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Chapter 5

Stage & Set

An Introduction

The Ultimate Stagehand Guide

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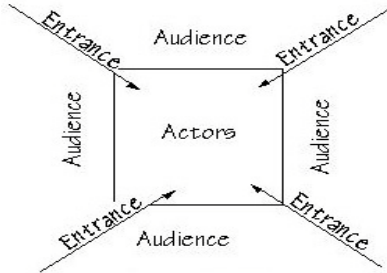
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LOOK FOR MORE TO COME REAL SOON

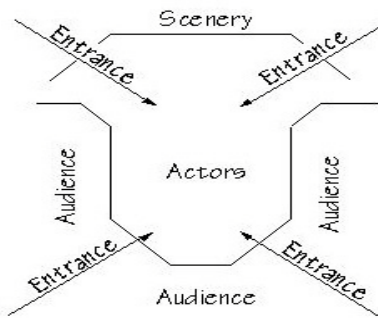
AND DON'T FORGET TO ALSO DOWNLOAD THE INTRODUCTION TO RIGGING WITH
THE GLOSSARY

THE THEATER STAGE AND ITS EQUIPMENT

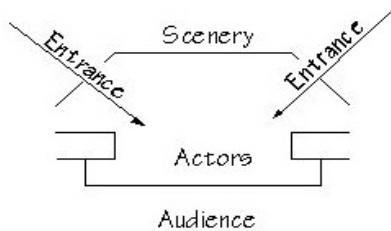
1. WHAT IS THE DIFFERENCE IN THE ACTOR-AUDIENCE RELATIONSHIP BETWEEN AN ARENA STAGE, A THRUST STAGE AND A PROSCENIUM THEATRE?



In an arena theatre the actor is totally surrounded by the audience. Entrances to the acting area are normally made through the audience at the four corners of the stage.



In a thrust stage theatre the actor is surrounded on three sides by the audience-- the fourth side contains the scenery. Entrances to the acting area are through the scenery upstage and through the audience at the two front corners of the stage.



In a proscenium house the actor is on a raised platform in front of the audience. Scenery typically fills the space behind, upstage of, the actor. Entrances to the playing space are made through the scenery.

2. WHAT WAS THE NAME OF THE FIRST PROSCENIUM THEATRE? WHERE WAS IT BUILT? WHEN?



Teatro Farnese

The 3000 seat Teatro Farnese, the first permanent proscenium theatre, was built into the Great Hall of the Palazzo della Pilotta in Parma, Italy in 1618. The theatre was primarily used for official state functions (such as a Royal wedding) for over 100 years before being abandoned. The palazzo was almost completely destroyed by Allied bombs during World War II (1944). It was rebuilt, following original drawings in the 1950s and reopened in 1962.

3. WHAT IS THE PROSCENIUM ARCH?

The arch (or "picture frame") which separates the acting area (stage) from the audience area (house or auditorium).

4. WHAT IS THE THEATRICAL NAME FOR THE FIRST, OR MAIN FLOOR OF THE AUDITORIUM?

The orchestra. In a musical or opera house there is an orchestra for the audience, and an orchestra pit for the musicians.

5. WHO WERE THE FIRST TO USE A THRUST STAGE?



The ancient Greeks. To the left is a view of the ruins of the Theatre of Dionysus, the fifth century BC home of the Greek tragedies of Aeschylus, Sophocles and Euripides. This permanent Greek theatre was built between 342 and 326 BC (approximately 100 years after Oedipus was first performed); remodeled to fit the Roman ideal during the reign of Nero (61 BC), and last used for a theatrical performance during the 4th century AD. This historical site was discovered during the 18th century and excavated during the 19th.

6. WHICH 20TH CENTURY ENGLISH DIRECTOR WAS INVOLVED IN THE DEVELOPMENT OF THE MODERN THRUST STAGE THEATRE?

Sir Tyrone Guthrie (1900-1971) was instrumental in design of the of both the Canadian Shakespeare Festival Theatre in 1953 and the Guthrie Theatre in 1963.

7. WHAT WAS THE FIRST MODERN ARENA THEATRE?



The Penthouse Theatre. Professor Glenn Hughes, the founder and Dean (1930-1931) of the University of Washington's School of Drama wanted a small, intimate space, for his educational theatre productions. Such a space was not available on campus so his first theatre (1935-1940) was the penthouse of a Seattle hotel. In 1940 a 160 seat arena theatre was built by the WPA on the university campus at a cost of a little over \$ 64,000. This became the Hughes Penthouse Theatre.

During the the 1950s and 60s many alternative spaces -- car dealerships, hotel ballrooms, grocery stores, warehouses -- became arena theatres. On a university campus the easiest space to adapt to an intimate arena theatre was the stage of the University's large auditorium. In Columbus, Ohio, Roy Bowen of the Players Club created the Stadium Theatre, a 300 seat arena space under Gate 10 of the Ohio State University Football Stadium.

8. WHAT IS THE DIFFERENCE BETWEEN A FOUND SPACE AND A BLACK BOX THEATRE?



An Arena Stage

A found space is a nontheatrical space -- the rotunda of the state capitol, a church, warehouse, courtroom, carepnters shop -- which is used for production.

