An Approach to Stage Lighting

Resources

Reference...

1. Briefly outline the process of lighting a show.

My approach to lighting is primarily based on Stanley McCandless' method. McCandless was a professor at Yale University (1925-1964) and was one of the first teachers to offer a course in Stage Lighting. His two major works, *A Method of Lighting the Stage* and *A Syllabus of Stage Lighting* were originally published in the 1930s.

I divide the process into three phases: **Research, Design** and **Execution**.

1. **Research Phase**
   1. **Read the script.**
      1. What is the setting of the play?
      2. When does it take place?
      3. What is the time frame of each scene?
      4. What (and where) is the "light source"?
      5. Are specific Qs mentioned in the text?
      6. What is the style of the work?
      7. The mood?

2. **Examine the scene and costume designs.**
   1. What is the location of the doors, windows, and drops?
   2. Have lighting positions been blocked by scenic pieces?
   3. What is the color of the set?
   4. What is the color of the costumes?

3. **Visit the theatre.**
   1. Is there a cove position? Box booms? Balcony rail?
   2. How many electric pipes are available?
   3. How many instruments do you have?
   4. How many dimmers?
   5. Do they all work?
   6. What type of control console will you be working with?
   7. Can you rent additional equipment? From where?
4. Watch a rehearsal.
   1. How does the director use the stage?
   2. Where are the major scenes played?
   3. What cues are suggested by the staging?
   4. Where will specials need to be located?

2. Design Phase
   1. Create a list of **Lighting Systems** (acting areas, washes of side, back or downlight, specials, background lights...) needed to produce the looks required by the script and/or director.
   2. Using this list and your experience as a designer (or conventional formulas) develop an **Equipment Inventory** indicating what instruments (number and type) will be needed in each mounting position.
   3. Create a **Lighting Key** for each major look.
   4. Develop a **Composite Key** which encompasses each individual **Lighting Key**.
   5. Divide the stage into **Lighting (Acting) Areas**.
   6. Replicate the **Composite Lighting Key** into each of these **lighting areas**.
   7. Using your **Composite Lighting Key** and **Equipment Inventory** draft a **Light Plot** indicating where each lamp will be hung.
   8. Develop a **Hook-up Chart** showing which channel controls each system of lights.
   9. Write a **Cue List** indicating when (line or action) each lighting change (**Light Cue**) will happen.

3. Execution Phase
   1. Hang, gel and plug the lights as indicated on the **Plot** and **Hook-up Chart**.
   2. **Focus** the lights. A few suggestions:
      1. Use a crew of at least four. A **board operator**, an **electrician on the ladder** to adjust the unit, and two stage hands to **steady the ladder**.
      2. Focus only one light at a time.
      3. Focus on a darkened stage.
      4. Stand in the center of the area to be lit.
      5. Do **not** look into the light. Turn away from the instrument and watch where the pool of light lands on the floor or scenery. When the shadow of your head is in the middle of the pool, you are in the "hot spot."
      6. Give the electrician **specific directions** for shutter cuts, adjustments of the lens barrel (hard to soft focus) or adjusting the spot to flood position on a Fresnel.
      7. If you are focusing a wash make sure that the edges of the pools of light blend together. Diffusion (such as **R114: Hamburg Frost**) is your friend.
3. Set the light levels for each of the compositions indicated on the Cue List. This four to six hour session (often called a dry tech) is traditionally done with out actors. The designer and director sit in the darkened theatre giving directions to the board operator in the light booth and to the stage manager (or stagehand) who walks through the various acting areas on stage. (Note: Many lighting designers write the initial cue sheet on their office or studio computer using an off line editor. The looks are then loaded into the theatres light board and played back for the director's approval.)

