An Introduction to TECHNICAL THEATRE

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An Introduction to Technical Theatre
Most modern theatre spaces are capable of getting quite dark when the lights are turned out. These spaces rarely have windows and when they do, they are usually heavily draped to effectively block out any outside light. Once it is dark, anything the audience sees is visible because of the work of the lighting designer. Theatrical lighting designers are masters of the unique and controlled skill of “painting” with light. As with the other designers, their art is that of a storyteller, and the choices they make for a production support the story being told. Lighting design not only provides illumination so we can see the performance, but also utilizes the remaining functions of light to create mood, modeling of the playing area, and to provide a selective focus so audiences know where to look in order to follow the story. Light designers manipulate the controllable qualities of light at their disposal—direction (distribution), intensity, color, and movement—to create their design.

Most plays are set in interiors, though epic plays and musical theatre productions are more likely to have both indoor and outdoor locations. In either case, the lighting designer recreates some version of a lighting situation that the audience is familiar with. We know what the light looks like at sunset on the beach or inside a cozy cabin bathed in firelight, and so we have an expectation of what that should look like on the stage. Therefore, part of a designer’s consideration has to be an awareness of that expectation, regardless of whether they choose to support it or take the audience in a different direction.

A script provides the designer with information regarding place and time period, including specifics regarding years, seasons, and times of day for each scene of the play. All these elements are taken into consideration in the design. The set design, architecture of the theatre space, and the lighting positions it provides, also heavily influence the design of the lighting.

We are used to gauging light largely in terms of sunlight. Even our interiors are often partly illuminated by natural light from windows or skylights. The sun, as we know, is a very bright light source. It produces an even and consistent light over large areas. Creating a reasonable imitation of these qualities is a tall order for the lighting designer. Lighting designers are highly aware of how natural light behaves and de-
velop methods for representing that light with their equipment. A lighting angle of about 45 degrees above the performer produces a light that best approximates daylight from the sun and creates minimum shadows across facial features, allowing the audience to easily read the expressions of the actors.

If two lights are used at that natural 45 degree angle above the performer, but also at an angle 45 degrees out from the performer, the designer can sculpt the contours of that performer by individually adjusting the intensity of the two sources. The brighter source becomes the key light and is the motivated source, meaning it is replicating the hypothetical light source of the scene—the sun, a window, or fireplace, etc. The less intense, non-motivated side is the fill light and represents the reflected light in the environment. By filtering these two lights additional sculpting of color play becomes possible.

Therefore, many schools of thought about how best to sculpt a playing space within lighting design. The choice of angles and the distribution of light in the playing area are central to the development of the lighting design.

There are four controllable qualities of light.

Intensity: Relative brightness of lights.

Color: The color created by filters or combination of filtered lights.

Movement: Physical movement of lighting sources and movement created by cued changes in lighting states.

Direction: Angle of lighting source to its target.

There are four functions of light:

Mood: Setting an emotional tone for a scene through use of color, angle, and intensity of light.

Illumination: Providing light by which the audience can see the performance.

Modeling: The use of highlight and shadow to reveal the form of the actors and the stage environment.

Selective focus: Using contrast within the lighting of the stage to create a point of focus for the audience.

Eventually the lighting design is represented graphically as a light plot and its accompanying spreadsheet paperwork. The light plot is a plan that shows the lighting positions on and above the stage area. Each lighting instrument on the design is drawn to scale on the plan with labels for its purpose, color filter, accessory needs, and desired control channel. The plot is often accompanied by a centerline section, which shows the height of each lighting position. All light plots should include a leg-
end box that serves as a key to the symbols used on the plot. This plot is delivered to the master electrician who ensures all the necessary cables, connectors, color filters, templates, pipes, and anything else needed to install the plot are acquired and delivered to the theatre for the load-in. A busy time in the theatre space, the load-in must be carefully planned to efficiently get the equipment installed and working on schedule. Once the lighting plot has been installed and tested and the scenery has been installed for the production, the focus call can begin. During the focus call, a crew of electricians, led by the master electrician, turns on each instrument on the plot, one by one, and guided by the lighting designer, set its position and physical attributes for the show. This process is further complicated because it involves lifts and ladders that must be moved around scenic items and the theatre architecture in order to reach the lights and move them into position. Once the lights have all been focused to the designer’s specifications, the work of setting and recording individual cues for the show can begin.

