengage and the light will go off.

5 - On the input channel, Engage Group buttons 7 and 8 by pressing them down. This sends the input signal to group channel 7 and 8.

6 - Raise the Group channel 7 and 8 faders. This will set the volume at which the signal is being sent to the FX machine.

7 - On the Patch Panel, there should be 2 patch cables connecting Group 7 and Group 8 to the FX1 1/4" jacks. This should all be set well before show time, but always check.

8 - Raise Fader on FX Channel (white fader with Pink Tape located above Red group channels). This will determine how loud the now-enhanced signal will be sent to its output device. You should sound check before the performance so that you know to what level you should raise the fader.

9 - Disengage FX Cut Button. Make sure the Light is Off before you begin playback. If the Light is On, the Sound is Off.

10 - On the FX channel, Engage the MIX and MONO buttons by pressing them down. This sends the enhanced-signal to the main House speakers. If you desire to send the signal elsewhere, engage the appropriate group button.
Purpose: To take signal from the computer and direct it to House playback. For directions on sending Computer signal to other outputs, follow the first ___ steps on this page, then find the desired operation elsewhere in the handbook and substitute “Computer” for “input device.”

Procedure:

1. **Turn Power on for input device.** Yes, believe it or not, the computer will not work unless it is turned on, booted up, and signed in. Your Trinity Account will serve as an adequate sign-in name, though for some special theatre requirements you may need other Drama faculty or staff members to log in.

2. **Turn Power on for FX 2.** While not actually doing any fancy Effects, for basic house playback the signal will be routed through an AMP using FX2, so it must be turned on. Use the metal bracket to keep the on button compressed at all times.

3. **Raise Fader on input channel.** The Computer uses a variety of channels for its input. For most instances, know that White Stereo Input Channel 13 and 14 serve as the stereo input which brings in sound from such programs as Winamp. For some reason, sound played on Windows Media Player comes in as a mono signal on White Input Channel 15. You should sound check before the performance so that you know to what level you should raise the fader, and which channels you will be using.

4. **Disengage Cut Button.** If the Cut light is not on, you’re done, if it is on, press down on the Cut Button. When you release, it will disengage and the light will go off.

5. **On the input channel, Engage MIX and MONO send buttons by pressing them down.** This sends the input signal to the main house mix.

6. **Raise Yellow Main Mix Output faders.** This will set the volume at which the house speakers will play the signal to the house.

7. **On the Input channel, Raise the Aux. 7 and 8 dials.** This will set the volume at which the house overhead speakers will play the signal.

**Note:** Computer signal can be directed to any other output device, most notably the sound booth speakers for personal jam time before a show, or to on-stage effects speakers for the appropriate Strike Mood Music. On the computer sound can be played through a very complicated Theatre sound software program which will not be discussed in this book, or it can be played on Winamp just as on any normal PC. Show sound should be stored on the computer hard drive, but non-show music can be played off the TUCC-network.
Chapter 4 - Concepts for Advanced Sound

The information contained within this chapter is not necessarily designed to walk you, the sound operator, through each process, but rather to provide you with the necessary information to complete processes not described elsewhere in the handbook. The K3 Theatre Sound Board is a very expensive tool, something between a 10 ft. Swiss Army knife and an Origami Swan. It can do much, and it can be incredibly flexible, but does require the proper care and know how. Practically speaking, anything you would need to do for a show which is not described earlier in this handbook will probably be taken care of by a more experienced sound technician; however this chapter is designed to prepare basic sound operators to become more advanced sound technicians. So if you really want to be the top Sound Dog at Trinity, read on. This isn’t a complete course, but it should get you started.