Typically the space is chosen because of its context to the play: Shakespeare's Julius Caesar at the capitol, The Passion Play in a church, Inherit the Wind in a courtroom...

A black box theatre is a large, flexible theatrical space which can be easily adapted into any (end, thrust, arena, or corner stage) theatrical form.

9. GIVE A LOCAL EXAMPLE OF A PROSCENIUM THEATRE

A THRUST STAGE THEATRE?

AN ARENA THEATRE?

Although it's not local, the Arena Stage in Washington, DC is probably the most obvious example of an arena theatre. Northern has used both the arena and thrust configuration for its Theatre-On-the-Stage presentations.

10. THE NAMES OF VARIOUS STAGE PARTS

The fire curtain is a flame resistance drop hung immediately behind the proscenium arch. In the case of a fire the curtain is dropped to protect the audience.

ACT CURTAIN

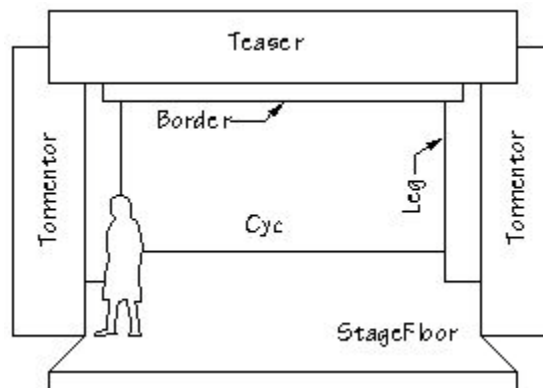
The act curtain (also known as the grand drape) is generally hung directly behind the fire curtain. It is traditionally made of 24oz Velour and is used to begin and end each act.

TRAVELER

A traveler is a full-stage drape which is split in the center. When opened it travels to the side and is stored off-stage left and right.

TORMENTOR, TEASER, LEG, BORDER AND CYC

The tormentor and teaser establish the size (width and height) of the set on a proscenium stage.



The tormentors are narrow (8' wide) curtains hung behind (up stage of) the act curtain. They are used to establish the width of the setting and mask (hide) the off-stage space. On the MainStage we use the act curtain to establish the width of the opening.

The teaser (or valance) is a short, full stage (48' wide x 8' tall) curtain hung behind (up stage of) the act curtain. It is used to establish the height of the setting and to mask the lights and scenery hung above the acting area.

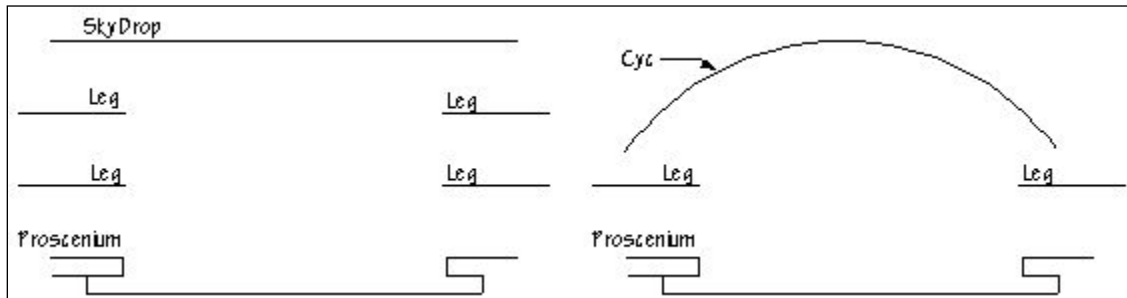
Together the tormentor and teaser form an inner portal or false proscenium which frames the action of the play.

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Legs are the long narrow curtains (8' wide x 24' long) hung at the sides of the stage which mask the off-stage space. They are generally hung parallel to the front of the stage on 6' to 10' centers. The MainStage requires three sets of legs to mask.

Borders or short full stage width curtains (48' wide x 4.5' high) hung above the acting area which mask the lights and scenery hung in the fly loft. Typically the borders are hung downstage (in front of) each set of legs. Typically both legs and borders are cut from black velour or commando cloth.

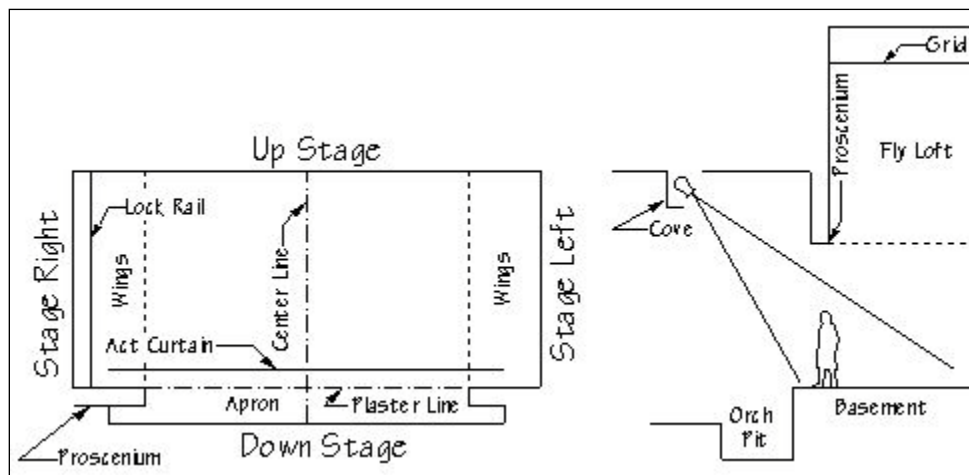
The Cyc, short for cyclorama, is the light sky-blue drop, or white plastered wall, at the rear of the stage. It is generally used to represent an endless, cloudless sky. Note: What I call a cyc is actually a sky drop. A true cyclorama is curved, it starts down left curves around the back of the stage and ends down right. As you can see from the drawing below, the use of a real cyc severely restricts access to the stage



