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Lighting Production:

Key Applications, Variations, and Uses

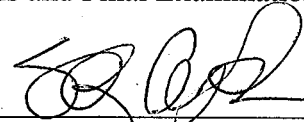
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**Lighting Production:  
Key Applications, Variations, and Uses**

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## Lighting Production:

### Key Applications, Variations, and Uses

The world of light engineering is confined to a very niche group of people. One might not know anything about what light engineering is or what it is used for. One may know about only a small segment of light engineering. Then there are those who may be experts in all branches of light engineering. There are many different uses for lighting and lighting engineers. For example, there is lighting in concert production. Lighting in concert production is both tactical and creative, requiring skill and innovation. Another use for lighting is within church production. While lighting in Church production can be controversial, it can be used to greatly benefit the church and its members. Next, there is lighting in theatre production. Theatre production is largely based on the audience's perspective. There is also lighting for studio production. This is done for news broadcasts, photo shoots, and various other production that happen within studios. Each branch of lighting is unique and has a different end goal. Each branch also requires different technology. The lights used in a large rock concert will not be the same as what is used in a small studio session. A lighting engineer must understand the task at hand. An engineer must also be able to operate all technology involved in the production to be successful. It is also important for a lighting engineer to understand color theory. Colors greatly affect lighting production and are very important, yet often overlooked.

## Lighting in Concert Production

Lighting within concert production is arguably the most exciting use for lighting. As a lighting engineer, big rock concerts are the things I look forward to most. Lighting for concert production requires an immense amount of knowledge, planning, and creativity. Key things that a lighting engineer must know to be successful include understanding stage direction: stage right, stage center, stage left, downstage, and upstage (Prack, Brad). The engineer must choose the correct fixture to cover each of these places properly. While some lights offer a soft, diffused coverage, others are bright and direct. For example, LEDs are commonly used to wash out the stage, while spotlights offer a direct, intense beam (Prack, Brad). There are many fixtures used in concert production including LEDs, Ellipsoidal Reflector Spotlights, Par Cans, Fresnels, Spotlights, Moving Lights, and Hazers (Prack, Brad).

LEDs can recreate many different color combinations very easily. They draw very little power and produce minimal heat (Prack, Brad). Ellipsoidal Reflector Spotlights are commonly referred to as Lekos. These are very popular and can be adjusted to light the stage with soft or sharp edges (Prack, Brad). Par Cans are also very common in concert lighting. They are a very simple way to light the stage (Prack, Brad). These lights can be less than ideal though, because they get very hot and one must take caution when handling them (Prack, Brad). Fresnels are similar to Lekos, but they cast a softer light (Prack, Brad). Spotlights are big, bright lights that are often placed high up and far away from the stage. During a concert, someone will manually operate the

spotlight from where it is positioned. It is the Spot Operator's job to follow the most important aspect on stage, usually the lead singer (Prack, Brad). Moving lights are much more technical to use than the previous fixtures listed. Their movement is controlled by the lighting engineer from the console. They usually offer color changing, focus controls, and motorized shutters (Prack, Brad). Lastly, Hazers are not actually lights, but they are operated by the lighting engineer and provide important visual qualities to the lights. Without haze, one can not actually see the beam of light, only where they hit the floor (Prack, Brad). For an effective light show, a hazer is necessary.

Color in concert lighting is very important as well. Some lights are capable of color mixing, while others have to cycle between colors with a colored filter. This is important when choosing our colors. It is unprofessional to show cycle of color filter during a show and can be distracting for the audience. Most lights used for concert production have seven basic colors: red, green, blue, cyan, magenta, yellow, and white (Prack, Brad). Red, green, and blue are primary additive colors (Prack, Brad). This means that one can add them to other colors to create various shades. For example, yellow is made by mixing red and green, magenta is made by mixing red and blue, cyan is made by mixing green and blue, and white is made by mixing red, green, and blue (Prack, Brad). One can also create their own color combinations by using the color mixing feature within the software.

A third aspect in concert production is the DMX controller, also known as the lighting console. DMX stands for Digital Multiplex (Prack, Brad). DMX is the



digital communication network used to control the lights on stage (Prack, Brad). The lighting console connects to the fixtures in one's DMX fixture chain, starting at the first fixture. The fixtures will be "daisy-chained" to each other, meaning they are all connected. Because of this, the signal will then flow through the chain into each individual fixture. This allows the lighting engineer to have control of each fixture individually, creating endless possibilities for the engineer to utilize when designing the show. From the lighting console, the engineer can control the intensity, color, and movement of the lights (Prack, Brad). This can be used for on the fly programming, meaning the lighting engineer programs during the concert, or for pre-programming, meaning the lighting engineer sets up the whole show prior to the actual concert.