4. Integrate (a wet tech) the lighting cues into the flow of the show.

2. What are the four chapters of McCandless' Method of Lighting the Stage?

1. Lighting the Acting Area
2. Toning and Blending the acting areas
3. Lighting the Background
4. Adding Specials

3. How do they relate to My Personal Approach?

As with mounting positions, I divide my lights into two groups. Those units hung Front-of-House in the cove, on the balcony rail and box boom positions and those hung On Stage on electric pipes, booms, ladders, and on the set.

**Front-of-House** lights are for visibility--

1. Lighting the Acting Areas and/or
2. Front washes

**On Stage** lights are for molding and separation--

1. **Washes** of Cross light, Down Light and Back Light to tone and blend the stage
2. **Sunlight** and Moonlight
3. **Practicals**: Wall sconces, chandeliers, table lamps
4. Lighting the backings behind windows, doors and archways
5. Lighting the cyc or back drops and ...
6. **Specials

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**Front-of-House Lights**
1. What is an acting area?

According to Gillette, acting areas are "those spaces on the stage where specific scenes are played." The shape and size of the acting area (or areas), is determined by the scene designer's setting and the director's blocking. The entire stage space may be one large acting area (as in a Neil Simon comedy, for example) or divided into numerous small acting areas (as in Tennessee William's Streetcar Named Desire, Arthur Miller's Death of a Salesman or a Shakespearean tragedy).

2. A lighting area?

A lighting area is a small section of the total acting space. Each area is "a cylindrical space approximately eight to twelve feet in diameter and seven feet tall." (Gillette). Although there is a distinction between a lighting area and an acting area, I, like many teachers and designers, use the terms interchangeably.

3. What is the function of the acting area lights?

Acting area lights illuminate the performers face and, by varying the intensity between the lighting areas, helps focus the audience's attention.

4. How many lighting areas are normally used for a small production?

The number of lighting areas depends on the size of the stage. Small productions on a small stage (24' x 12') generally use six areas. Larger works on larger stages (36' x 24') may use up to fifteen.

Where are they usually located?

With a six area system, three are down stage and three are up stage.

Generally the total acting space is divided into two (DS and US) or three (DS, CS and US) full stage plains. Each plain is then divided into an odd (usually 3 or 5) number of lighting areas.

5. How many instruments should be used to light each area?

Two (or more). Stanley McCandless' original system used only two lights. I generally use three or four per area. Today most designers surround the performer with three to six units.

6. Where should these instruments be located?
Following McCandless' theory, both lights should be mounted above, in front of, and to the left and right of the performer. The three down stage areas are traditionally lit by six lamps (Ellipsoidals) hung in the Ceiling Cove; the three up stage areas are lit by six units (Fresnels) hung on the First Electric. A total of 12 lights for six areas.

A Basic McCandless Plot

7. How does a designer light the three front acting areas if the theatre does not have a ceiling cove?

This is a problem encountered by many designers, especially those working in older theatres. Most Broadway houses do not have a ceiling beam. Before the introduction of the front-of-house truss in the early 80s, Broadway designers cross lit the three down stage areas from the First Electric and filled in the shadows with units mounted on the First Balcony and Box Booms. In a Broadway house the six acting areas can be effectively lit with 21 to 24 units -- 3 (or 6) Ellipsoidals on the Balcony Rail, 3 Ellipsoidals on each Box Boom, 6 Fresnels on the First Electric to light the three down stage areas, and 6 Fresnels on the Second Electric to light the three up stage areas.

The Broadway Approach to a "Basic McCandless Plot"
8. What colors are traditionally used to light the actor?

McCandless believed that one of the two lamps should be gelled in a warm color (R01: Bastard Amber) and the other in a cool color (R63: Pale Blue). I, like most designers today, would gel both units in the same color (R02: Bastard Amber) or in two similar colors (R33: No Color Pink and R02: Bastard Amber).

9. What is the difference between a "Key light" and a "Fill light"?

The Key Light establishes the high lights; the Fill Light controls the color and depth of the shadow area. The Key / Fill relationship can be established by either a difference in color or intensity. The Key Light is the brighter or the warmer of the two units.

