

## 6 Lighting Design

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Walk outside. Take a look at your surroundings. Think about what you see. Can you describe it in terms of light and shadow? You might see a brilliant blue sky and the dappling of light and shadow as it falls on the sidewalk in front of you. You might notice the pools of light created by streetlights and how the people around you float in and out of light and shadow. Do you see your world differently when you think about the light all around you? How does it change your perception of your surroundings?

Lighting a stage allows the audience to see the world of the play, but it is much more than illumination. The lighting designer must be something of a magician, revealing what must be seen and hiding what needs to be hidden. He or she has the ability to subtly influence the perceptions of the audience and to dramatically transport them from one magical place to the next. Time of day can slowly change over the course of a play or you can go from a scorching desert to a cold, dark castle.

### Functions of Lighting

In order to influence the world of the play, the lighting designer works with five basic principles in order to guide his or her work. These are known as **the functions of lighting**, the visual vocabulary the lighting designer uses to communicate with the audience. They are as follows:

- **Selective visibility.** Selective visibility is revealing what the audience needs to see and the manner in which they need to see it. This

may vary from scene to scene. Sometimes only a silhouette needs to be seen. At other times, the audience needs to see all the detail of a scene brightly lit.

- **Composition.** This is directing the eye of the audience to a particular place or places on stage. The composition of a scene begins with what the scene designer places on the stage, continues with where the director places the actors, and is completed when the lighting designer guides the audience's eye to what needs to be seen.
- **Revelation of form.** Altering shape is one of the greatest powers of the lighting designer. Figures on stage (and sometimes scenery) must be lit in such a way as to maintain a constant three-dimensional presence.
- **Establishing the mood.** Mood is an inescapable feature of light—color, shape, and visibility must be used to establish the tone of a scene.
- **Reinforcing the theme.** The lighting of the scene must support the action of the scene. By doing so, the designer helps to convey the themes of the play.

Some of the greatest mistakes that a lighting designer can make are ignoring any of these functions. They help to enhance the audience's viewing and interpretation of the play. Ignoring them will confuse the audience and cloud the play's meaning.

## The Lighting Designer

A great deal of responsibility is placed on the role of the lighting designer, but who is this person? A lighting designer is someone who strives to “paint with light,” to create moments on stage that can capture the meaning and intent of a scene as if it were a painting or a photograph. A lighting designer is someone who spends a great deal of time paying attention to light, shadow, highlight, and shade. He or she will notice how the natural light and color move and strive to recreate these effects for an audience. In sum, the lighting designer tries to bring the natural world to life on stage in order to highlight meaning.

A lighting designer is a team player and a collaborative artist. The actors, director, and set and costume designers bring their work to the stage before the lighting designer. There is a great deal of planning, but

the lighting designer cannot begin working on the stage until very close to the end of the design process. Therefore, he or she must be highly involved in the design and production process in order to be able to unify all the elements of the production.

The lighting designer cannot complete his or her tasks without a support team. Typically, an **assistant lighting designer** helps facilitate communication between the lighting designer and the production team as well as helping to complete some of the required paperwork for a production. The assistant lighting designer must be incredibly organized in order to help keep the lighting designer on task and to make sure everything is completed and on time.

Typically, a theatre will have a **master electrician** working for them. This person is responsible for the physical implementation of the lighting designer's work, making sure all the lighting instruments or fixtures get hung and focused correctly. He or she makes sure everything is working and all appropriate supplies are purchased. Often, the master electrician is also in charge of supplying other support staff that may be needed.

## A Brief History of Stage Lighting

We all take for granted the electric lights we have in our homes. It is assumed that every space we enter in the modern world will have electricity and other modern conveniences. In our everyday lives, we often forget that even a century ago, amenities such as electric lighting, indoor plumbing, and air-conditioning were new technologies. Many texts on lighting design do not take the past into account. However, when you look at lighting design from a historical perspective, you can gain a greater appreciation of what it has achieved.

Texts dealing with ancient Greek and Roman theatre deal very little with the lighting of plays, stating only that it is assumed that they took place during the day. Since play festivals would have taken place over the course of a whole day, it is thought that torches and shiny pieces of mica were used to redirect the natural light entering the theatre. This would allow actors and moments to be highlighted for the audience, much as modern lighting attempts to do.