Lastly, to produce an effective show, a lighting engineer must rely heavily on intuition and experience. The best way to be an effective lighting engineer is to practice. Watching videos and going to concerts are also great ways to advance one's skills as a lighting engineer. Watching other successful lighting engineers' shows can inspire creativity and new ideas. Artists and venues want their hired lighting engineer to create innovative lights that they have never seen before. The type of light show one creates is largely based off the genre of music the engineer is working with. Examples of various genres include rock, pop, jazz, rap, and classical music.

Rock and pop music typically consist of a huge light show with many moving parts and various colors. In rock and pop music, there are often driving beats and prominent drum hits. A lighting engineer should recognize these and

design the lights accordingly. One way a lighting engineer could do this is by timing the movement of lights to the beat or by flashing bright lights on big drum hits. Rock and pop music are often bold and loud as well. The lights should reflect that by being bold and bright. Blinders are often used in rock and pop shows to create huge flashes of light that captivate the audience. Rock and pop can also be an appropriate place to use strobing in one's design, although this should be used carefully. A strobe light is a light that flashes very quickly. Strobing can be used to create a ton of energy in the show. I often like to start off a rock or pop concert with strobing, as long as it fits the beginning song and overall style of the performance. This instantly amps up the energy in the audience and creates a great atmosphere for the rest of the show. Examples of upbeat songs include Mr. Brightside by The Killers or Raise Your Glass by P!nk. If the show one is designing lights for consists of more melodic ballads, such as Patient by Charlie Puth or Sober by Demi Lovato, the lights should reflect this with slower movement, fewer bright flashes, and quieter colors. Dropkick Murphys' live show is a great example of both bold and mellow lighting designed for a rock setting (Dropkick Murphys).

Lighting design for the jazz genre is varies greatly from that of rock and pop. The focus of a jazz performance is the music, not the show. Because of this, jazz typically involves a lot of backlighting, instead of front lighting. Intense backlighting sets the mood for the performance. By limiting front lighting and intensifying backlighting, the engineer is calling attention to the sound and music rather than the musicians on the stage. Lighting design for jazz also utilizes

powerful, saturated colors. This intensifies the mood associated with the performance and allows for a better connection with the audience. Lighting design for jazz should not be very dynamic. Successful jazz lighting engineers often set up a show with one intense color to backlight the show along with dull, soft, and warm front lighting, and very limited, if any, effects and movement. Color changes are also minimal. It is rare that the engineer will change the colors between songs of a jazz set, like one would do in a rock or pop show. Color changes will most likely take place between acts. The fixtures used in jazz lighting usually reflect this with simple fixtures and a small set up. Lekos are often used for front lighting. LEDs are usually used for backlighting. There are not typically moving lights in a jazz show. A great example of lighting design for jazz is Wynton Marsalis' tribute to Louis Armstrong (getgs). This production demonstrates intense saturated colors and soft front lighting.

Lighting design for rap is dynamic and intense. Like rock and pop, rap lighting is often flashy and bold. Lighting design for rap also pulls influence from jazz, utilizing intense, saturated colors. Typically, in rap lighting, one intense color is used per song with the possibility for an accent color. Lighting design for rap music is all about flash and excitement. Lighting design for rap has to be visually interesting and inspiring (Show Profile). It also has to be functional for lighting the musicians on stage while also accommodating those acts (Show Profile). The goal is to produce a compelling light show that draws the audience in. Lighting engineers for rap rely heavily on the feeling of the song and the atmosphere of the concert. Fixtures that are often used in lighting design for rap

include LED panels, LEDs, moving lights, blinders, and Lekos (Show Profile). Kanye West shows are a great example of lighting designed for rap (Kanye West).

Classical music is often overlooked, but it is an important branch of concert production. While lighting for classical music is not flashy, it is very technical. It is crucial for all musicians to be clearly lit for the audience to see while not shining any lights directly in the eyes of the concert goers. It is also important to adapt lighting to the needs of the musicians so they can see the director and their sheet music clearly. Shadow and glare can cause issues, so the lighting engineer needs to be wary of that (Sayer, Rob). The conductor must also be clearly lit, especially when bows are taken (Sayer, Rob). It is tricky to find the right balance of brightness in the classical setting. It is also important to use the right fixture. Choosing the right fixtures will help with lighting the stage properly. When lighting the stage, one wants a neutral colored light with soft edges. It can be distracting when one can see the edges of where the light begins and ends. Lekos can help with this greatly. The position of the fixtures and the angle at which they hit the stage is as important as the fixtures one chooses, along with the focus (Sayer, Rob). Barn doors are also very important. Barn doors give direction to a beam of light. Lastly, cropping lights for classical productions is very important. One should crop the light so that it doesn't shine below the bottom ledge of the stage or too far above the head of the tallest musician on stage. The lights should also be cropped on both sides up to the very edge of the musical group. The lighting engineer for the Chicago

Symphony Orchestra demonstrates well designed classical lighting (Beethoven 9).