### Aux. Channel Listing

<table>
<thead>
<tr>
<th>Aux. #</th>
<th>Output</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Effect Speaker Output 1</td>
<td>Down stage Right</td>
</tr>
<tr>
<td>2</td>
<td>Effect Speaker Output 2</td>
<td>Down stage Right</td>
</tr>
<tr>
<td>3</td>
<td>Effect Speaker Output 3</td>
<td>Down Stage Left</td>
</tr>
<tr>
<td>4</td>
<td>Effect Speaker Output 4</td>
<td>Up stage Right</td>
</tr>
<tr>
<td>5</td>
<td>Effect Speaker Output 5</td>
<td>Up stage Right</td>
</tr>
<tr>
<td>6</td>
<td>Effect Speaker Output 6</td>
<td>Up stage Right</td>
</tr>
<tr>
<td>7</td>
<td>House Overhead Speakers 7</td>
<td>Under Balcony</td>
</tr>
<tr>
<td>8</td>
<td>House Overhead Speakers 8</td>
<td>Above Catwalk</td>
</tr>
</tbody>
</table>

### Input Channel Listing

<table>
<thead>
<tr>
<th>Ch. #</th>
<th>Dedicated Use</th>
<th>Ch. #</th>
<th>Dedicated Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Lavalier Mic 1</td>
<td>19</td>
<td>Computer Input 7</td>
</tr>
<tr>
<td>2</td>
<td>Lavalier Mic 2</td>
<td>20</td>
<td>Computer Input 8</td>
</tr>
<tr>
<td>3</td>
<td>Stage Mic 3</td>
<td>21</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Stage Mic 4</td>
<td>22</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Stage Mic 5</td>
<td>23</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Stage Mic 6</td>
<td>24</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Stage Mic 7</td>
<td>25</td>
<td>VCR Left</td>
</tr>
<tr>
<td>8</td>
<td>Stage Mic 8</td>
<td>26</td>
<td>VCR Right</td>
</tr>
<tr>
<td>9</td>
<td></td>
<td>27</td>
<td>Overhead Mic Left</td>
</tr>
<tr>
<td>10</td>
<td></td>
<td>28</td>
<td>Overhead Mic Right</td>
</tr>
<tr>
<td>11</td>
<td></td>
<td>29</td>
<td>DVD Left</td>
</tr>
<tr>
<td>12</td>
<td></td>
<td>30</td>
<td>DVD Right</td>
</tr>
<tr>
<td>13</td>
<td>Computer Input 1</td>
<td>31</td>
<td>A / V Computer Left</td>
</tr>
<tr>
<td>14</td>
<td>Computer Input 2</td>
<td>32</td>
<td>A / V Computer Right</td>
</tr>
<tr>
<td>15</td>
<td>Computer Input 3</td>
<td>33</td>
<td>CD Mono</td>
</tr>
<tr>
<td>16</td>
<td>Computer Input 4</td>
<td>34</td>
<td>DAT Mono</td>
</tr>
<tr>
<td>17</td>
<td>Computer Input 5</td>
<td>35</td>
<td>Cassette 1 &amp; 2 Mono</td>
</tr>
<tr>
<td>18</td>
<td>Computer Input 6</td>
<td>36</td>
<td>Minidisk Mono</td>
</tr>
</tbody>
</table>

### Matrix Map

| 1D | Sound Booth (left) |
| 1C | Sound Booth (right) |
| 1B | Clear Comm |
| 1A | Lobby/ Asst. Listening |
| 2D | Orchestra Pit (left) |
| 2C | Orchestra Pit (right) |

### Group Assignments

<table>
<thead>
<tr>
<th>Group #</th>
<th>Primary Use</th>
<th>Usual Inputs</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - 2</td>
<td>Sound Booth Playback</td>
<td>Overhead Mics, Sound Input for previewing (CD player)</td>
</tr>
<tr>
<td>3 - 4</td>
<td>Lobby/ Asst. Listening/ Clear Comm</td>
<td>Overhead Mics, Sound Input for intermission (CD player)</td>
</tr>
<tr>
<td>5 - 6</td>
<td>VCR Recording</td>
<td>Overhead Mics</td>
</tr>
<tr>
<td>7 - 8</td>
<td>Orchestra Pit or FX or Other</td>
<td>Overhead Mics or On-Stage Mics</td>
</tr>
</tbody>
</table>

