

WEEK 3 - WEDNESDAY, APRIL 4

ANGLE OF LIGHT AND LIGHTING HANGING POSITIONS

There are many different angles of light.

Front, Back, Top, Side, High Side, Up, to name a few

Different angles of light can have different meanings depending on how you use the angle

Above all the angle of light you choose must support the story

ANGLES OF LIGHT

THE ANGLES

▶ Direct vs. Indirect

- ▶ Direct lighting is when the light falls directly on an object from a source
- ▶ Indirect lighting is when the light is reflected off of an object in order to illuminate another object
 - ▶ Indirect light tends to create a softer look than Direct lighting

Direct - Flash light

Indirect - table lamp, tends to create

THE ANGLES

▶ Front Light

- ▶ The source is behind the observer
- ▶ The flattest kind of light
- ▶ It does make all of the action and movement directly visible

▶ Back Light

- ▶ The source is behind the object
- ▶ Shadows are cast towards the observer

Flat - puts all of the shadows behind an object
very little contrast

Back Shadows - create depth

THE ANGLES

▶ Side Light

- ▶ Most common angle of light
- ▶ Mixture of shadows and highlights

▶ From Below, or Up light

- ▶ Difficult for the mind to handle

Up - low angle seems unnatural

HANGING POSITIONS

- ▶ Locations in the theatre where a designer can place lights to achieve certain angles
- ▶ Industrial metal pipes hung in specific locations
- ▶ Some permanently installed
- ▶ Others have the flexibility to be moved around

FRONT OF HOUSE (FOH)

- ▶ Pipes down stage of the proscenium arch
- ▶ As unique as the theatre
- ▶ Access
 - ▶ Cove, Bridge, Catwalk, Ladder
 - ▶ Automated

Above or besides

Automated - motors that allow the pipe to be lowered to the stage deck

National Theatre, London FOH lowered in a harness

FOH CONT.

- ▶ Ceiling pipes
 - ▶ They go by many different names
 - ▶ Cove, Bridge, Catwalk, AP's in the University Theatre, Rows in the Studio Theatre
 - ▶ Primarily front light in proscenium theaters
- ▶ Box Booms
 - ▶ Vertical pipes commonly located to the sides of the audience
 - ▶ Helps achieve a lower 45 degree angle

Box booms - just downstage of proscenium

FOH CONT.

- ▶ Balcony Rail
 - ▶ Located at the front edge of audience balcony
 - ▶ Perfect for low Front Light
- ▶ Pit Booms
 - ▶ Vertical pipes at the corners of the orchestra pit
 - ▶ Offer a more severe side angle for down stage areas than Box Booms will
- ▶ Pit Rail
 - ▶ Horizontal pipe that runs along the edge of the pit
 - ▶ Great for Up light and Special Effects

ON STAGE POSITIONS

- ▶ Electrics
 - ▶ Directly above the stage
 - ▶ Great for Front, High Side, Top, and Back Light
- ▶ Booms and Rolling Towers
 - ▶ Vertical pipes specifically placed and/or moved around the stage
 - ▶ Amazing positions for varying heights of low Side Light
 - ▶ Director and Scenic Designer input is crucial

These pipes are above and around the stage and the actors

Most are accessed on the stage deck by bringing in line sets or by smaller ladders or the fixtures are already on the deck

Electrics - flown in by ropes and counterweights

ON STAGE CONT.

- ▶ Ladders
 - ▶ Pipe built like the rungs of a ladder, but with more space for lighting fixtures
 - ▶ Typically hung from over stage grid midway between a Boom and an Electric
- ▶ Side Trusses and Galleries
 - ▶ Offstage running from PL to back wall
 - ▶ Great for side lighting

Ladders - great for sidelight

ON STAGE CONT.

- ▶ Ground Row
 - ▶ On the floor in a row across the deck up stage
 - ▶ Primarily to light a Cyc or back light drops
- ▶ Deck/Edge of Deck
 - ▶ Lights anywhere else on the deck
 - ▶ Footlights
 - ▶ Great for creating Up Light specials and scenic textures

LIGHTING CONTROL

THE HISTORY OF DIMMERS

- ▶ Dates back to the battle between Direct Current and Alternating Current
 - ▶ Direct Current - electricity that flows in only one direction, for example a battery
 - ▶ Alternating Current - electricity that periodically switches which direction it is flowing, for example the electrical socket in your house
- ▶ A DIMMER is a control device that is used for adjusting the intensity of any lights that are contained in a circuit.
- ▶ Lighting Fixture -> Circuit -> Dimmer -> Light Board

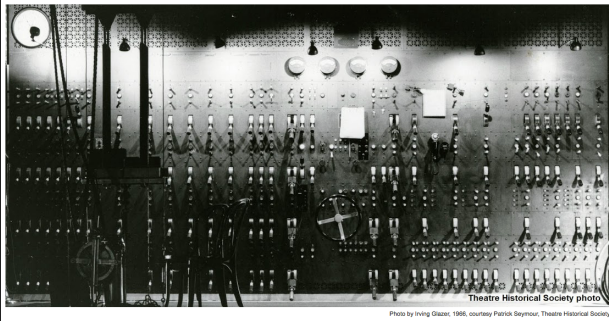
Thomas Edison v. Nikola Tesla early 20th century