In lighting design for concert production, the ultimate goal is to compliment the music and enhance the overall experience. Lighting can help the audience understand the message of the music. In concert production, lighting should also help to communicate the feeling of the music to the audience. Lastly, lighting can greatly enhance the energy in the venue. David Henry summarized lighting for concert production well when he said, "Great band lighting draws you in close, building an intimate connection...then blows you away...to match the band's energy on stage," (Henry, David). The goal of lighting is to enhance the experience of a concert production.

## Lighting in Church Production

Lighting is also used to enhance the experience of church production. Although it is considered controversial by some, there are many advantages to using lighting production in churches. One of those benefits is enhanced emotion. Lighting in church production should be used to enhance the church goer's experience. A lighting engineer has the ability to deepen the feelings of the congregation. Color can be used to reflect the mood of the sermon. Varying levels of light intensity can also reflect the mood, along with the energy, or the sermon. Essentially, lighting can be used to emphasize the feelings one is meant to have during the church service. This allows God's word to be heard more clearly for some church goers. A lighting engineer's responsibility within the church is to create an environment that allows church goers to more easily embrace, receive, and understand the Gospel and God's words.

Lighting can also be used to modernize a church. This should be done carefully though. A church's demographic will largely indicate whether or not lighting is appropriate within that specific church. Progressive churches often have more lighting fixtures than conservative churches. One is also more likely to find lighting in churches that focus on music and worship teams. In parallel, one will find less modern lighting in churches that focus on the message given during a sermon.

When deciding if lighting is appropriate for a church, it is crucial to keep in mind how adding technology to the service will impact the church's members. Each church has a different style (Kumorek, Jim). If the congregation is older or

more conservative, lighting fixtures and light shows may make them uncomfortable. The lighting designs might also be distracting. In the case of a church that would not benefit from lighting, avoiding lighting technology would be a better choice. Sometimes, integrating lighting can be beneficial, but may need to be done slowly so as to avoid making members uncomfortable. If this is the case, it is important to add technology slowly and with as little disruption as possible. For example, adding simple mood lighting and color to a service would be an appropriate first step. Adding moving lights, strange gobos, and flashing blinders as a first step would be disruptive and unacceptable. The goal is to create as little friction as possible when integrating new technology.

If one is dealing with a younger, more progressive congregation, integrating lighting technology can be much easier (Cruz, Joseph). In congregations such as these, new technology is often welcomed with open arms and excitement. For the younger generation, it is exciting to see the church become more relatable (Cruz, Joseph). When dealing with this type of situation, it is important to integrate lighting in a way that is not distracting. The main focus of a service should always be God and His word. When dealing with a younger congregation, the lights can steal the show. It is the responsibility of the lighting engineer to create a light show that simply enhances the service and does not distract from the teachings.

Lighting adds excitement and interest to a church service (Bowler, Kate). In doing so, the message is often better received. An exciting and interesting service may also draw in new members, adding to a church's reach. The more

people that can be drawn into a sermon, the more impact a church can have. Lighting design can add a contemporary element to a church (Bowler, Kate). Lighting design is able to bond the congregation with the worship, creating a unique experience (Bowler, Kate). People are drawn to the connections they feel at church and lighting aids in strengthening those connections. Lighting technology can essentially aid in the prosperity of the church (Bowler, Kate).

While there are many benefits to lighting production within the church, precautions should be taken by the lighting designers. It is important that one programs lighting so as to not take away from the meaning of church. Overproduction should be avoided. Lighting designers should present just enough production to emphasize worship and emotions, not the music and performance. Music and performance can easily become the forefront of a church service, but this should be avoided (Cruz, Joseph). In order to do this successfully, the lighting designer should pay attention to the congregation and how they are receiving the service as a whole. Knowing the music is also a helpful tool, allowing one to use meaningful designs. Mastering the process of designing lighting for various churches takes intuition, patience, and plenty of practice. How to properly use lighting within one's specific church setting changes with every situation. The following are examples of churches with differing levels of production and technology that can help one to navigate lighting design within various churches.