Similar practices in lighting continued until the sixteenth century. At the dawn of the Renaissance, theatre experienced a rebirth. Stage settings became more elaborate and stage machinery became more

complex. Some theatres began to move indoors. As the physical space of the theatre changed, so did theatrical lighting. Theatres began to use chandeliers suspended from the ceiling and oil lamps hung on walls and scenery to light the stage. This took a great deal of candles, oil, and effort to create enough light.

In the early 1600s, theatre practitioners began to use reflectors to intensify the effects of the candles and lamps used to light the stage and audience. Later, theatres also began using candles or oil lamps at the front edge of the stage as footlights. They also placed them in vertical stacks in the wings to provide additional illumination. While these lights provided significant illumination, they also created a serious fire hazard. Over the years, many theatres burned down because of this method of lighting.

In 1792, William Murdock developed a process for distilling gas from coal, inventing a new form of illumination. Gas lighting quickly gained public popularity and rapidly moved into theatres and other public spaces in Europe and North America. A great improvement over candles and oil lamps, it provided a brighter and cleaner-burning source of light that was also easily controllable. While gas was a great improvement over earlier methods, it still posed a fire hazard as well as producing a great amount of heat and odor.



The angle of light can dramatically alter the mood of a scene. In this scene from a 2012 production of the musical *Urinetown*, the old practice of footlights was used to give the actors' faces a ghastly, menacing appearance. Constans Theatre, University of Florida School of Theatre and Dance, directed by Charlie Mitchell, lighting design by Timothy A. Reed. Photo by Stan Kaye.

The next great improvement in stage lighting came in 1879 when Thomas Edison developed a practical incandescent lamp, or the lightbulb as it is known today. Many lamps used today are variations on Edison's design. By 1900, most theatres had converted to electricity and were using incandescent lamps rather than gaslight. With this innovation, theatres slowly started moving into the twentieth century.

At first, the introduction of electricity itself did not change the way in which lighting operated. Electric lines were run to lights and electric fixtures operated much as gas fixtures had done previously. However, with the advent of the first circuit board electronics, stage lighting technology improved by leaps and bounds in the second half of the twentieth century. One of the biggest breakthroughs came in 1975 when the first computerized **lightboard**—a specialized piece of computer equipment designed and used to control theatrical lights—was used on Broadway by Tharon Musser in her groundbreaking lighting design for the musical *A Chorus Line*. It paved the way for the use of modern technology in lighting design.

Since the introduction of computer technology, lighting has changed almost as fast as the computer market itself. Each new generation of lightboard can process faster, control more lights, and interface more easily with the user. Lighting instruments are brighter and more energy



The first computerized lightboard.

efficient. Automated fixtures have been introduced to the theatre market and continue to grow in popularity and usefulness. Now, LEDs (light-emitting diodes) are being introduced as theatrical lights. They are more energy efficient, produce less heat, and are very controllable. As lighting technology improves, one is sure to see even greater changes in the tools of lighting design.

### Lighting Pioneers

**Adolphe Appia** was born in 1862 in Geneva, Switzerland, the son of a physician who supported music but disliked theatre mostly because of his strict Calvinist views. As a young man, Appia studied music, including the operas of Richard Wagner. Appia disliked the traditional staging of Wagner's operas, with their two-dimensional painted scenery and lack of unity. Instead, he favored the idea of an artistic unity that would blend the acting with the staging, lighting, and music. Appia believed that shadow was as important as highlight. It helped to create depth and heightened the reality of the piece. His use of three-dimensional scenery and lighting to artistically unify a theatrical piece helped to revolutionize the ways in which productions were staged and lighting was used.

**Stanley McCandless** (1897–1967) is considered the father of modern lighting design. He developed what is known as the McCandless Method, which he published in *A Method of Lighting the Stage* in 1932. His theory was that light cast on the actor from a forty-five-



Lighting visionary Adolphe Appia.



Adolphe Appia's 1896 rendering of the Sacred Forest in Act 1 of Richard Wagner's opera *Parsifal*.

degree angle enhanced visibility and appeared natural. He maintained that there should be two lights at forty-five-degree angles aimed at the front of an actor—one with a warm tint and one with a cool tint. This technique is still used today.

**Jean Rosenthal** (1912–1969) is considered the first professional lighting designer. She studied lighting design with McCandless at Yale University from 1931 to 1934. During her career, she became the first resident designer for the Metropolitan Opera in New York City. She began working at a time when women were not accepted as professionals in the backstage theatre world. She is perhaps most well known for her work with the Martha Graham dance company; her lighting techniques for dance have become standards in the dance lighting repertoire.