SCRIM

Scrim is an open weave fabric which is often used for "magical" effects. When lit from the front it appears solid; when the lights behind the scrim are turned on, the fabric becomes transparent revealing whatever is up stage.

Apron, Wings, Fly Loft, Grid, Cove, Center Line, Plaster Line, Up Stage, Down Stage, Stage Left and Stage Right



THE APRON is the narrow stage space in front of the act curtain.

THE WINGS are the backstage space on either side of the acting area.

THE FLY LOFT is the backstage space above the acting area.

THE GRID is the I beams which form the "ceiling" of the stage house. The blocks (or pulleys) which hold the lines of the rigging system are clamped to these beams.

THE COVE, OR CEILING BEAM, is the front-of-house mounting position, usually cut into the ceiling of the auditorium, where lighting instruments are hung to light the front edge of the stage.

THE CENTER LINE marks the center of the stage. It is one of the two reference lines used when locating points on the stage.

THE PLASTER LINE is the second reference line. It extends from the upstage corner of the stage left proscenium arch to the upstage corner of the stage right proscenium arch. Each point on stage is located by its distance up stage (or down stage) from the plaster line and its distance left or right of the center line.

STAGE LEFT AND STAGE RIGHT are always from the actor's point-of-view with the actor standing on stage, facing the audience.

DOWN STAGE is towards the audience; up stage is towards the back wall.

PIN RAIL (OR LOCK RAIL)

The lines which control the rigging are secured (tied off or locked) at the pin rail (or lock rail).

HOW DEEP IS YOUR LOCAL STAGE?

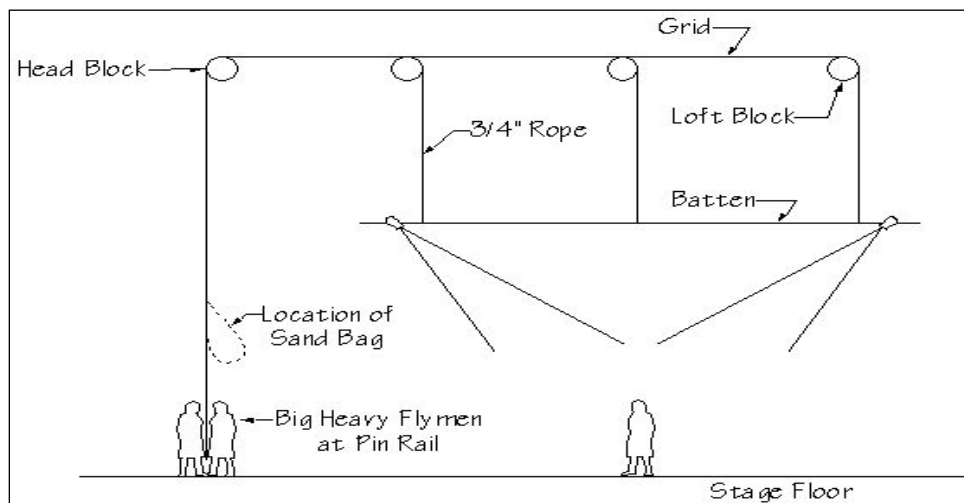
HOW WIDE IS YOUR STAGE HOUSE?

WHAT IS THE HEIGHT OF YOUR GRIDIRON?

WHAT IS YOUR AUDITORIUM'S SEATING CAPACITY?

WHAT IS THE DEPTH OF THE AUDITORIUM?