10. What is the Lighting Key?
The lighting key is a drawing indicating the direction and color of each instrument lighting the acting area. The key on the left is from the summer 2005 ACT production of Annie Get Your Gun. Each acting area was lit from the front and back in both pink (R33: No Color Pink [front] and R34: Flesh Pink [back]) and blue (R68: Sky Blue [front] and R80: Primary Blue [back]) and from the side in white (no color). The four front lights would be considered acting area lights and the two back and two side lights would be toning and blending units.

11. What patterns can be used in ganging acting area lights?

Usually all of the lights focused on an area are ganged on the same channel. A six area system requires six channels— one per area.

12. What is the difference between a front wash, and the acting area system?

In a Front Wash, the three downstage areas are controlled by one channel producing a 6 lamp full stage (width) wash. It is also possible to gang the front area lights by color and/or direction.

A Front Wash -- McCandless Style

13. How many lamps per color are needed for a full stage front wash?

Four to six 26° Ellipsoidals per color. The smallest musical would require eight lights in the Ceiling Cove or on the Balcony Rail. Four of the instruments would be gelled in pink (R34: Flesh Pink) and the other four in blue (R67: Light Sky Blue). Unlike the McCandless System, these eight lamps would probably be focused straight in.

A Front Wash -- Broadway Style
14. What is the function of a curtain warmer?

The **curtain warmer** is generally a system of lamps, often 2 or 3-8” Fresnels, focused on the *act curtain* (or "show curtain") and used to add a little warmth to the stage area as the audience enters the house.

15. How can the lighting area system be adapted to the thrust and arena stage?

In a typical arena theatre with a 24’ x 24’ acting area, the stage space is divided into nine 8’ lighting areas with each area illuminated by three (separated by 120°) or four (separated by 90°) lights.

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**On-Stage Lights**

1. What is the function of toning and blending lights?

1. **Blend** the pools of acting area lights together,
2. Add a layer of color to **tone** the costumes and setting.
3. **Reveal** the actor's form and
4. **Separate** him from the background.

2. What type of instruments did McCandless suggest for toning and blending lights?

Twelve to sixteen feet of three color **Borderlights** hung on the center of the First Electric and a similar length of three color **Footlights**.

3. What "patterns of light" do I use to tone and blend the stage?

I, and most designers today, use combinations of **side**, **back**, and **down washes** to tone and blend the acting areas. These colors and positions are generally included in the **Lighting Key**.

4. What is a wash?

According to Jean Rosenthal, a **wash** bathes a section of the stage with an "even field of light using a circuit of two or more lamps." (*The Magic of Light*, page 178)

A cross wash?
A **cross wash** is a group of two to four instruments per color, mounted on a boom, ladder or the end of an electric pipe and focused **across** the stage.

**A down wash?**

A **down wash** is a group of three to six instruments per color, evenly distributed on an electric pipe and focused **straight down**.

**A back wash?**

A **back wash** is a group of three to six instruments per color, evenly distributed on an up stage electric pipe and focused into a down stage plane. Traditionally, lamps hung on the second electric or focused on an actor standing under the first electric.

5. **Where, on the overhead light pipes, can instruments be mounted to produce high angle side light?**

On the outside ends of an electric pipe.

6. **What is this position called?**

Pipe ends, or simply: "Ends."

7. **How many different colors of toning and blending lights are usually used?**

At least **two**, a warm (pink, yellow or amber) and a cool (blue). Often a **third** color, perhaps a neutral (lavender) will be added.

8. **How are toning and blending lights traditionally ganged?**

Traditionally by **color**, **direction** and **position**.
In the above drawing, I have added 12 **toning and blending** back light lights (6 warm and 6 cool) on the 2nd and 3rd Pipe to the basic 12 lamp **McCandless plot**. This layout could be controlled by 10 channels -- 6 for the six areas and 4 for the back lights -- pink and blue on the 2nd pipe and pink and blue on the 3rd pipe.

