Lighting Design and Pre-Visualization Software  
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Project Scope
The Advanced Lighting Technology course I took offered me the opportunity to get hands on experience with the new and rapidly advancing technology of pre-visualization. I was able to learn more about these programs and how the connect with one another while designing the lights to a song in a virtual space before actually building the set and fixtures. This was a pre-visualization software while using a computer port of a software traditionally available on a different technological media.

Lighting Technology
I used two programs to complete this project. Capture 2018 and ETCnomad. Capture is a pre-visualization software created by Capture Sweden and allows one to create a scaled down version of a set, either real or theoretical, in a virtual world to see how the area will be laid out spatially and with pieces of furniture, extrusions from the floor or ceiling, and other such objects. This is useful in the entertainment and performing arts industry because it allows designers to see the space before hand and, for lighting designers, to see how the lights will look in the space beforehand to make sure that everything is being lit properly and even see how the colored lights will affect the set and costumes, but only if you have created these textures in the Capture software. More information is available on the Capture Sweden website. ETCnomad is a computer version of the software used on the ETC lines of consoles, such as the Ion or the Gio-S, and can be used on both PC and Mac. It is a programming software that allows you to have the same amount of control over programming a show as you would with one of their conventional lighting consoles. To truly have time to replace the lighting console, however, you would need to purchase the ETCnomad Puck to actually send the light information from your ETCnomad software to the lights you are trying to control. ETCnomad on its own is a fine software used in both the educational and professional world since you are still able to write cues and have that programming capability offline. Essentially, through ETCnomad you can program but you are not able to bring that up on the show without the ETCnomad Puck. ETCnomad will also work with pre-visualization software, such as Capture Sweden. These two programs work together to let someone see their show before it is in a performance space. The programs were not created to replace any system, but only if you have created those textures in the Capture software.

Research Images

Lighting Design
There are four controllable properties of light that we can manipulate; intensity, color, direction, and movement. We can control the intensity by controlling how bright a light is. Most conventional fixtures, those that do not move or change color on their own and are placed in a completely static position, are plugged into outlet called dimmers because we are unable to be controlled by a lighting console and range from 0 to one hundred. A dimmer circuit is a coil of wires wound in a circle and electricity runs through this coil based on what the intensity is set to versus color. Color is controlled by what gel is put over the opening of lighting fixture. A gel is a thin piece of plastic that is one of a multitude of different colors across the entire spectrum of visible light and each gel has a specific transmission curve to show how transparent the gel is and what percentage of each wavelength of visible light will be seen through the gel when used on a lighting fixture that has a light at the color temperature for tungsten light (3200 Kelvin), which we see as white light or natural sunlight in the middle of the day. The less transparent gels are more saturated colors and vice versa. The gels are a form of subtractive color mixing, because they block a lot of the wavelengths of light to show only one piece of the white light. When the colored lights reach the stage, however, they can be used in additive color mixing, so if you were to point three lights, each one with gel that corresponds, with the primary colors of light (red, green, and blue), white light will be made where they all intersect. Direction can be controlled by placing a lighting instrument at whatever it needs to light, whether that be toward the stage so the actors can move through it, on specific pieces of scenery on stage, or on anything else the designer may want to do. For conventional lights hung in a static position it mainly falls under the first category of lighting the stage for the actors. Since most fixtures can be directed in any direction at any time and can move to light other things, as well. Movement has similar qualities as direction since for conventional fixtures it mainly involves two things: the actors move through the lights or the pattern put into the fixture to break up the lights being moved through, this pattern or texture is called a gobos and come in a multitude of sizes for any lighting instrument and can be made of either plastic or glass. For moving lights, however, it is a physical property of the light as opposed to a more abstract one since these lights can be moved and programmed to move with the actors.

In theatrical stage lighting, the standard lighting technique is called McCandless lighting or the McCandless method, and is named after Stanley McCandless who first proposed this setup to light the stage in his book A Method of Lighting the Stage in 1922 and the method is still greatly popular and in wide use by lighting designers to this day. It uses three lighting fixtures to light a specific area. Two fixtures are placed on either side of the stage a hundred feet back from the object being light pointing at it at forty-five degree angle, which are called angled front lights, and one light above the object to light it from the top, which is called top light. This setup method allows there to be a strong pool of light to make sure the actors are well lit and visible of the stage. Generally, the color of each light is also changed to evoke whatever mood or create any atmosphere the designer is trying to achieve. Also by using these colored lights can create the standard incandescent light emitted from the lighting fixture into a soft blue for a subtle hint of color ranging all the way to a deeply saturated color for anything ambiguous and seemingly hard to define in the world.

For McCandless lighting the standard mix of colors is to have one of the two angled front lights be a warmer color, which would be a red, amber, or yellow hue, and the other to be a cooler color, such as a green, blue, or any commonly a blue hue. For the top light it is either a desaturated color or it is left as no color, which means to not put any gels or light the lighting instrument so it retains the standard incandescent tungsten. For other types of performances, such as dance for example, the lighting methods change and can include spot lighting, where the performer is not from the front as in McCandless but their sides. This is because seeing the silhouette and movements of the dancer are considered more important than seeing their face, as in acting, since they are not speaking.

The song I chose to design was “Let it Rain” by Gray Racing. To start my design process, I listened to the song once again using the same computer and my brain. I then listened to the song for an analytical sense where I was pinpointing moments where the lighting should change or what color would best portray the mood at a particular moment. I could not get all the information I needed by listening to the song just two times, so I repeated it multiple times until I was content with what I had planned. All of these notes and ideas were written in a small notebook and had the timescode for the specific moment in the song written out next to them. I used these notes to make more efficient work of my time with the software. During this time I was also listening to the song on repeat so I could accurately time out the changes form look to look and I could watch a section of the song after I programmed it.

For specific lighting techniques, I used a combination of dance and the traditional theatre because of how the virtual stage was up in the Capture file, so I was able to use a few convention fixtures for lighting the models of band and actors. These were mainly the intelligent moving fixtures and LED fixtures. Using these fixtures, I tried to evoke one of the underlying themes of moving past loss with hope for a new day within the song, so I emphasized mainly on the colors most closely associated with rain, shades of blue and greens, and to evoke the cleansing force of rain in this song and explore the duality of the meaning of these colors; as they can symbolize sadness and remembrance yet hope and joy at the same time. To avoid an overabundance of these colors, I used a few shades of magenta and red to break up the constancy of the rain colors to make the impact of lines such as “IT wear your blood like warpaint” more powerful. Some of the virtual instruments had metal discs called gobos in them which create a pattern on whatever surface the light is pointed at. I placed these mainly in the main moments to create a visual texture on stage to reduce the flatness of the constant light. The gobos used were a horizontal zebra stripe pattern, so using these emulated the underlying theme of water being a cleansing force, in but in conjunction with the red LED lights they are in lieu back to the “wear your blood like warpaint” line to show that this cleansing force is more deliberate and focused than the average rain.