Lighting Design and Pre-Visualization Software

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Project Scope

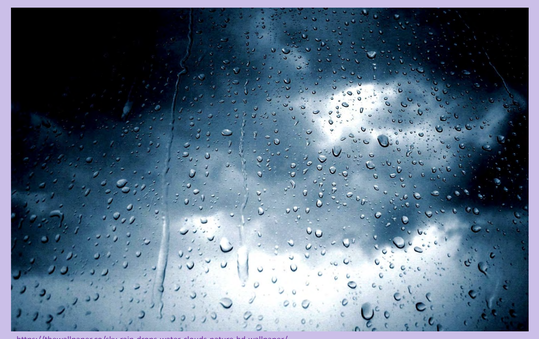
The Advanced Lighting Technology course I took offered me the opportunity to get hands on experience with the new and rapidly advancing technology of pre-visualization. I was able to learn more about these programs and how the connect with one another while designing the lights to a song in a virtual space created in 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 space, 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 those textures in the Capture software. More information is available on the Capture Sweden website at www.Capture.se for all of their other software packages and pricings. ETCnomad is a computer version of the software used on the ETC lines of consoles, such as the Ion or the Gio@5, 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 it replace the lighting console, however, you would need to purchase the ETCnomad Puck to actually send the lighting information from your ETCnomad software to the lights you are trying to control. ETCnomad on its own is a free 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 lights up or run 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. They need a network connection each time you use the two programs in conjunction with another, for this I found that opening Capture first and then opening ETCnomad was the best way to get a reliable connection, and then select the "Offline w/Viz" softkey on the ETCnomad startup screen. "Offline w/Viz" means "offline with visualizer" in the sense that you are not connected to any lighting instruments that can be manipulated in the real world. The two programs are constantly connected through this network link and share information simultaneously so there is little to no lag from inputting a programming command on the ETCnomad software to seeing it take affect in the Capture software.

For this project, I was using a desktop Windows PC with two external monitors so I was able to manipulate and see both programs simultaneously. This helped to streamline my work so I could efficiently work toward my end goal of a fully design song. I used ETCnomad on the bottom monitor and Capture on the top monitor to emulate how I see the stage while in program in real life with the light board below the stage in my sightline. I also had a webpage pulled up in the background so I could look at any of the programming shortcuts on a traditional desktop keyboard if I did not know how to do a certain action or pull up a specific programming screen in ETCnomad.

Research Images

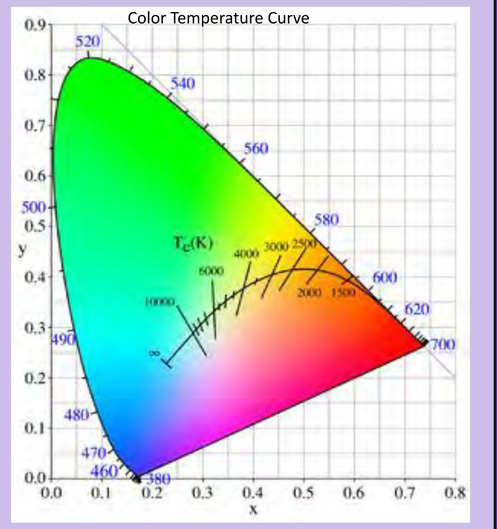


https://thewallpaper.co/sky-rain-drops-water-clouds-nature-hd-wallpaper/

https://outsideourbubble.com/stormy-weather/

http://atlas.colorado.edu/events/portraiture-lighting-with-pizza/

http://www.lovethispic.com/image/49268/blue-lighting



Capture Sweden 2018 Software Logo

ETCnomad Software Logo

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 outlets called dimmers because they are able to be controlled by a lighting console and range from intensities from zero to one-hundred. A dimmer circuit is a coil of wires bound in a circle and electricity runs through this coil based on what the intensity is set at on the console. 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 chart 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 pointing 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 be seen. For conventional lights hung in a static position it mainly falls under the first category of lighting the stage for the actors, but for intelligent moving fixtures they are able to be directed to light anything 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 pertains to how the actors move through the light or the pattern put into the fixture to break up the light being moved through, this pattern or texture is called a gobo and come in a multitude of sizes for any lighting instrument and can be made of either tin 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 actor.

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 1932 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 from in front of the object being lit pointing toward it at a 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 on the stage. Generally, the color of each light is also changed to evoke whatever mood or create any atmosphere the designer wants, this is done by using sheets of colored thin plastic called gels. Using gels can change 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, vibrant magenta for anything bodacious and seemingly out-of-this-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, violet, or most commonly a blue hue. For the top light in this method, it is either a deeper, more saturated cool color or it is left as no color, which means to not put gel in the lighting instrument so it retains the standard incandescent tungsten. For other types of performance, such as dance for example, the general lighting method is predominantly using side lighting, where the performers are not lit 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 Grayscale. To start my design process, I listened to the song once casually just to get the sound in my brain. I then listened to the song in a more 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 timecode for the specific moment in the song written out next to them. I used these notes to make more efficient work of my time programming each look in ETCnomad. 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 set up in the Capture file, so I was able to use a few convention fixtures for lighting the models of band members and then the rest 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 blues and greens, to underscore the cleansing force of rain in this song and explore the duality of the meaning of these colors; as they can symbolize sadness and remorse yet hope and joy at the same time. To avoid an overabundance of these colors, I used shades of magenta and red to break up the constancy of the rain colors to make the impact of lines such as "I'll 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 which I used mainly in these red moments to create an array of textures on stage to reduce the flatness of the constant light. The gobos used were a horizontal zebra stripe pattern, so using these emulated the look of a running river, to play on the theme of water being a cleansing force, but in conjunction with the red LED lights they are in ties back to the "wear your blood like warpaint" line to show that this cleansing force is more deliberate and focused than the average river.