Chapter 4 - Concepts for Advanced Sound

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Theater Layout

Key

FX - Effects Speaker Output plug
MIC - Microphone Input plug (XLR)

Approximate Range of Assisted Listening Radio Transmitters
Stereo Input Channel (White Fader)

1 Cut Button - Red = No Sound. If it is red, press it again, this will make it un-red.

2 Fader - It goes up, it goes down, it controls your level of sound, it's a Fader, Darth Fader.

3 LED Level Display - Green is good, yellow is caution, Red is Bad. If you are consistently getting the red signal, and thereby "clipping" first adjust the fader. If this is not helpful, lower your Gain, discussed below.

4 Basic Sends - When you push a button down, it glows green. I'd like to say that this is to show you the raw power surging through the soundboard from this channel to the group, but the truth is, it's just one of those cut tricks engineers come up with to impress simple minds like us.

5 Pan - Nope, not the Greek god of shepherds, this Pan determines the signal strength balance between the left and right output of the channel. If it is a stereo channel, you should have this panned to bias the desired side. If the channel is mono, keep it set "amidships."

6 Aux. Sends - A supplementation to the basic sends, these Auxiliary sends provide other direct options for output sending. Not that if you have the PRE button engaged (down), the Aux. Channel will rise and fall with the white channel fader, but if PRE is not engaged (up), the signal will continue to be played even if the channel fader is all the way down.

7 SENS - This is a way to either boost or lower signal before it gets to the fader. Under normal circumstances, this dial should be set to the Unity, or 0 mark. However, there are some instances in advanced operations when a signal needs either an additional strength boost. When this happens increase the SENSitivity, but only a very little. This dial is very powerful. To set these levels, increase the SENS dial just a little, and adjust with the fader. If this is still not enough signal, increase the dial a little more, and again, attempt to adjust with the fader.

8 EQ - Though not something which comes up often, it is occasionally necessary to set the Equalizer levels to non-standard settings for Theatre sound. These knobs determine the relative signal strength of the High Frequency (HF), High Middle Frequency (HMF), Low Middle Frequency (LMF), and Low Frequency (LF) of the incoming signal. To use the Equalizer, the EQ button must be engaged.

9 48V - When Engaged, this button sends 48 volts of Phantom Power to the input XLR cable. What is Phantom Power? Do you recall how in the original Star Wars Trilogy, the Force was just a mysterious power that everyone knew existed but no one understood? And recall how disappointing it was to learn in the Prequel Episode I that the Force was caused by Miticoreans? We're not going to ruin the mystery and majesty of Phantom Power like that. Some things need it, by pressing this button you have it, that is all. May the Phantom Power be with you.

10 RNGE - Range (RNGE), sometimes also labeled LINE, determines which input the channel will recognize. Because it is designed to be flexible, every channel has the ability to accept signal from a variety of sources, some hardwired, others externally added. If you desire to use signal from an alternate source plugged into the channel, either engage or disengage this button, depending on its usual setting. In General, assume the RNGE should be disengaged.
Mono Input Channel (Blue Fader)

1 Cut Button - Red = No Sound. If it is red, press it again, this will make it un-red.

2 Fader - It goes up, it goes down, it controls your level of sound, it's a Fader, Darth Fader.

3 LED Level Display - Green is good, yellow is caution, Red is Bad. If you are consistently getting the red signal, and thereby "clipping" first adjust the fader. If this is not helpful, lower your Gain, discussed below.

4 Basic Sends - When you push a button down, it glows green. I'd like to say that this is to show you the raw power surging through the soundboard from this channel to the group, but the truth is, it's just one of those cut tricks engineers come up with to impress simple minds like us.

5 Pan - Nope, not the Greek god of shepherds, this Pan determines the signal strength balance between the left and right output of the channel. If it is a stereo channel, you should have this panned to bias the desired side. If the channel is mono, keep it set "amidships."

