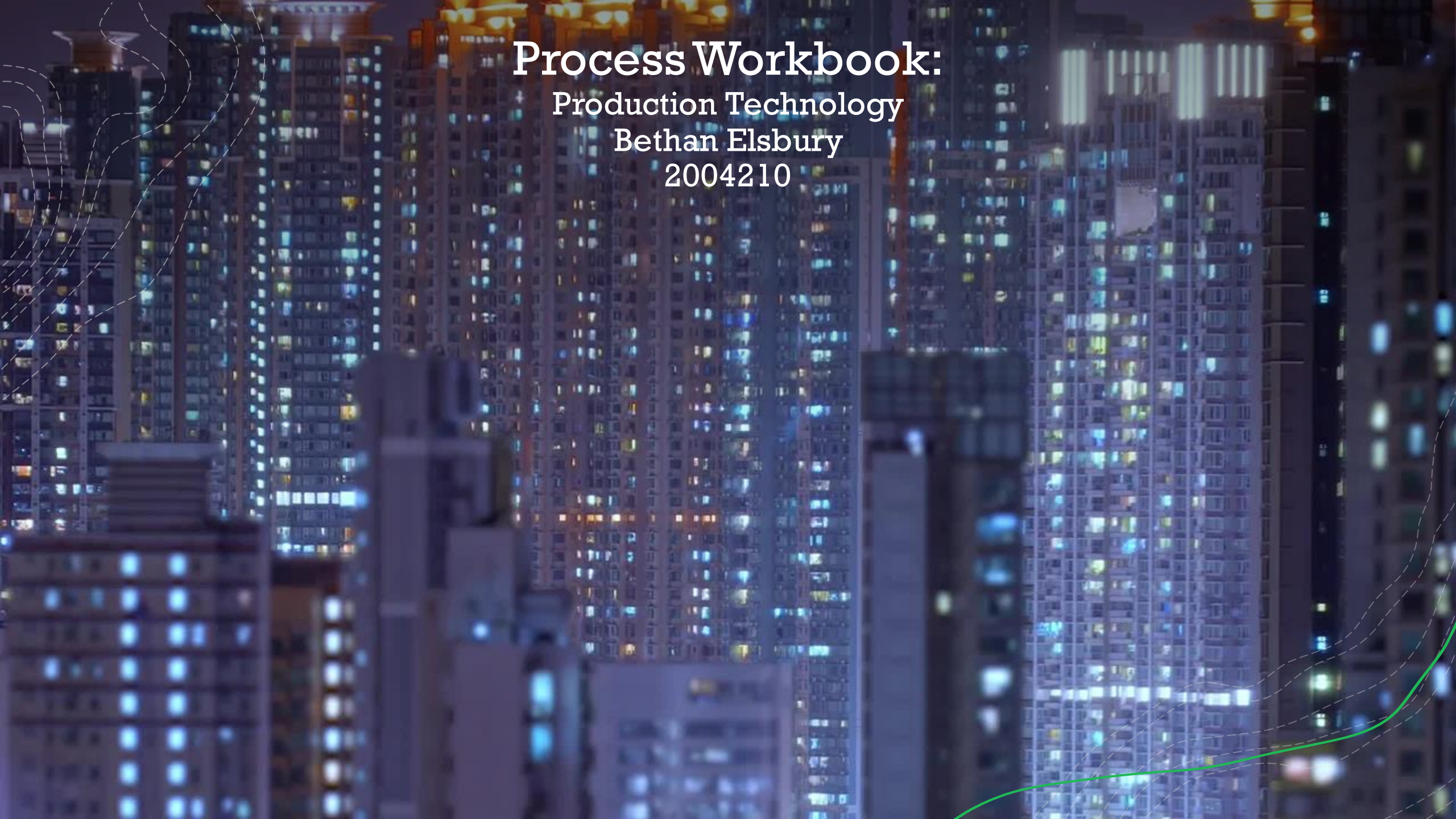


A nighttime photograph of a dense urban skyline, likely New York City, with numerous skyscrapers illuminated by city lights. The image has a dark, moody aesthetic with a blue and purple color palette. Overlaid on the image are several decorative lines: a series of white dashed lines in the upper left corner and a solid green line in the lower right corner, both curving across the frame.