The Crossing Church started in 1989 in a living room as Windsor Crossing Community Church. Their goal was to "create a place where people could



explore the truth of Scripture, experience the grace of Jesus, and express love to others in extravagant ways,” (AboutUs). Today, The Crossing reaches people across the world with 4 campuses and online live-streaming access. They also have outreach programs in various other countries. The crossing is a progressive, contemporary, mega church with a congregation of all ages, backgrounds, and denominations. Thousands of people experience the Gospel through the crossing every week. At the Crossing in Chesterfield, MO, lighting production is a large part of the service. The Crossing employs a head lighting designer, along with multiple lighting technicians. Lighting designers at The Crossing create designs that complement the worship teams and the music played each week. The Crossing also uses outside production for larger events, like their Baptism. At the crossing, one will find highly produced services, many different lighting fixtures, advanced lighting technology, and an exciting and interesting service.

Greenville University Chapel and Vespers in Greenville, Illinois, is also a place where people can come to explore the truths of Scripture. “Greenville University Chapel helps to unite and spiritually strengthen the Greenville University community through Christian programming. We seek to help equip students to live out their Christian faith in all settings and circumstances of life, strengthen community ties, allow persons the opportunity to respond to the Gospel of Jesus Christ through confession of sin and profession of faith, and integrate important social, moral, intellectual, and political issues in a Christian faith and learning context,” (Chapel). Technology at Greenville University Chapel

and Vespers is important because the demographic is largely young adult college students. Lighting design within chapel and vespers helps to keep students engaged and focused during services. It also creates a more comfortable environment for people who are used to being around an abundance of technology.

Victory Church in Pevely, MO was founded in 1983 as the merger of two churches. Victory Church has about 85 members. This small church has a mixed demographic of old and young congregation members. The leaders of Victory Church wanted to integrate lighting technology into their services, but they found resistance in their older members. A solution for Victory Church was to create two separate services. An early morning sermon now services the older generation, while a more contemporary sermon later in the day services their younger generation. Having solved the issue of varying demographics, they now face inexperienced lighting designers. Inexperienced lighting designers often create more distracting light shows that do not complement the worship and sermon. In order to resolve this issue, Victory Church employs the help of a local production company to train their novice lighting designers. In time, Victory Church will develop into a successful lighting technology integration example.

Leet Memorial United Methodist Church in Bradford, Illinois is my home church. With a congregation of 31 people on an average Sunday, Leet Memorial is one of the smallest churches one can visit. Leet Memorial utilizes zero lighting technology in their services. There is also no desire to add lighting technology. With the older demographic outnumbering the younger demographic by many,

adding lighting technology could ruin this traditional church's service for many of its members. It would be considered distracting and inappropriate. While not everyone would agree with this point of view, it is crucial to keep each church in mind. Each church is unique and has its own distinct environment that creates a comfortable and safe place for its congregation. The complex task of navigating each specific church is a crucial first step in successfully integrating lighting into churches.

## Lighting in Studio Production

Lighting for studio production is much more straight forward than lighting for church production. There are 3 variations of studio production that most commonly require lighting: photography, videography, and television production. The final goal in all three is to create an effective lighting design for each individual project in order to produce optimal outcomes.

Studio lighting production for photography requires that the lighting designer fulfill the photographer's needs. Having complete control over lighting offers the photographer control over the final image (Clayton, Greg). The lighting designer should take into consideration what light is already available in the room. For example, the sun, ambient light, and firelight could all be present on set and should be considered when planning for the overall effect of the lighting. (Clayton, Greg). The photographer will have a final product in mind and will have more knowledge about varied exposure tactics. Because of this, the lighting designer should rely on the photographer for direction (Clayton, Greg). Some lights that may be used include strobes, reflectors, diffusers, and colored lighting. If one is using strobes, it is important to sync the strobe with the camera being used. One can do this through a radio transmitter or through a flash tether cord (Clayton, Greg). Arranging the lights for a photography session can be difficult, so one should take their time and be very specific. Odd shadows or glare can ruin the final product. Lights can be arranged in any orientation to the subject, as long as it complements the photographer's goals for the session. There are three rules to remember when designing lighting for studio photography (Clayton,

Greg). The first is that light travels in straight paths. Next, illumination diminishes with distance, meaning the farther the light is from the subject, the dimmer it will appear. Lastly, the larger the light source, the softer the light quality (Clayton, Greg). This is due to the greater surface area of the bulb which allows the light to diffuse. Overall, the possibilities when lighting a photography session are endless. Communication with the photographer and creativity are crucial.