6 Aux. Sends - A supplementation to the basic sends, these Auxiliary sends provide other direct options for output sending. Not that if you have the PRE button engaged (down), the Aux. Channel will rise and fall with the white channel fader, but if PRE is not engaged (up), the signal will continue to be played even if the channel fader is all the way down.

7 SENS - This is a way to either boost or lower signal before it gets to the fader. Under normal circumstances, this dial should be set to the Unity, or 0 mark. However, there are some instances in advanced operations when a signal needs either an additional strength boost. When this happens increase the SENSitivity, but only a very little. This dial is very powerful. To set these levels, increase the SENS dial just a little, and adjust with the fader. If this is still not enough signal, increase the dial a little more, and again, attempt to adjust with the fader.

8 EQ - Though not something which comes up often, it is occasionally necessary to set the Equalizer levels to non-standard settings for Theatre sound. These knobs determine the relative signal strength of the High Frequency (HF), High Middle Frequency (HMF), Low Middle Frequency (LMF), and Low Frequency (LF) of the incoming signal. To use the Equalizer, the EQ button must be engaged.

9 48V - When Engaged, this button sends 48 volts of Phantom Power to the input XLR cable. What is Phantom Power? Do you recall how in the original Star Wars Trilogy, the Force was just a mysterious power that everyone knew existed but no one understood? And recall how disappointing it was to learn in the Prequel Episode I that the Force was caused by Miticoreans? We're not going to ruin the mystery and majesty of Phantom Power like that. Some things need it, by pressing this button you have it, that is all. May the Phantom Power be with you.

10 RNGE - Range (RNGE), sometimes also labeled LINE, determines which input the channel will recognize. Because it is designed to be flexible, every channel has the ability to accept signal from a variety of sources, some hardwired, others externally added. If you desire to use signal from an alternate source plugged into the channel, either engage or disengage this button, depending on its usual setting. In General, assume the RNGE should be disengaged.
Group Mix Channel (Red Fader)

1 Cut Button - Red = No Sound. If it is red, press it again, this will make it un-red.

2 Fader - The primary volume level control for the channel. This determines the volume at which the signal is being sent through the group. Group channels are not usually output channels, but operate more as "middlemen." An input signal is sent to the group, and the group then sends it to a different output channel. As such, this fader is just one more opportunity for the sound operator to manipulate the signal level. Best sound will be achieved by keeping this near the 0 dB mark, and adjusting output volume on the output channel, though some adjustment on this channel should also be expected. Notice that these faders are designed to work in pairs (1-2, 3-4, 5-6, 7-8), and are able to accommodate either stereo or mono signal. See ch.3 for suggested group channel assignments.

3 LED Level Display - Green is good, yellow is caution, Red is Bad. If you are consistently getting the red signal, and thereby "clipping" first adjust the fader. If this is not helpful, lower your Gain, discussed below.

4 Mix Send - Group channels are primarily designed for signals which are not to be sent to the main house mix, however this crafty little board is all about options. Should you, for whatever reason, want to send a group signal to the main mix, engage the MIX buttons. The STE button determines whether this signal is sent to mix as stereo or mono. If STE is pressed down, it sends stereo, if STE is un-pressed, Mono. Don’t expect to use this often.

5 EQ B - When engaged, these knobs determine the equalization of the Right, or B Channel of a stereo group channel. Though not something which comes up often, it is occasionally necessary to set the Equalizer levels to non-standard settings for Theatre sound. These knobs determine the relative signal strength of the High Frequency (HF), High Middle Frequency (HMF), Low Middle Frequency (LMF), and Low Frequency (LF) of the incoming signal. To use the Equalizer, the EQ button must be engaged.