Process Workbook:

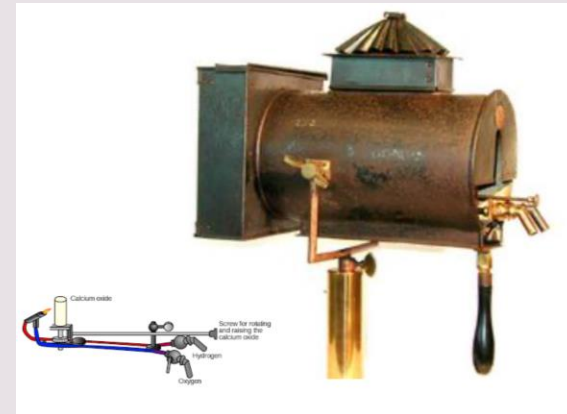
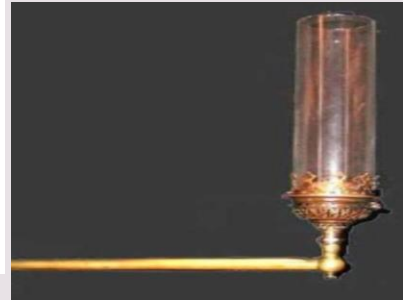
Production Technology
Bethan Elsbury
2004210

LIGHTING

Lighting Equipment Over Time:

- Early Greeks – used sunlight/the time of day. (Considering where the sun would be)
- Globe Theatre – Natural lighting (open top)
- Candles – in the 1500s (lots of candles)
- Oil lamps – coloured glass/filters (late 1780s)
- Gas Lamps - 1800s (gas controlled)
- Limelight - more control (dim/bright) with lenses for more direct aim. (1830s)
- Carbon Arc –(1846) beam of light (2 rods of carbon touched and then pulled apart, stretching the flame – can be directed)
- Incandescent Lamp – first bulb – Thomas Edison (1880s)
- Tungsten Halogen – much brighter and efficient light design form the incandescent lamp (mid 1960s)
- Further lamp developments – High-Intensity Discharge Lamps (1980s)
- LED lights - low energy with good, coloured light output (invented in the 1960s, took over on stage in 2008)

Source: Given by tutor.



Source: Given by tutor.

Purpose of Lighting:

- To engage the audience with colour, mood, energy and texture.
- To direct the audience's focus.
- Allows things to be seen.
- (More than just practical lighting)
- Setting.
- Emotional energy.
- Allows actors, action and artistic elements to be seen.

Functions of Stage Lighting:

- **Visibility:** so that elements of performance can be seen.
- **Selective Focus:** directing attention.
- **Modelling:** using texture to emphasise highlights or shadows.
- **Mood:** use of colour to empathise emotion or determine time of day etc.
- **Style:** realistic/non-realistic
- **Information:** location, time, space.

Source: Given by tutor.

LIGHT FIXTURES:

Types of Fixtures:

- The Profile Spotlight – Ellipsoidal Reflector Spotlight (ERS) (best for front light)
- Directional Spotlight (Long and Short Distance)
- Fresnel (best for front (fill light) and back light)
- Scoop (Multi-purpose reflector floodlight)
- Par Can (Fill light)
- Intelligent Lighting (Automated/Mechanical Abilities)
- Strip Light and LED Strips (Covers long distances smoothly and evenly)
- Follow Spot (Often used for following lead characters)



Source: Given by tutor.

LIGHT ACCESSORIES

- Gobo (Water Gobo and Glass Gobo)
- Gobo Holder
- Gobo Rotator
- Colour Gel
- Gel Frame
- Top Hat
- Barn Doors
- Iris



Source: Given by tutor.

Four Main Functions of Stage Lighting:

- VISIBILITY
- MOTIVATION
- COMPOSITION
- MOOD

Four Main Functions of Stage Lighting:

- INTENSITY
- DISTRIBUTION
- COLOUR
- MOVEMENT

Where to Start:

- Define the acting area/space
- Distribute fixtures to achieve desired visibility – so that the actor is clearly visible and distinct within the scene
- Use colour support the area/space, actor and scene