Lighting for studio videography shares a few key similarities and differences from lighting for studio photography. One may find that the positioning of lights is similar in photography and videography. One may also notice that some of the same fixtures are used. The goals of both photography lighting and videography lighting are also similar. In videography, it is important to keep the director's goals in mind. The project may require creative, innovative lighting or it may require simple, straight forward lighting. Keep in mind that cameras don't always register light the same way that a person's eyes can. Videography sets often need to be over lit to create a natural looking scene that reflects what the viewer would see in real life (Basic Cinematography). It is the job of the lighting designer to speak with the director and decipher what needs should be met. Communication is a key strength for lighting designers to master.

Once one has communicated design plans with the director, the lighting designer can choose what fixtures to use and what orientation to place them in. The lighting designer may choose a unique orientation set up, or one may choose from the 12 basic videography lighting techniques. The 12 techniques are key lighting, fill lighting, back lighting, side lighting, practical light, hard lighting,

soft lighting, bounce lighting, high key, low key, motivated lighting, and ambient lighting (Basic Cinematography). It is important to keep in mind that these techniques are not always straight forward. Many times, a lighting set up will reflect multiple techniques (Basic Cinematography). The overall project and achieving cinematic goals should one's main focus. Without successful lighting, the film will lack visual compulsion.

Lighting design for television production also requires the creation of visual compulsion for viewers. Few productions tools have more impact on the outcome of a broadcast than the lighting design. Lighting has the ability to enhance the mood, focus attention, and enable the audience to have a clear view of what the director wants them to see (TV Studio Lighting). Lighting also affects and controls the quality, color temperature, and intensity of the broadcast image (TV Studio Lighting). To create a positive impact, the right tools must be utilized. While broadcast production lighting isn't as bright as lights used in concert or church settings, they are of exceptional quality. Some common fixtures include quartz lamps, Fresnel lenses, and LED lights (TV Studio Lighting). Quartz lamps have been in the industry for quite a long time. While they produce high quality light, they also generate a lot of heat and use a lot of electricity. LED lights can be a solution to this issue. They produce high quality, bright light while utilizing much less energy and producing little to no heat (TV Studio Lighting). Fresnel lenses are often used to focus beams of light on stage (TV Studio Lighting). A Fresnel lens has the ability to focus a small amount of light into a bright, focused

spotlight. These can be used to push a viewer's attention to a certain spot on set.

Along with the proper tools and fixtures, it is important to use the lights correctly. One very important step, like in photography and videography, is diffusion. Diffusing the light allows one to eliminate harsh shadows and diminish light that would otherwise be overpowering (TV Studio Lighting). Diffusion can be done very easily. A common method is to cut gel pieces that will fit the shape of the light. Next, one simply mounts the gel in front of the light. The gel will filter the light creating the diffusion one needs. Lights can sometimes still be too bright, even with diffusion. A lighting meter is a helpful tool that can be utilized to ensure one does not overwhelm the cameras with too much light (TV Studio Lighting). One last thing to note is that the background lights should be dimmer than the foreground lights. This allows the lighting engineer to highlight the subjects, making them stand out from the rest of the set. Making subjects stand out is also very important in theatrical lighting.

## Lighting in Theatre Production

Theatre production is very different from concert and church production and dates back to Shakespearean times (French, David). In order to be successful at lighting design for the theatre, one must know the play or musical one is working with (French, David). It is important to go to rehearsals and practice with the cast. One also must know the equipment (French, David). Each theatre tends to have different equipment and being familiar with that equipment is key. In theatre lighting, color not only lights the actors, it sets the mood for the scene. Using colored lights can help connect the audience to the characters or even foreshadow future events (French, David). Warm colors, like red, orange, and yellow, portray energy. Red is especially associated with love and anger. Cool colors, like green, blue, and purple, are calm and subdued. Blue is associated with sadness (French, David).

While colors add mood to the stage, using gobos and patterns can add extra dimension. A gobo is a cut-out shape that is placed in front of the light to project a pattern or image. This can draw attention to certain parts of the set. It also creates abstract scenery. Movement can also be added to the theatrical production, although this isn't very common in most shows. Things like moving clouds, rain, snow, and stars can all be added by the lighting engineer (French, David). This helps the audience feel like they are actually in the play, instead of just watching. Hazers can also be used in theatre lighting, adding a gloomy or creepy effect to the stage.



Theatre lighting is not always scripted (French, David). If possible, one should include lighting cues in the script or write them down. Forgetting to cue a light change in a theatrical production can be a very big mistake. Some theatrical productions can be done with interpretation, although only confident lighting engineers should attempt this. Lighting engineers who have been successful with theatre lighting include Kenneth Posner, Brian Sidney Bembridge, and Richard Winkler. Studying their works can increase confidence and lead to more successful light shows. Overall, the main goal of theatre lighting engineer is to light the characters on stage so the audience can enjoy the show and enhance the audience's experience by adding depth to the production.