**Tharon Musser** (1925–2009) began her career in 1956 with her lighting of the premiere of Eugene O'Neill's *Long Day's Journey into Night*. She had a prolific career as a lighting designer and was a pioneer in her field. She was nominated for ten Tony Awards



Jean Rosenthal in 1951. Photo by Carl Van Vechten. Courtesy of Bruce Kellner.



Jennifer Tipton teaching a lighting master class in 2011. Courtesy of the Wexner Center.

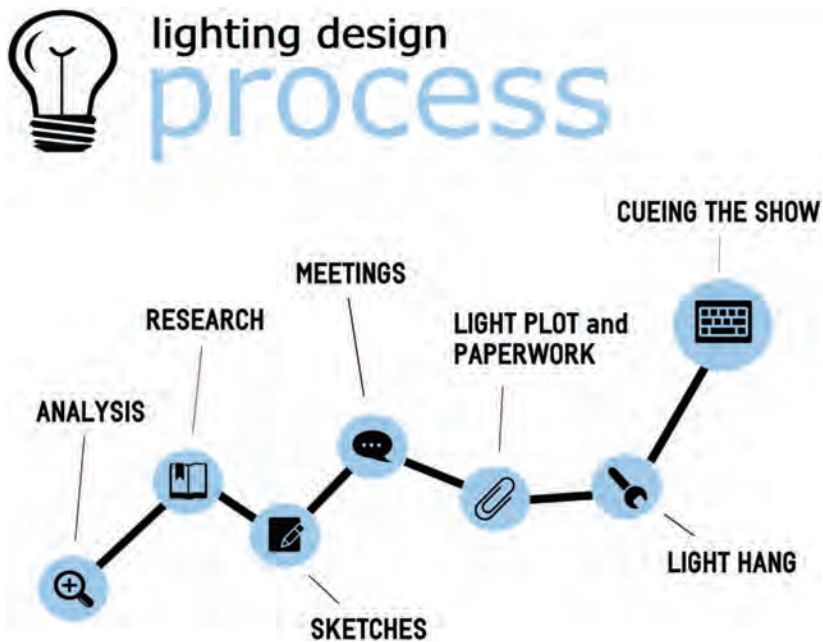


throughout her career and won three. She is perhaps most well known for her introduction of the computerized lighting board to Broadway.

**Jennifer Tipton** (1937– ) has truly managed to unify the field of lighting design through her work in theatre, opera, and dance. Tipton has been working in theatre since 1969. She is best known for her use of white light and how it shapes the space. Her work and innovative style are currently influencing designers around the world.

## The Design Process

Theatrical design is a collaborative process. Each designer works in his or her own area while also communicating with the production team as a whole. All designers share certain parts of the design process, such as analysis, research, and production meetings. However, the work that each designer produces as a result of these steps in the process is vastly different.





Once a designer is hired for a production, he or she receives a copy of the script from which to work. If the show is a musical, he or she also receives the appropriate accompanying documentation such as a copy of the music, as well as the score if necessary. The first step in the design process is analysis. The designer must read through the script several times, looking for different elements each time. On the first reading, the designer is typically just reading the play through to get a sense of the plot, characters, themes, mood, and atmosphere while noting any mention of lighting in the script. On the second and third readings, the designer reads deeper and looks for the specific shape of the action that leads to the play's climax and ways in which lighting can enhance specific scenes. These readings often happen between meetings with the production team. In these initial meetings, ideas the production team would like to highlight are discussed.

This textual analysis leads the lighting designer into the second step in the design process, the research phase, by doing both the visual and background research for the lighting of the production. For instance, a production of *The Heiress* by Ruth and Augustus Goetz, which takes place in 1880, would require research into gas lighting, which was common for interior and exterior spaces. The lighting designer might look into what gas light fixtures look like, how gas light works, and what color of light it produces.

The lighting designer will also look for visuals that support ideas he or she has about the mood, atmosphere, composition, and theme of a production. These images are used to help convey ideas between the lighting designer and other members of the production team. Visual images will help the lighting designer describe what he or she wants a particular scene or moment to look like. For example, images of light through trees might help the lighting designer describe the front yard for a production of Arthur Miller's *All My Sons*, a play that takes place in the yard of the family home and mentions an apple tree.