RESISTANCE DIMMERS

- ▶ Powered by Direct Current
- ▶ Most common on Broadway Alternating Current took over
- ▶ Piano Boards
 - ▶ Large rack with control handles connected directly to the dimmer
 - ▶ Needed multiple people
- ▶ Energy into heat
- ▶ Ghost Load

Energy into heat - electrical energy was converted into heat to regulate the power

Ghost Load - needed a minimum amount of electricity in order to dim other appliances



THE HISTORY OF DIMMERS

AUTOTRANSFORMER DIMMERS

- ▶ Powered by Alternating Current
- ▶ No minimum load to dim
- ▶ No electrical energy into heat to work
- ▶ Were smaller and more compact
 - ▶ Alternating Current pumps more electricity through a smaller amount of cable than Direct Current

SILICON CONTROLLED RECTIFIER (SCR)

- ▶ First solid-state dimmer
 - ▶ Stored in separate rooms
 - ▶ Light Board
 - ▶ Smaller and module
- ▶ Stored in a dimmer rack that create a fair amount of noise

Solid-state = made of a solid piece of metal/no moving parts

Rooms - less noise leak onto the stage

Light Board - connected through a data cable to send small electrical signals

Smaller - individual dimmers - independent units that create a larger system

DIMMING DISTRIBUTION

- ▶ 5 Key components
 - ▶ 1. Lighting Control Console, or Light Board
 - ▶ Sends a signal out containing information such as intensity levels and color data
 - ▶ 2. Digital Cable or Wireless device
 - ▶ Carries the signal out of the Light Board
 - ▶ 3. Dimmers
 - ▶ Control the electrical energy sent to conventional lighting fixtures
 - ▶ 4. High Voltage Cable
 - ▶ Carries the appropriate amount of electricity
 - ▶ 5. Electrical Cable inputs, or Circuits
 - ▶ Where you plug the lighting fixture in

CENTRALIZED DIMMING SYSTEMS

- ▶ Dimmer racks are in one central location
- ▶ Electrical power lines
- ▶ Circuits
 - ▶ Raceways
 - ▶ Drop
 - ▶ Wall outlets
 - ▶ Floor Pockets
- ▶ DMX, Wi-Fi, and Ethernet cable and outlets

Electrical Power - from the dimmer room to each lighting hanging position to create Circuits

Raceways - long plugging strips
attached to FOH and Electrics

Drop Boxes - lowered from the ceiling over stage
placed wherever their cable reaches

Floor Pockets - in the stage deck
mostly SL, SR, and US

DMX, etc - directly out of the Light Board to intelligent fixtures

DISTRIBUTIVE DIMMING SYSTEM

- ▶ Dimmers near the fixture
- ▶ Completely self contained
- ▶ No need for high powered circuits
- ▶ Some dimmers fit within an individual fixture
- ▶ Less power per dimmer **BUT** only one fixture per dimmer

Self contained - with internal protective devices, such as circuit breakers

PRESET BOARDS

- ▶ Multiple rows of faders
- ▶ One row = one scene or lighting cue
- ▶ Master Crossfade fader
- ▶ Varying Sizes
- ▶ Human Error

Faders - each sends a low energy signal to the dimmers

You set one row of faders and while that row is live on stage you set the next row for the next lighting look

Master Crossfade - To switch from one scene to the next you use a master crossfade fader that switches which row gives out the signal to the dimmers

Sizes - 2 scene to 20 scene

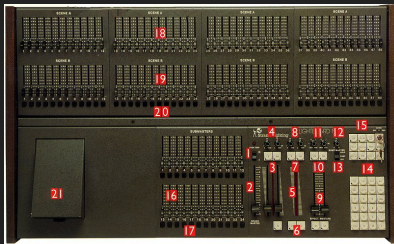
2 scene most common

Human Error - each scene must be manually set



Two Scene Preset Board
ETC Smart Fade 12 Channels

Two Scene Preset Board
Strand Lighting 48 Channel



MEMORY LIGHTING DESKS

- ▶ First computerized boards in the 1970's
- ▶ Eliminated human error
- ▶ Cues run at a rapid rate and look exactly the same
- ▶ Computers in control -> computers in fixtures
 - ▶ First Moving Lights in the 1980's!!

1970's - first computerized boards

Cues - for every performance, baring technical difficulties

Since then Lighting Control Consoles have become more advanced and sophisticated as technology has advanced

- ▶ Questions about Lighting Journals
- ▶ #1 Due tonight at 11:59pm

The student will write 5 lighting journals, each at least 100 words in length. The first 3 of the 5 journals should critically analyze an image found in nature and relate it to the concepts of lighting discussed in class. The final 2 should focus on artistically designed lighting, critically analyzing it and relating it to the concepts of lighting discussed in class.

Journals should be submitted in PDF form to Beachboard. Images should be submitted with each journal so that the instructors can reference that student's observations. No late work will be accepted for these journals.