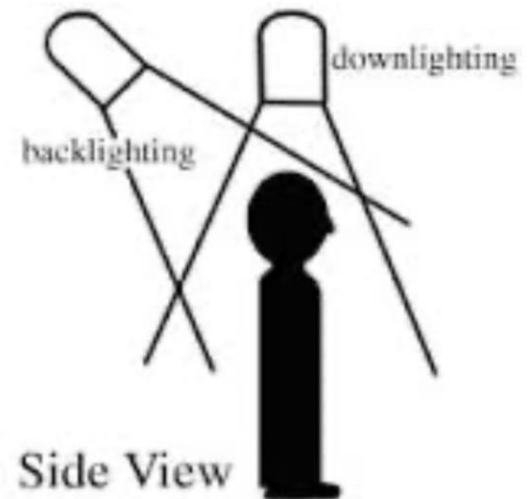
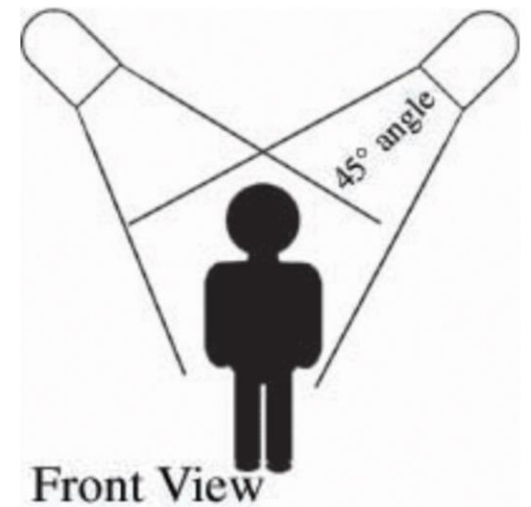
Types of Lighting:

- FRONT LIGHT – from the front, makes object look flat.
- TOP LIGHT – Directly above performer, sometimes called a God light.
- SIDE LIGHT - Used to sculpt body, common in dance/musicals. (A low side light is often on the floor and called "shinbusters".)
- BACKLIGHT - Either directly behind or at an angle.
- SILHOUETTE – Either directly behind or lighting surface behind the performer.
- FLOOR LIGHT – Or light from bellow.

Source: Given by tutor.

The McCandless System:

- Each area lit by two lights, each above from a 45-degree angle (using front lights).
- To create feature enhancing shadows on the actor and draw the actor away from the background.
- Ellipsoidals are ideal to use for the front lighting.
- Down lighting and backlighting are important as well to provide a 3D appearance and separate actor from background.
- This type of lighting is typically not as bright as the front lighting.
- Fresnels or PAR cans are ideal for the backlighting.



Source: Given by tutor.

COLOUR:

Colour is "the most significant defining factor in most lighting designs" as stated by *Theatre476: Stage Lighting*.

For example, colour has the ability to create:

- Emotion
- Atmosphere
- Location
- Temperature

You are even able to mix different colours to create another colour. "The primary colours of light are Red, Blue and GREEN, and when all of these colours are mixed together, the result is white light."

Another factor to consider is saturation and temperature of the lighting/colour of lighting. The hue and saturation of a colour can affect the intensity and therefore the dynamic of the colour in use. Different types of light sources can have different tones. A plain lighting source with no colour particularly, can have a pale blue tint or a warmer yellow tint and can change the tone of the space.

Source, given by tutor: Theatre476: Stage Lighting

What I Can Interpreted From Different Colours:

Red:

– Darker tones: **anger, frustration, intense, danger** - Lighter tones: **love, romance, passion** – General: **dry, hot**

Green:

– Darker tones: **sinister, contemplative** - Lighter tones: **hope, progress, growth** – General: **earthy, nature**

Yellow:

– Darker tones: **comfort, hopeful, warmth** - Lighter tones: **hopeful, free** - General: **positive, sun**

Blue:

– Darker tones: **evening, modern, futuristic, sci-fi, clinical** – Lighter tones: **sky, fulfilment, openness** - General: **cold**

Purple:

– Darker tones: **unsettled, mystery** – Lighter tones: **youth, learning**

Orange:

– Darker tones: **dry, heavy warmth, thick heat** – Light tones: **comfort, hope, warmth**

Source: Given by tutor.

The Lighting System:

What does it consist of?

- Electricity
- Dimmers
- Cables
- Lanterns
- Control Desk (with connection to dimmers)

A Basic UK Lighting System:

- 13A Power Supply
- 3-Way Dimmer Pack (Zero 88 Alphapack)
- DMX512 Cable
- Single Preset Lighting Control (Zero 88 Level 6)
- 15A Extension cable
- Lantern (Selecon Acclaim PC)

A Small Theatre Lighting System (UK):

- 32A Power supply
- 12 Channel Dimmer Rack (Avolites ART 2000S) with 2 x Socapex 6 channel output on rear
- DMX512 Cable
- Lighting Control Desk (Zero 88 Solution)
- Socapex Cable
- Socapex 15A Socket Spider
- 15A Extension Cable
- Lantern (Selecon Acclaim PC)

Source: Given by tutor.

Basic Lighting System (UK)



Small Theatre Lighting System (UK)

3 x 12 way dimmer racks give you 36 dimmer channels.