**Cyc or Background Lights**

1. What type of lighting instrument is traditionally used to light the 24' x 48' Sky Cyc?

   Either **Scoops** (4 to 6 units per color), **Border lights** (40 feet -- 5- 8' or 7- 6' strips), or **Cyc lights** (4 sections).

2. How many colors of cyc lights are usually used.?

   Three. **Why**? Because strip lights are traditionally wired with three circuits.

3. What specific colors are commonly used?

   For realistic productions of drama, opera, musicals and dance the Sky Cyc is often lit with three different shades of **blue**--A dark blue (**R80: Primary Blue**), a middle blue (**R68: Sky Blue**) and a light blue (**R63: Pale Blue**). If the designer is
forced to use only two circuits, I would gel one in Dark Blue (R80) and leave the other circuit White.

Abstract non-realistic productions, such as modern dance, often light the backdrop with the three light primaries: Red (R27: Medium Red), Blue (R80: Primary Blue) and Green (R91: Primary Green).

4. Why should the backdrop be lit from both the top and the bottom?

If the drop is lit with Scoops or Border lights, and the designer wants an even wash across the sheet, it is necessary to light it from both the top and the bottom. Also, if the drop is lit from both the top and the bottom, it is possible to create a sunrise effect.

5. If the sky drop can only be lit from one position, which (top or bottom) is preferred?

Bottom. Why? Lighting the bottom of the cyc will keep the audience's focus low.

6. What is a ground row?

A ground row is another name for the mounting position used to light the bottom of the drop. A ground row is also the name of the piece of scenery used to mask the ground row lights.

7. What practical problems can be encountered when lighting the cyc from the bottom?

These floor mounted lights are often in the way for scene shifts. Actors and dancers have also been known to trip over them.

8. How are these problems solved in the commercial New York theatre?

The lamps are usually upstage of the cyc, lighting the seamless drop from behind. They are often hung on an electric pipe whose "in" trim is only a foot above the floor. During a shift, the pipe and ground row lights, can be lifted into the loft getting it out of the way of moving scenery.
Basic McCandless + Toning and Blending + Cyc Lights

In the above drawing, I have added 8 cyc lights on the 4th Pipe to the revised 24 lamp McCandless plot from question 12. The design now includes 32 units...

1. 12 front acting area lights (Left, Center, Right) in the Cove and 1st Pipe
2. 12 back toning and blending lights (Warm, Cool) on the 2nd and 3rd Pipe, and
3. 8 background lights (Nite, Day) on the 4th Pipe

9. What is a backing light?

A small light placed behind (or off-stage of) a door or window unit and used to light the scenic backing.

What instrument is normally used to light a backing?

In the non-commercial, academic and community theatres, the usual instrument is the 150 watt PARCan. I have also used clip-on reflector lights (with a 60 to 100 watt lamp) which I have purchased at Menards. In the commercial world many designers use a Wizard, a 10 inch, 400 watt flood light, or a 6" Fresnel.

10. Briefly describe how to light a window backing.
I would use two (or three) lights per window. (1) A floodlight (or two) mounted near the top of the flat to light the Sky Cyc and (2) a spotlight (an Ellipsoidal, Fresnel or PARcan with a NSP lamp) hung off stage and focused through the window to provide a shaft of sunlight.

A Window Backing

An interior door backing

An Interior Door Backing

I would use two lamps. (1) A floodlight mounted near the top of the back side of the door flat to light the "room" and (2) a spotlight hung further off stage and focused on the back of the door. This lamp will high light the actor as he opens the door to exit.

An arched entrance into hallway

A Hallway Backing
I would use four lights. Two floodlights mounted over the arch to light the hall, and two spotlights located 4 to 6 feet off stage from the edge of the arch and cross focused to the center of the entrance. These two units will high light the performer as he enters (or exits) through the hall.