6 EQ A - When engaged, these knobs determine the equalization of the Left, or A Channel of a stereo group channel. Though not something which comes up often, it is occasionally necessary to set the Equalizer levels to non-standard settings for Theatre sound. These knobs determine the relative signal strength of the High Frequency (HF), High Middle Frequency (HMF), Low Middle Frequency (LMF), and Low Frequency (LF) of the incoming signal. To use the Equalizer, the EQ button must be engaged.
FX 1 Channel (White Fader w/ Pink Tape)

1 Cut Button - Red = No Sound. If it is red, press it again, this will make it un-red.

2 Fader - The primary volume level control for the channel. This determines the volume at which the signal is being sent from the FX 1 machine to the desired output device.

3 Basic Sends - Just like any normal channel, FX 1 signal can be sent to the Main MIX, MONO, or any of the subgroups, however it is important that you NOT send the FX 1 signal back to the same subgroup from which you are generating it. This may cause feedback, or potentially cause a rift in the space-time continuum, which we’re pretty sure is a bad thing.

4 Aux. Send - While this short channel only has AUX. 1 and 2 as apparent auxiliary outputs, by engaging the 3-4 button, you can change these dials to apply to AUX 3 and 4 instead, however you will still be limited to just two aux outputs at any one time.

5 Balance - Same thing as pan, this determines the relative signal between left and right. Unless a very special effect is desired, this should always be left pointing straight up, and thereby sending the left and right signals equally.

6 EQ - There is no engage button, so these dials are always “hot.” These knobs determine the relative signal strength of the High Frequency (HF), and Low Frequency (LF) of the incoming signal.

7 Width - Does this FX setting make me look fat? Nope, that’s just your signal width. If the dial is set all the way to the left, the channel output will be in Mono, if it is set pointing straight up, it will be in normal Stereo, and if the dial is set to the far right, it will be in “phase-enhanced wide stereo.” The Balance will still determine what levels the sound will be output at relative to left and right, but the actual sound quality, whether mono, stereo, or wide stereo will be determined by this dial. Trippy, huh?
**Cable Identifications**

**1/4” Cable**
Used Primarily for connecting outputs, it has no male or female end and is the sole cable which can be used directly on the patch panel.

**Effects Speaker Cable**
This locking cable is used to connect the Effect Speakers to their wall outlets. They lock in place by a simple twist, but can’t be linked like XLR can for added reach.

**XLR Cable**
Primarily used for inputs, the XLR is specifically used for mic inputs or for connecting additional channels directly to the sound board, rather than through the patch panel. On the Female, make sure to press the button to disengage, and be cautious with the male end, so as not to break, bend, or damage the three prongs. Overall, a stout piece of sound hardware.

**The Patch Panel**

The Patch panel is the Final Frontier of sound board versatility. If you’re willing to go where few have dared go before, then read on, but be warned: The Patch panel is a simple idea which may nonetheless blow your mind, and this is not a complete run down of how it works, rather an introduction to the concept with the expectation that if you intend to use the patch panel extensively, you will experiment with it further and learn a great deal more than this handbook could explain.

Every channel on the soundboard, and every device connected to the Tower is also connected to the patch panel. The Panel, we actually have 4 of them, is a short cut, a back door, or an over-ride to the normal workings of the channel or device. Using the 1/4” patch cables to connect two channels effectively hardwires them together, and will override whatever normal pathways or signals that channel should be using.

The Stieren Theater soundboard is designed to use the patch panel as little as possible, but there are instances, such as when using the FX 1 machine, recording to VCR, or any of a number of very specialized tasks when it may become either necessary, or merely convenient. One golden rule of patch panels is that you Never remove a patch cable you did not place yourself, and you Never connect and leave a patch cable in unless you’re certain it will not cause problems with other operators. Even if you know what you’re doing, the next person in the booth may need to use that channel, and may not understand that the patch panel is causing them all that grief. Do unto others, and all that.

Once you understand that you’re using the Patch cable’s the shortcut and hot-wire your way through the sound board, it gets pretty easy. The best way to learn is by trying, so connect a subgroup out channel to a specific channel, or the FX 1 in channel, and watch the results. Get it now? Good. If not, rinse and repeat.