## Color Theory

Color theory is an incredibly important aspect of lighting production. The colors one chooses will set the mood and the basic structure for the production. Colors effect the emotion of the viewers. Scientific studies have shown that color can have physical effects on viewers. There is even evidence that color can create long term mental effects. When choosing colors for production, the lighting engineer should consider what the ultimate goal of the production is and pick colors to demonstrate that goal. Usually, less is more when it comes to choosing colors. A good rule of thumb is to pick one or two main colors. It is acceptable to add an accent color if the one feels it is necessary. Lighting design is meant to be creative though, so picking more than two colors can be acceptable if it benefits the overall goal of the production. One should also keep in mind the type of fixtures. Some fixtures are limited in the color hues they can create. It is crucial to think about the message one wants to portray to the viewers. The color wheel is a basic tool used for choosing color. Color harmony is also a valuable concept.

The color wheel is broken down in to 3 main categories. The first category is primary colors (Kurt, Sevinc). Primary colors consist of red, yellow, and blue. These three colors cannot be created or formed by any combination of other colors. All other colors are derived from red, yellow, and blue (Kurt, Sevinc). The second category is secondary colors (Kurt, Sevinc). Secondary colors include green, orange, and purple. These colors are formed by mixing the primary colors (Kurt, Sevinc). Lastly, the third category is tertiary colors (Kurt,

Sevinc). Tertiary colors are often hues that fall in between secondary colors. Examples include yellow-orange, red-orange, -blue-purple, blue-green, and yellow-green. These are formed by mixing a primary color and a secondary color (Kurt, Sevinc). Primary, secondary, and tertiary colors are all used in lighting production.

Once one understands the different colors, one can explore color harmony. Color harmony is how the colors work together in an arrangement (Kurt, Sevinc). Color harmony helps to engage the viewers and creates a sense of completeness. When colors do not harmonize well together, it creates a sense of disarray. This can also be helpful depending on the project. When colors are in unity, it creates boredom. Finding a balance between boring and overdone is key. When colors are lackluster, the viewer will lose interest. When colors are too stimulating, the viewer will be unable to look at the lights. There are many different theories of color harmony that can help one choose the proper colors.

One theory of color harmony is analogous colors. Analogous colors are side by side on a 12-part color wheel (Kurt, Sevinc). For example, yellow-green, yellow, and yellow-orange would be considered analogous colors. Another theory of color harmony is complementary colors. Complementary colors are any two colors opposite each other on the color wheel (Kurt, Sevinc). Examples of complementary colors are red and green, blue and orange, or yellow and purple. The extreme contrast between these colors creates harmony. Next,

color scheme based on nature is a theory of color harmony (Kurt, Sevinc). When applicable to a project, finding inspiration in nature can be very beneficial.

Along with theories of color harmony, one should consider color context. Color context is the state one finds a color in. Color context influences emotions and how viewers will interpret colors (Kurt, Sevinc). One color can have multiple meanings. For example, people of China see white as sad and wear white to mourn. On the other hand, European societies see white as pure and clean (Kurt, Sevinc). In Asia, orange is a positive and life-affirming color. In the United States, orange is seen associated with traffic cones and fast food (Kurt, Sevinc). Colors can also portray moods, age, and even gender. The way people perceive color is actually a psychophysical reaction (Kurt, Sevinc). For example, red is powerful and strong. It appears closer to the eye and grabs people's attention. Red could activate a fight or flight instinct in some people. Red can be seen as lively and friendly or demanding and aggressive. Other responses to red include courage, strength, warmth, energy, defiance, and strain (Kurt, Sevinc). Yellow is thought to be a joyful color. It insights feelings of openness and friendliness. Yellow is also associated with comedy, happiness, playfulness, and hopefulness (Kurt, Sevinc). People viewing the color yellow often feel a greater sense of self-esteem and creativity (Kurt, Sevinc). An important yellow symbol is the sun. Green is thought to be a calming color. Green portrays refreshment and harmony (Kurt, Sevinc). Green can also symbolize love and peace. Because green is found abundantly in nature, it has a calming effect on people who see it. Blue tends to encourage reason and logical thought (Kurt, Sevinc). Blue is also a

soothing color. Color can have physical effects on the body as well (Morton, Jill). For example, red environments typically raise viewers blood pressure. On the other hand, blue tends to lower blood pressure. Blue is also an appetite suppressor. Eating on blue plates or consuming blue foods lead to ingesting less (Morton, Jill).