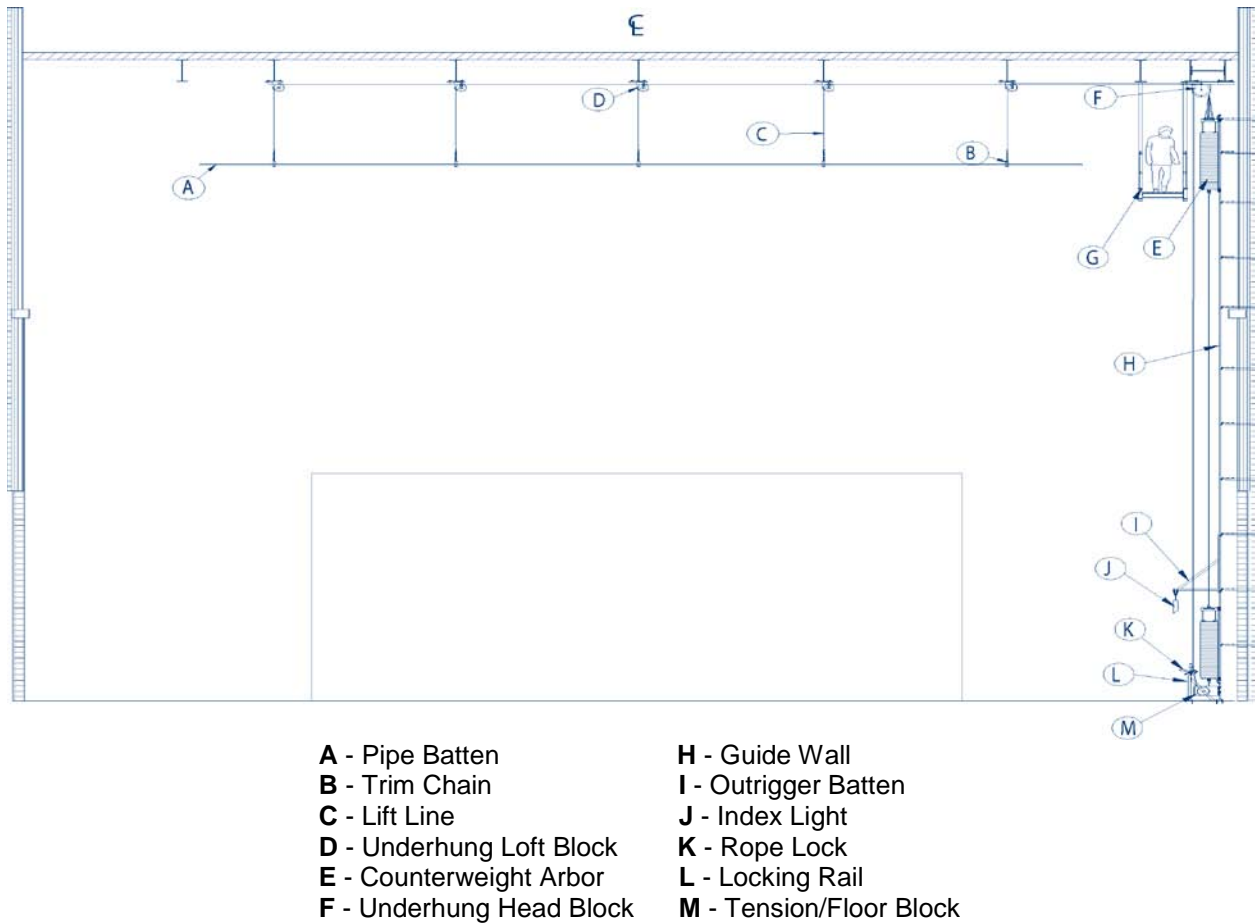
12. WHAT IS THE DIFFERENCE BETWEEN A ROPE SET (OR HEMP) AND A COUNTERWEIGHT SYSTEM.



A rope set is the oldest, simplest, most flexible and most dangerous rigging system. A set of ropes (often 3/4" hemp) run from the pipe (or batten) up to the loft blocks clamped to the grid, across to the head block secured to the side wall of the fly loft and down to the pin rail. A 400 pound load on the pipe (20 spotlights, for example) will require a 400 pound force (two or three large fly men) at the pin rail.

If a rope set is used during a show a sandbag will often be attached with a prussic knot to the rope set to help balance the weight of the load. For example, if a drop weighs 150 pounds, 100 pounds of sand may be attached to the off-stage lines.

COUNTERWEIGHT,



A counterweight system is easier and safer to use. A set of 1/4" steel cables (lift lines) run from the 1 1/2" steel pipe (or batten) up to the loft blocks across to the head block and down to the top of the counterweight arbor. A 3/4" rope haul line runs from the top of the arbor up to the head block, down through the lock rail, around the tension pulley and back up to the bottom of the arbor. A 400 pound load on the pipe (20 spotlights, for example) is balanced with 10-- 40 pound cast iron counterweights (bricks) in the arbor.

To bring the pipe in (down), the flyman pulls the onstage or outside haul line down which raises the arbor and lowers the pipe. To take the pipe out (up), the flyman pulls the offstage or inside haul line down which lowers the arbor and raises the pipe. Because the load is balanced only one operator is required.

Before a pipe is brought in the flyman should (1) make sure the stage area is clear and (2) should call out in a loud clear voice: "Heads Up, pipe coming in."

DEAD HUNG SYSTEM OF RIGGING?

In a dead hung system the pipe is permanently chained to the grid. If you need to hang a light you get out the ladder.

13. WHICH RIGGING SYSTEM DO YOU HAVE IN YOUR THEATER?

WHAT ON YOUR LOCAL STAGE IS DEAD-HUNG?

14. WHAT TYPE OF FLOORING SHOULD BE USED ON A STAGE?

The stage floor should be made of a soft wood (perhaps plywood) covered with particle board or tempered Masonite®. Typically the top layer of the stage floor will need to be replaced every two or three years.

15. WHAT IS A TRAP? HOW IS IT USED?

A trap is section of the stage floor which can be removed giving the actors and crew access to the basement. It is generally used for those plays which require an entrance from below.

16. WHAT SHOULD BE THE COLOR AND FINISH OF THE STAGE FLOOR?

The floor should be painted black with a semi-gloss or satin finish. The traditional "flat" black appears dull grey, not black.

THE MASKING DRAPES?

Black.