11. What ganging pattern is used for backing lights?

All the units within a specific backing are generally ganged together on the same dimmer. If there are five door and/or windows in a set, the lighting designer should assign at least five channels.

**Specials**

1. What is a special?

In a way, any instrument which is not an acting area light, a toning and blending light, or a background light is a special. Generally a special is used to create a tight pool of light to isolate a specific moment in the play, emphasize an important entrance, or provide a shaft of sun light (or moon light) through a window.

2. How does a Broadway designer plot in the specials a month before the show goes into rehearsal?

Normally, entrance and furniture specials can be easily plotted as soon as the scene designer's floor plan has been finalized. The designer will then add six or eight additional lamps, "spares," usually in the cove and on the first electric, to cover the director's last minute requests.

3. What is the difference between a motivating light, and a motivated light?

The motivating light is the practical, or fixture, which is "illuminating" the scene. The motivated light is the theatrical unit (or units) which actually light the actor. The Ellipsoidal
mounted outside a window to produce a beam of sunlight is a motivated light. The floor lamp, wall sconce, or chandelier is a motivating light. Both motivating and motivated lights are considered specials.

4. What is the most common motivated light?

**Sun** light and/or moon light. Most lighting designers almost automatically place a "sun spot" (or "moon spot") outside every window and exterior door in a realistic interior box set. In a musical or operatic design, the sun and moon spots are almost always hung at the ends of the electric pipes (*pipe ends*) or at the top of the side torm positions. For years the traditional sun and moon spot was a 10 (or 16) inch *beam projector* an instrument which has been effectively replaced by the *PARCan*. Today most designers use an Ellipsoidal.

5. What is the color of sun light?

This is a design choice. My generic sun is usually either *R08: Pale Gold* or *No color white*. My moonlight is almost always *R63: Pale Blue*. Jean Rosenthal's standards were *Cinemoid 550: Pale Yellow* (Close match: R7) for sunlight, *Cinemoid 541: Bright Blue* (Close match: L141) for moonlight and a sheet of *Cinemoid 510: Middle Rose* (Close match: R36) and *549: Canary* (Close match: R11) in the same frame for a setting sun. *(Note: The Cinemoid matches were determined with Gelfind.)*

6. Can a major dramatic scene be played only under the motivating or motivated light?

No, probably not. Both motivating and motivated light create interesting, and often revealing, compositions, but they tend not to provide enough light on the actor's face to satisfy either the director or an audience. Generally the specials are reinforced with a little front light from the *acting area* units.

7. What is a fixture, or practical?

A fixture is the on-stage motivating light. It can be a floor lamp, desk lamp, wall sconce, or chandelier. It can also be an oil lamp or candle.

8. Why should they be controlled through the switch board?
Normally every fixture (motivating light) has at least one theatrical unit (motivated light) to create the dramatic effect.

If the practical is turned on in a Light Q, at least three channels will move: (1) the fixture, (2) the special area, and (3) the associated front area light.

9. Why are fixtures normally under lamped?

A sixty watt lamp in a wall sconce or chandelier would blind the audience. Relamping the fixture with a 25 watt bulb would present a more enjoyable experience.

10. How can we create the effect of lightning on stage?

Lightning is traditionally produced by flashing several high wattage lights. I have used 1000 watt scoops (with a 3200K degree lamp) and PARCans with 1000 watt, VNSP lamps. Forty years ago we flashed the white circuit of our three color Border Lights. Twenty-six 150 watt light bulbs (3900 watts) per Border can produce quite a bit of light.

Although McCandless' approach was initially developed approximately 70 years ago for the staging of realistic drama within a realistic "box" set in an intimate theatre with a ceiling cove for its primary front-of-house mounting position, much of McCandless' Method can still be applied to lighting the arena theatre, the musical, the dance, and even the concert stage.

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