As a lighting engineer, one's main focus should be the experience of the viewer. The color plays a huge role in this. While programing, color should be one of the first things chosen. This helps to ensure it is well thought out. It helps to listen to the music, study the scene, or talk to the project creator to get a good idea of what colors to use. Sometimes, the project creators will have specific colors in mind. Other times, it will be up to the lighting engineer to pick colors. Either way, it is the lighting engineer's job to utilize color to aid in the viewers overall experience.

## Outpour: A Thesis Project to Demonstrate Lighting Production for the Church and Concert Setting

Outpour was a worship set put together by students at Greenville University. The goal of the project was to unite the campus and the surrounding community in worship through music, prayer, and communion. The entire production was done by students, including instrumentation, singing, audio production, visual production, and lighting production. I was responsible for the lighting production for Outpour. Songs performed included cover songs and original songs created by the worship leaders. 17 songs were played during Outpour. A list of songs can be found on page 32.

When I was asked to create the lighting for Outpour, my first step was to plan the lighting plot. I decided that I would use 6 Mac Viper Profile lights. These 6 lights were placed on 6 pieces of 8-foot truss to create a tower. The 6 towers were then positioned around the back of the stage in a half circle shape. I chose Mac Viper Profile lights because they have a strong beam that can be seen easily from anywhere in the room. They also have color mixing ability. Color mixing gave me more options for color. This was beneficial because I had so many songs to program. I also decided to use these lights because they have many different gobos. The color mixing and gobo options gave me the ability to add something unique to every song. I chose to use 8-foot-tall truss because I wanted the lights to be above the musicians' heads. This made it easier for the audience to focus on the musicians. It also allowed me to create beams of light with no interruption which is more visually pleasing to the audience.

For side lighting, I chose to use 4 Chauvet Intimidator Spot LED 350's, 2 on each side of the stage. The Chauvet Intimidator Spot LED 350's were placed on the ground. These lights are good for ground placement because they are small and do not take up much stage space. This was important for Outpour because there were many musicians and instruments on stage. I used the Chauvet Intimidator Spot LED 350's as side fill lighting. This added interest and called attention to the musicians on stage.

Front lighting was created with Par Cans. These were mounted in the ceiling in front of the stage and above the stage in the James E. Wilson Recital Hall where Outpour was held. For most of this performance, I kept the front lighting at about 40 percent intensity. Outpour took place at 4:00 p.m., so there was still some daylight coming through the window. This reduces the amount of light needed. I also found that 40 percent intensity created a nice light on stage without washing out the performers or making them look out of place.

I used 25 Chauvet Freedom Par Quad – 4 lights around the room and on the stage. These lights are great because they are wireless and have a rechargeable battery. To connect them my lighting console, I used a Chauvet D – Fi. To connect the lights, one simply chooses the same channel for both the D – Fi and the lights. The D- Fi works as a transmitter, sending information from the board to the lights. This is very beneficial because there are no wires running between the lights, making them safer to place where the audience and musicians are walking. I place Freedom Pars around the room to create mood lighting. I kept the movement of these lights simple so they were not distracting to

the audience. Using slow waves or snaps for room lighting is a good choice. I matched the color of the Freedom Pars to the colors I put on the stage. This tied the room together and created an on-stage experience for the audience members. I also used a few of these lights on the side stages to create some side color which added interest to what the audience was seeing on stage. Lastly, I used 3 Chauvet Freedom Pars to backlight a cross that was placed at center stage.

Other lighting that was used in the set included 3 Chauvet Washes. These were used to create a color wash on the back of the stage. I also utilized a Chauvet Color Bar SMD to create a light wash of color over the heads of the musicians on stage. Lastly, I used 6 Par Cans on the back of the stage, hung almost at the ceiling, to create a wash effect. These lights are very intense and create a lot of emotion, so I used them sparingly and only when they were needed. Lastly, I used 2 Blizzard Lighting SnowBlind Strobe lights. I only used the strobe effect in 2 songs. Using too much strobe lighting can be very distracting for the audience. It could even make the audience uncomfortable and unable to look at the bright lights. It is smart to use strobe lights very sparingly. The songs I used strobe lighting in were Joy and Cover the Earth. I thought through using strobe lighting thoroughly before finally making the choice. An announcer also warned people in the audience of the use of strobes before the show began. This is helpful for anyone who might react negatively to such intense lighting.