17. OUT OF WHAT TYPE OF MATERIAL SHOULD THEY BE CUT?

Velour, or a similar light absorbing material such as 16oz. Commando Cloth, also known as Duvetyn or Velourette.

18. WHAT BASIC SET OF CURTAINS SHOULD ANY THEATRE OWN?

Act Curtain
Valence (or teaser)
Legs (probably three or four sets)
Borders (probably three or four sets)
Concert drape (or olio)
Full stage black (up stage)
Black scrim
Cyc (or sky drop)

19. WHAT IS A "CONCERT DRAPE" OR "OLIO?"

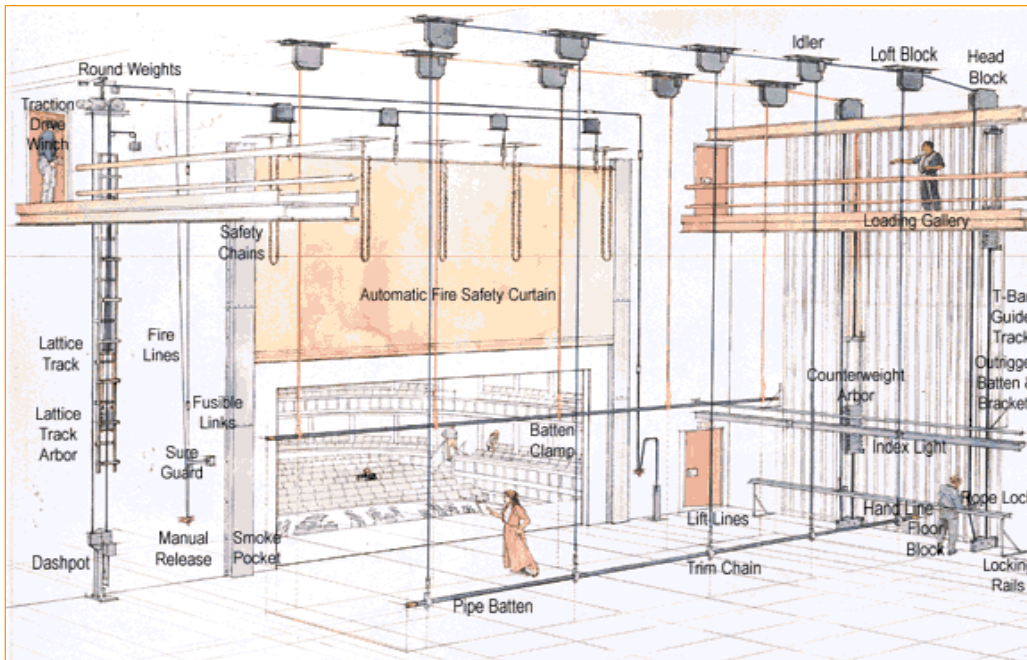
A full stage traveler hung eight to twelve feet upstage of the act curtain.

HOW IS IT USED?

It is traditionally the backdrop behind a speaker.

NOTES

WORKING PARTS OF THE STAGE



PIPE BATTEN

Hundreds of pounds of lighting fixtures, scenery, sound equipment - anything - may be hung from the pipe batten so it had better be robust and rigid. Usually made in 20-foot lengths, ours have 18-inch iron splices that slip into the pipe to stiffen and strengthen the joints.

BATTEN CLAMP

A device which attaches to the flange of a steel beam without altering the beam from which a load is hung

TRIM CHAIN

With multiple lift lines attached to each pipe batten, it is inevitable that their lengths will have to be adjusted to keep the batten parallel to the stage. There are several trimming devices, but the most common is the trim chain.

LIFT LINES

The wire rope lift lines that support the pipe batten are the tendons, the muscles that hold the rigging system together. Galvanized steel aircraft cable is preferred for its strength, flexibility and free-running nature.

HAND LINE

The flyman uses the hand line to raise and lower the batten. Traditionally made of 3/4-inch manila rope, polyester hand lines now provide greater durability, dimensional stability and operator comfort.

FLOOR BLOCK

The hand line runs over the head block and under the floor block. The floor block is adjustable to keep the line taut.

BLOCKS

If the lift lines are a rigging system's tendons, then the loft, head, floor and idler blocks are its joints. Loft and head blocks can either be hung under structural members or mounted upright on a grid.

LOFT BLOCK

Mounted overhead at grid level, the loft block is a simple pulley that runs the lift line 90° toward stage left or right. Sealed precision ball bearings allow the sheave to turn smoothly and quietly on the shaft. The groove in the sheaves should be machined or molded precisely so it supports the line through at least 150° of its circumference. This minimizes deformation and wear. Better sheaves have double depth grooves so the line feeds into the sheave securely when the head block is offset.

HEAD BLOCK

Individual lift lines are collected by the head block and turned downward in their own groove toward the floor. There also is a separate center groove for the hand line. Head blocks are muscular because they carry the entire load attached to the batten. Tapered roller bearings are a must.

IDLER

Despite the weight they carry, lift lines will sag as they cross the stage unless they are supported by small idler blocks attached to the loft block sideplates. The closer a loft block is to the head block, the more idlers it carries.