Once the production team agrees on certain images and ideas, the lighting designer can move on to creating specific visuals for scenes or moments in the play. Most lighting designers will do light sketches or create CAD (computer-aided design) renderings for specific moments such as the climax of the play or for special moments of visual interest. These sketches or renderings help to further the conversation with the director and the rest of the team. They communicate the “look” of the

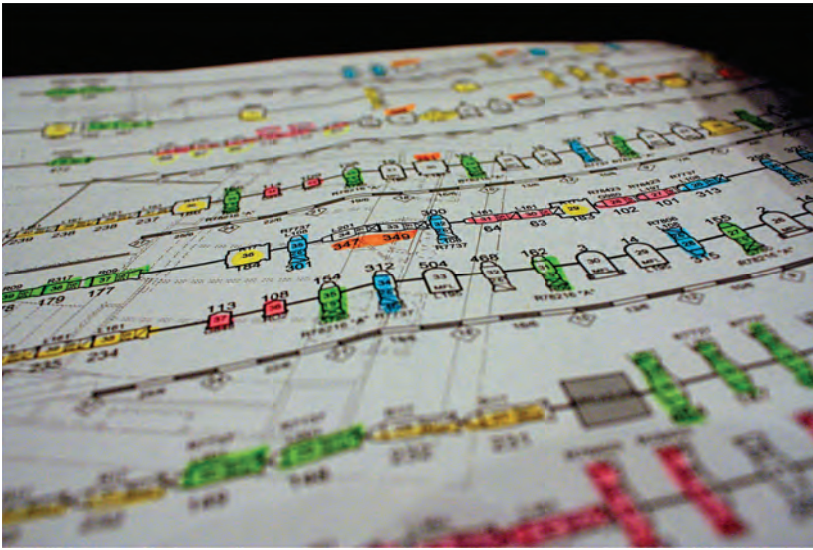


The 2010 production of *All My Sons*, featuring Zoe Wanamaker, Daniel Lapaine, David Suchet, Stephen Campbell Moore, and Jemima Rooper; directed by Howard Davies, Apollo Theatre, London. Photo © Robbie Jack/Corbis.

final design in these key moments. These drawings can be reworked until the production team is happy with how the show will look once it is lit.

Throughout this whole process, the design and production team meets regularly, usually a couple of times a week, to communicate ideas and information about the production. Meetings can happen in the same room, if the production team is in one location. They can also happen virtually through the use of technologies such as Skype, e-mail, and file-sharing programs. It does not matter how the meetings happen as long as there is a free flow of communication and information is shared regularly.

After the design ideas for a production are finalized, the lighting designer can move on to the production stage of the design process. This means producing a **light plot** in order for the master electrician to hang lights in the appropriate places to make the lighting designer's vision happen on stage. The light plot will provide three important pieces of information about each instrument—on which part of the stage the light should be focused, what color it should have, and how it is controlled. Color is created by a **gel**, a colored plastic filter placed in front of a lighting instrument in order to change the color of the light it emits. Control is



A light plot. Photo by Keturah Stickann.

achieved by assigning each light a **channel number**. This number is assigned to a light or group of lights to help the designer identify the purpose of the instrument.

At this point, supporting paperwork is produced with lists of all of the lighting instruments and their channel numbers, the order in which they appear on the plot, and their gel colors. This paperwork is supplemental to the light plot and helps to provide more information for the master electrician to complete his or her work. Once the paperwork is in the hands of the master electrician, the physical implementation of the design begins. He or she makes sure the information conveyed in the plot is made into reality in the theatre space. The lights are hung, tested, gelled, and then focused so the lighting designer can complete his or her work.

"I can make you cry. I can make you get excited -- maybe even make you jump to your feet. By doing a light cue in the right way, I can change the emotions of what the audience sees."



Ken Billington, lighting designer

The final step of the design process is the cuing of the show. A **cue** is a change in the lighting on stage. Cuing a show is defining how and when the stage lighting will change. The lighting designer will watch several rehearsals in order to understand the action happening in each scene on stage. Once the designer has a good grasp on what is happening, he or she can begin using the lights that have been hung to shape the look of each scene. These cues take place in a sequence starting at the beginning and building on one another until the end of the show is reached. Each cue has a specific purpose and is used to make the functions of lighting a reality for a particular production. Cues are refined during each technical and dress rehearsal until everything meets the satisfaction of the lighting designer and the production team and is ready for an audience on opening night.