After I decided what lights to use and where to place them, I started programming the lights. My first step was to choose the colors for each song. I chose 2 colors for each song and sometimes added white as an accent color. To choose the colors, I listened to each song multiple times. I paid close attention to how the songs made me feel. I also thought about how my color choices would affect the audience. Lastly, I wanted to make each song new and different from the last, so that also influenced my color choices. Once my colors were chosen, I chose a gobo for each song. Only using one gobo per song is a good choice because it unifies the entire song and separates it from other songs. Once I had picked the colors and the gobo, I began programming movements and intensity changes. This took a lot of time and planning. There were many times when I got stuck. When that happened, I would take a mental break or listen to the song over. It can also be helpful to start from the beginning of the song and watch the programming you have done. This can lead to inspiration for the next part you need to program.

Programming can be a very trying task. If possible, you should give yourself adequate time to program what you have in mind. Unfortunately, that isn't always the case in lighting production. I had 5 days to program these 17 songs. I also had to deal with programming in a communal space. Many rehearsals and recitals took place in the venue throughout the week, so I wasn't able to be in the space during day time hours. This meant that I had to spend many nights programming until morning. As a lighting engineer, this is something one must learn to adapt to. In fact, most production jobs will require you to work

around other events. Another issue that you might face is software issues. After I had programmed for many hours, my file was corrupted and I had to start over. This was really unfortunate, but it is something that happens in lighting design. It is important to roll with the punches and persevere. Losing your work gives you a chance to do it over and make it better the second time around. Time management, good communication, and setting goals will help you get through programming and the challenges you face. It is also important to enjoy your time programming! Programming, in my opinion, is the hardest part of lighting, but it is also the most rewarding. When you are done, you get to see the polished show and all of your hard work on stage. Keep your end goal in mind and keep programming.

Once I was finished programming, it was time for the show. I was so excited, but so nervous. All of my friends and family came to see the show. It is ok to be nervous for a big show, but it is also important to keep a cool head. Focus is critical to having a successful show. It is important to be ready for missed cues. Sometimes musicians improvise on stage. There are also times when mistakes are made and the structure of the song is changed. As the lighting engineer, it is your job to adapt to these instances. It can be challenging but it is not impossible. Practicing and getting to know your equipment is one way to cope with these challenges. Attending rehearsals before the show is another good way to predict what will happen on stage.

Overall, Outpour went very smoothly. There were a few hiccups that I had to adapt to, but I was able to do so because I was prepared and expecting them.

The lights for each song looked exactly how I wanted them to. The audience was captivated and the musicians on stage were highlighted. The emotions in the room were also enhanced. My lights functioned properly, and my software worked throughout the entire show. Outpour was not perfect, but perfection is almost impossible in the production world. Do your best to plan ahead for things like equipment failure, musician mistakes, and your own mistakes and you will have a successful show and beautiful final project.

It was so rewarding to see how the entire show came together. Everyone who was involved worked diligently to create a successful night of worship. The most rewarding part though, was seeing how my lighting affected the audience. There were many people present who had not experienced lighting design in that way. There were also many people who had never worshiped in that kind of environment before. Creating that experience for so many made all of the long hours of hard work worth it.

## Conclusion

There are many different aspects of lighting design that one should know when creating a lighting project. Lighting design for concert production, church production, studio production, and theatre production are all different and challenging in their own ways. There are also many different types of lighting fixtures that one can use to design lighting. The final goal of the project should be considered when choosing lights. Color is an incredibly important part of lighting design as well. The goal of a lighting engineer is to create a design that will emphasize the emotions being portrayed by the project. Engaging the audience and adding excitement to a production is also an important job of the lighting engineer. It is crucial to pay attention to your audience and the setting one will be designing the lights for. These factors will dictate the type of lighting designs one creates. Lighting design is challenging, but it is also rewarding. A lighting engineer must understand the task at hand and work to create designs that will accomplish the ultimate goal. It is my hope that this guide to the applications, variations, and uses of lighting design will guide you as you learn about lighting design and what it has to offer.

## Outpour Set List

- Joy - For King & Country \*
- Great Things - Phil Wickham
- Won't Stop Now - Elevation Worship
- Fall Afresh - Kari Jobe
- How Deep the Father's Love – Austin Stone Worship
- Blessed Assurance - Elevation Worship
- Trading My Sorrows - Darrell Evans
- Glorious Day - Passion
- Cover the Earth - Kari Jobe and Cody Carnes \*
- Desert Song - Hillsong Worship
- Do It Again Reprise - Elevation Worship
- New Wine - Hillsong Worship
- How Precious - Jasmine Webber
- Yes I Will - Vertical Worship
- Things Above - Austin Simmons
- O Praise the Name - Hillsong Worship
- Again I Say Rejoice - Israel Houghton
- Free as a Bird - Rend Collective

Used Strobe Light

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