LOADING GALLERY

The gallery's function is simple - it provides a place to stand while adding weights to or subtracting them from the arbor. It must be ruggedly designed since it has to be capable of storing all the weights in all the arbors, often several tons.

COUNTERWEIGHT ARBOR

Counterweight arbors should be built like a tank. Look for a heavy welded steel top and bottom. Avoid brittle castings - there is too much at stake. Threaded ¾-inch steel arbor rods are attached to the top and bottom plates with double sets of nuts. Spacers should keep the weights from resting on the bottom nuts to prevent stress and wear.

T-BAR GUIDE TRACK

Attached to the back of each counterweight arbor is a guide shoe that lets the arbor slide up and down between two T-shaped guides, but prevents it from swinging from side to side. The guide shoe is Ultra High Molecular Weight (UHMW) polymer backed by a steel plate so it stays rigid while still sliding smoothly and quietly.

OUTRIGGER BATTEN AND BRACKET

Fastened to the wall with a triangular bracket, the outrigger batten is a convenient rest for ladders, scenery, etc., so they won't foul the handlines and counterweight arbors.

INDEX LIGHT

In darkened wings these lights, attached to the outrigger batten, allow the flyman to see what he or she is doing. A reflector hides the light from the audience.

ROPE LOCK

Once a batten is positioned "on its mark," the rope lock holds the hand line in position. A handle-operated cam clamps the line between two metal "dogs," one of which is adjustable depending on the rope's diameter.

LOCKING RAILS

Rope locks are attached to the locking rail. Erasable plastic index cards that can be used to label the set's purpose are often attached to the locking rail, as well.

INTRODUCTION TO SET CARPENTRY.

Perhaps the most visible part of any production is the setting. The purpose of the set is to provide visual context for the action taking place on stage. If a production is to take place in an apartment, the set may be a very realistic representation of an apartment room.

To create a realistic scene, many different finishing techniques can be applied. These techniques require the use of special paints and painting tools. From the design perspective, an understanding of basic color principles and illusory techniques are necessary.

Often, the set is not only a visual element, but a structural one. Multi-level sets must be designed and built such that they can support the weight of actors on their upper levels. Walls must be structurally sound so that when set doors and windows are slammed, the set doesn't move and shatter the illusion of a real room.

The Set Designer is the person most responsible for the final look of the set. The responsibilities of the position include preparing measured drawings for the Master Carpenter, who is responsible for getting the set built as designed

SET PIECES

In most theatres, and on all touring productions, musical and others, modular scenic components are used that can be assembled in a virtually unlimited number of ways. Due to budgetary constraints, some of these components can be re-used for many productions, and it is not uncommon for a theatre's scene shop to contain a large inventory of these set components.

PLATFORMS

Platforms are weight-bearing scenic structures that are used as acting space. Platforms can be used at varying heights, often several feet off of the ground. Platforms can be commercially purchased or built out of lumber. Commercial platforms tend to be bulky, noisy when walked upon, and generally can't be painted, thus the tendency to use wooden platforms.

A typical platform is constructed out of two by six inch lumber frame and covered with 3/4 inch plywood. This construction makes platforms sturdy, and often quite heavy if they are large. Legs can be attached to platforms, usually by the use of large screws. Figure [3.2](#) shows the construction of a typical platform.

Frequently, four by four inch material is used for platform legs, due to its strength and available area for attaching to the platform, Legs made of four by four lumber need cross-bracing if they are over three feet tall. This bracing can generally be made out of scrap lumber.

Often a stock of legs with standard heights is kept in a theatre's scene shop. Stock of several legs ranging from one to four feet in one-foot increments is not at all uncommon, and is what the WPI scene shop stocks. Often times custom heights need to be cut from fresh stock, but generally most work can be done with the supply of standard legs.

Special care must be taken when extremely high platforms are used. The platforms must be adequately braced and supported such that there is no chance of a collapse. Railings should be used on high platforms wherever possible to minimize the chances of an actor falling off of one. For platforms over eight feet tall, four by four material for the legs is mandatory. The platform and legs should be attached to the wall and floor of the stage if possible.

Some stages have strips of lumber attached to the upstage wall for the specific purpose of tying set pieces in. However, this is not always possible, especially in cases where a cyclorama or other soft good is flown behind the set. In cases like this, using aircraft cable to attach the platforms to the gridiron is a possible solution. The rigging chapter in our guide provides more information relative to this topic.

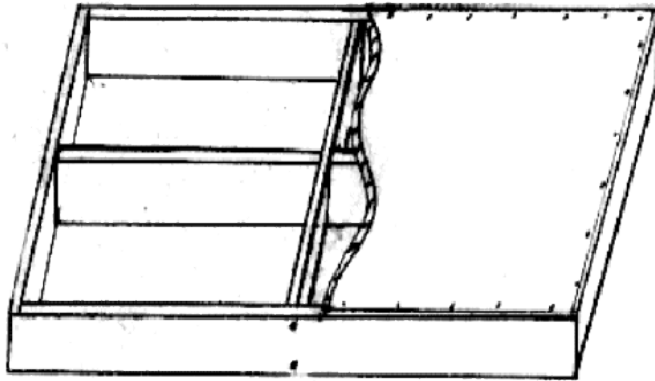


Figure 3.2: Construction of a typical platform. 2 inch lumber is used for the frame and 3/4 inch plywood is used for the top surface.