There’s More to Know

Theatre instruments are hung on pipe battens that have electrical circuits attached to them or onto pipe battens that are rigged to carry heavy weight loads. The lights themselves clamp onto the pipes via a “C-clamp.” The C-clamp wraps around the pipe to allow the light to be tightened in place without the danger of slipping off. Still, theatrical lights hung overhead should also be equipped with a safety cable that serves as a fall-arrest so even if the C-clamp fails, the safety cable wrapped though the yoke of the instrument and around the batten will prevent the instrument from falling to the ground.

To hang an instrument, first hook the open C-clamp over the batten or pipe and hand tighten its bolt. Once the bolt is snug, the light cannot fall from the pipe. You can now connect the safety cable over the pipe ensuring that it is run through the yoke of the instrument. Next, use a wrench to tighten the C-clamp bolt to the pipe, then orient the fixture towards its eventual focus position. Ensure that it is right side up and all of its bolts are snug. If you are using a shuttered instrument, pull out all shutters to open the instrument. Finally, connect the instrument to a dimmer circuit and to any control cables as needed. Some designers prefer to have the color filters installed when the instruments are hung, others prefer to place them during focus.

Reverse this procedure to strike the instrument.

A cue for lighting can be thought of as a snapshot or a single moment when a group of lights are set at various intensities to achieve the desired look for that on stage. The snapshot is recorded into a lighting control console (essentially a specialized computer), and then the next snapshot of a look of the next moment is recorded. The lighting console is then able to play back each snapshot in order and with a preset time to fade between the looks. The action of fading between two snapshot looks provides the audience a sense of movement of light as some lights fade out in one area, while others come up on another part of the stage. In this way, the lighting
designer tells the audience where to look. As humans, we always look to the point of highest contrast in our field of vision, so the designer guides the audience members’ eyes to the point of focus and details of the action through the use of lighting contrast. This is one of the ways lighting design helps to tell a story. Cues can also help the audience to know when scenes begin and end though the use of blackouts. Scene shifts may occur in a shift light that helps the audience to distinguish them from the central action of the play. Bump-up or bump-out cues may be used for emphasis or to signal the audience to applaud a specific moment. Designers are careful to ensure the rhythm of the lighting cues matches the natural rhythm of the unfolding story.

The designer creates moods through the manipulation of color and intensity of lights, broadcasting from a variety of angles and directions. The way a designer models the light on the performers and scenic environments with these various light sources is akin to painting the stage with light. The use of highlight and shadow allows for lighting changes from subtle to extreme. Lighting is an art that requires a great deal of calculation and equipment management to get a plot in the air and the artful manipulation of these elements to create the visuals the audience experiences.

There are five common lighting directions and angles.

*Front light:* Directional light coming directly towards the actors’ front as they face the audience. This light is of primary importance as it allows the audience to read the actors expressions. It can flatten the visual so performers look 2-D unless supplemented by other lighting angles.

*Backlight/rim light:* Directional light from behind an actor that creates a rim of light allowing them to be visually separated from backgrounds and giving them dimensionality.

*Sidelight:* Directional light hitting an actor from the side. This angle provides definition of shape and a sharp outline. Can be used to enhance theatricality.

Sidelight angles for dance lighting:

*High sidelight:* High, overheard light often hung from electrics over the stage.

*Head/shoulder light:* A sidelight at approximately 5-6 feet high.

*Mid/waist light:* A sidelight at approximately 3-4 feet high.

*Shin light:* A sidelight at approximately 1-2 feet high.

*Top light/down light:* Directional light from above an actor. Can provide a sense of isolation, but causes shadows from the nose and brow.

*Up light:* An unusual directional light. Can recall a sense of Vaudeville footlights.
The lighting instruments fall into several basic categories. Theatrical lighting instruments, or luminaires, are either **hard-edged lights** or **soft-edged lights**. When we think of a spotlight, we usually think of a **follow-spot**, or one that follows a performer across the stage, keeping them in the center of a bright circle of light. The clear distinction of the edge of this circle of light is what we refer to as a “hard-edged light.” We can see where it stops. Often we are interested in isolating a performer from the area around them and need the definition of a sharply defined edge to show the audience this moment of separation. A soft-edged light doesn’t have this clearly distinct edge, but instead has a faded edge, making it harder to discern where its light actually stops. Modern hard-edged fixtures use a lens or system of lenses to create the even field of light they produce. The adjustment of those lenses can soften their hard edges to become less discernible. This allows a designer to use a series of hard-edged instruments together by softening their edges until they blend into a large field of light.

The most common types of theatrical instruments are discussed in Module 12, Lighting Equipment and Control Systems.

For Further Exploration