FLATS

To create the illusion of interior and exterior walls, flats are used. There are two main types of flats: the soft flat and the hard flat. Regardless of the type, they serve essentially the same purpose.

Soft flats are constructed out of lumber and fabric. A wood frame supports a piece of stretched cloth that is painted to look like whatever type of wall is necessary. Soft flats have the advantage of being extremely light and easy to transport, but they are not especially durable, requiring quite a bit of care to avoid damage.

Hard flats are constructed mainly of lumber. A typical hard flat is constructed from a sheet of 1/4 inch plywood and a frame of one by three inch lumber. This gives hard flats a distinct advantage over soft flats in that hard flats can take much more abuse without being destroyed. It is also quite a bit easier to build doors and windows into hard flats. Figure 3.3 shows the construction of a hard flat.

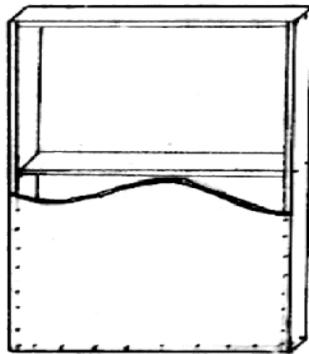


Figure 3.3: Construction of a typical hard flat. 1 inch lumber is used for frame and 1/4 inch plywood is used to cover it.

STAIRS

When high platforms are used, it is useful to have some means for the artist, or actor to get to them, or else there was little point in putting the platform there in the first place. A stair is generally used to provide the necessary access, either from the ground or another platform. There are a variety of methods that can be used to construct stairs. Some form self-supporting units that require little or no mounting to the set while others form units that must be attached to the set at their top and bottom points. Often stair units are constructed for several standard heights and kept on stock in a theatre's scene shop for later re-use.

Stairs must be constructed out of appropriately strong material. Self-supporting stairs often use 1 inch lumber for the step part (called a tread), and 2 inch lumber for the supports (called stringers or carriages).

Any stair higher than a couple of feet off the ground should have a railing on any exposed side. These railings can be constructed out of two by fours for offstage stairs that are hidden from audience view. On-stage railings can be almost as simple if the look is not important, and as complex as any railing in a fancy house. The goal is to provide support for the actor, and make them feel safe when using the stair.

OTHER STRUCTURES

Many productions call for other miscellaneous set structures such as trees, pillars, water wells, etc. Many different methods and materials can be used to build these objects. The nature of the object somewhat dictates the materials, but there is generally a lot of flexibility in what can be done.

If an object does not need to carry any weight, its frame can generally be made out of thin wood. The wooden frame is then usually covered with some sort of contouring skeleton, such as wire mesh. This skeleton is shaped to the desired contour, and then covered with papier-mâché strips, a fabric and glue combination, or fiberglass. Once dry, the structure can be painted and textured at will. Other interesting effects can be had using different types of foam (Styrofoam, etc.). Foam can be easily cut, shaped, and finished, allowing realistic rocks and other objects to be created.

If the structure must carry weight, generally a platform is built into the structure where the support is needed. The platform can be covered with the finishing material to blend the look of the structure together.

FLOOR COVERINGS

Most stage floors are polished hardwood, which is hardly representative of the desired floor type of most productions. For this reason, the floor is often covered with something more fitting to the scene of the production. Choosing a workable floor material is often difficult, as the material has to be resistant to scuffing, flat, easy to remove, and inexpensive. Often times it is difficult to meet all of these goals, which is a primary reason why the floor is often ignored in productions.

Many different materials can be used for floor coverings. Fabric, pressed hardboard, rugs, carpeting, and vinyl flooring can all be used with good results. Some surfaces, such as hardboard, lend themselves to painting, which makes creating almost any sort of pattern easy

Construction

Set construction is an important part of any production. Construction of a large set usually requires a large crew and many hours of work. Diverse skills are necessary for successful set construction. Many different materials are used, and consequently several types of tools are used to work the materials. Safety must be considered at all points during the construction, both for the safety of the construction crew and the cast that will be acting on the completed set.

MATERIALS

Many different types of materials can be used to construct the various elements of a set. Wood, cardboard, paper, plastics and metal are among the materials commonly used in large theatres. Most small theatres tend to limit themselves to wood, cardboard and paper, but there are often exceptions. Proper knowledge of how to work with these materials is essential for a successful and safe set construction.

Wood is a relatively easy material to work with. It is strong, easily cut with the appropriate tools, and readily available. Corrugated or honeycomb cardboard can be used in place of wood in some instances, especially in non-structural set pieces. It is easily cut with a knife, and readily shaped into a variety of forms. A variety of useful foams exist that can be used to construct various decorative set pieces. Plastics and metal are more difficult to work with, and require special tools that are often more difficult to gain access to than those for working wood.

Obtaining the appropriate materials can sometimes be a challenge. Lumber is usually fairly easy to obtain, as there are several lumber yards and homeowner-oriented stores that carry a large selection of materials. Other, more exotic materials may be difficult to track down. Theatre supply houses, craft stores, hobby shops, and industrial supply companies are all excellent resources for hard-to-find materials such as corrugated cardboard, plastics, metal, and foams.

TOOLS

Many tools are helpful for the construction of sets and set components. Some are specific to a particular type of material, but many are general purpose. Having the appropriate tools on hand tends to make the job of building a set much easier and safer for the set crew, as alternate methods of accomplishing tasks need not be sought.

Some of the standard tools handy for working with any material are: tape measures, squares, levels, awls, chalk lines, clamps, hammers, staplers and electric drills. These tools can be used for many tasks, and no set crew should be without them. Generally having several of each on hand can help a large set crew get their job done in an expedient fashion.

A multitude of saws, planes and sanders are useful for working with wood. Plastics and metal working demand more exotic tools such as metal rolls, metal benders, welders, heat guns, and vacuum forms. Hot knives are useful for smoothly cutting various types of foam. As always, knowing how to properly use these tools is paramount for successful and safe work.

FINISHING

The final step in set construction is to finish the set. The purpose of this step is to add detail, color and texture to the set so that it fits within the look desired by the production design team. Finishing a set tends to rely heavily upon artistic talent rather than technical knowledge, but there are still important technical considerations to be aware of.

PAINTING

One of the areas of theatre understood by the fewest people is scene painting. Painting is as much of an art form as it is a science. Knowing how to choose paints, choosing colors that will look good under the stage lighting, and understanding how to properly apply paint are all important skills for a scene painter.

TYPES OF PAINT

There are many types of paint available, each with a different chemical composition and purpose. Even with these differences, paints are made up of essentially the same components. A dye or pigment is used to give the paint its color. A binder is used to make the paint adhere to the surface to which it is applied. Lastly, the vehicle is the liquid substance that carries the binder and coloring, allowing it to actually be painted onto a surface. Different kinds of paint use different coloring, binders and vehicles, thus the availability of different types of paint (latex, oil-based, vinyl, gloss, semi-gloss, etc.).

Large theatres often mix their own paints by buying raw binder, pigments, etc. Most smaller theatres, however, buy pre-mixed paints. Acrylic, latex and vinyl are the types of paint most frequently used for theatre. Oil-based paints are generally not used in a theatre setting because of their hazardous fumes and slow drying time. Many vibrant colors are available in acrylic, latex and vinyl paints, making them a very popular choice for theatre applications.

While oil-based paints are not usually used, sometimes oil-based stains are. Stains differ from paints in that they are soaked into the material being covered and not bonded to the outside. Stains can offer very pleasing effects when used on wood, as they let the natural grain of the wood show through.

MIXING PAINTS

Within a given type of paint, colors can be mixed. Pigments and dyes mix by what is known as the subtractive mixing process. When pigments are mixed, the wavelengths of color interact, causing some to cancel each other out. Most people are familiar with the primary colors of pigment: red, blue and yellow. When pure colors are mixed in equal quantities, black is the result. The primaries can be combined to form the secondary colors of magenta, orange and green. Further mixing of the primaries and secondaries yields tertiary colors such as blue-violet, brown, etc. Figure 3.4 shows a subtractive-mixing color wheel.

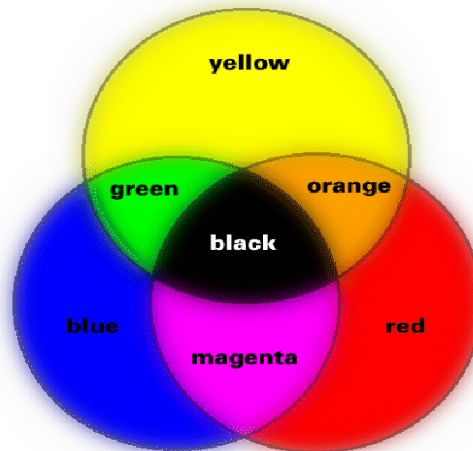


Figure 3.4: Subtractive mixing of the primary pigment and dye colors.

APPLYING PAINT

Many tools are used to apply paint to surfaces. The most common and familiar is the paint brush. Other common tools are the paint roller, the sponge, and various types of sprayers.

Each tool is suited to a particular purpose, but often can be used for others. Some tools offer interesting effects that can be easily taken advantage of in a theatre setting. Below is a list of some common painting tools and their uses:

Brushes are often thought of as the workhorse of painting, as they can be used for almost any job. Large brushes work well for covering large areas in a short time, while small brushes are suited to fine detail work.

Rollers are suited to covering large areas in a very short period of time for simple coverage, or for special texturing effects. Excellent for floors, walls, etc.

Sprayers can be used to cover large areas in a very short period of time. Their nature makes them suited for painting strangely shaped objects as well as blending colors.

Sponges can be used for adding textural effects as well as blending applied paint.

A set is generally painted in a series of steps, starting with a base coat of paint called the primer. The purpose of priming is to make the materials used on the set appear more uniform. This is important, as often a mix of new and old materials are used.

Next, a base coat of paint is applied. Several methods of applying the base coat exist, ranging from using a single color uniformly to blending many colors together. This base coat is the final color on some of the set in areas that have no additional layers painted on top of them. However, many areas will call for additional texturing and detail work, to make a set look dirty, old, etc.

Many textural effects are illusory rather than realistic. The illusions are accomplished through the use of paint color and appropriate application of the paint. Rock, brick, and wooden panels can all be simulated using textural tricks.