One rack (12 dimmers) shown below. The dimmer racks connect to the lighting bars via multicore 'Socapex' cables. Using a single multicore cable is far easier than running 6 separate 15A cables all the way from the dimmer racks to the lanterns.

(See [Flexible Lighting Installation](#) below for more)



Source: Given by tutor.

Response to Video:

- Strong visibility at start – well lit, pale room.
- Strong light in background as actor leaves the building.
- Her features get less visible – surroundings get darker.
- Night time – Passing lights in the background.
- Different outdoor spaces pass by as they continue to walk.
- Late, busy city lighting in background – out of focus.
- Continuous blank expression on face - the actor is the constant focus point.
- The sky begins to brighten – time change, they have been walking all night.
- Returning to daylight, again there is strong visibility.
- The actor breaks down in a brightly lit space at the end.

I made general notes to track the details in the video that I picked up along the way. My end thoughts are that the light represents the journey that the actor's emotions go on until she can no longer keep it submerged. The video begins with the actor feeling an intense emotion, represented by the strong lighting. As the actor begins walking to get away from it, background lights pass them by, representing continuous emotions stirring in their head as they remain neutral in appearance. The neutral appearance suggests that they are pushing their emotions down and ignoring them until the light gradually gets more intense again. Resulting in the break down at the end, suggesting that they became too much to remain submerged any longer.

What does the LIGHTING DESIGNER do?

- Reads the script (Score - if necessary)
- Attends rehearsals
- Coordinates with the Director and Production Staff
- Performs necessary research
- Generates/Communicates Design Ideas
- Creates a Light Plan
- Determines/Writes cues for the show
- Coordinates implementation through Chief Lighting Electrician (LX)
- Uses the basic tools of Lighting Design – Focus, Angle, Intensity, Quality, Colour, Movement

The Basic Tools of Lighting Design:

➤ Focus

- Highlighting the set? Keeping actors dark? One well-lit actor? Composition?

➤ Angle

- Where from? What works best with the type of performance? Multiple angles? Silhouettes?

➤ Intensity

- How bright? Where's the focus? Varying intensity?

➤ Quality

- Soft/Hard lighting? Textured (Gobos)? Instrument choice?

➤ Colour

- Colour Mixing? (Additive mixing?) Angle interaction? Mood/Emotion? Scene/Location?

➤ Movement

- Intelligent lighting? Timing of Cues? Type of show?

Source: Given by tutor.

What is a Light Source:

Something that motivates a light in a scene...

- Moonlight
- Car headlight
- Sunset
- Reflection off water

Key and Fill Sources:

Key Source:

- Primary source
- The Sun
- Indoor lighting (lamps, windows etc.)

Fill Sources:

- Colouring the shadows
- Reflections from surfaces

Realistic and Expressionistic Sources:

Realistic:

- Directly from setting/time of day
- E.g. Sun, Lamp, etc.
- Mood still applies

Expressionistic:

- Primarily by style, subjective interpretation of the subject

Source: Given by tutor.

Early Design Process:

➤ **Read the script**

- Read it at least once without making notes

➤ **Talk to the Director**

- Offer idea and see how they respond, don't talk in specifics, more in terms of general looks/scenes.
- Go to Director with interpretation questions.

➤ **Re-read the script**

➤ **Read the script looking for lighting "clues"**

- Explicit stage directions, time of day/seasonal references, location references.
- Think about each scene in detail – where is the lighting coming from? What does it feel like?
- Use a timeline.

➤ **If there is music, listen to the music**

➤ **Talk to the Director again**

➤ **Repeat**

Source: Given by tutor.

Design Tools:

➤ **Lighting Concept**

➤ **Visual Research**

➤ **Scene Analysis**

➤ **Colour Key**

➤ **Visual research:**

- Helpful to get ideas or give examples to the Director
- Pictures can convey better than words

Colour

Angle

Quality

Mood

Other Tools:

➤ **Scene Analysis**

- One per "scene"
- **Colour, direction and description of all sources**
- **Brief description of:** Setting/Time of day, Mood, Key and Fill sources, Quality, Other motivating factors

➤ **Colour Key**

- Show colours/angle of all washes
- Useful to have actual gel pieces
- Helps to talk about colour choice

➤ **Cue List**

- Lets you organise what cues you need in advance
- Location, Description, Timing etc.
- Useful to mark cues in script

Source: Given by tutor.

Tech Week (Overview):

Get-in...

- Rig
- Set it up
- Focus
- Plot
- Technical rehearsal
- Dress Rehearsal
- Preview performance
- First night

Production Notebook:

Keep a notebook of everything related to show...

- The script
- The light plot
- Scene analysis
- Colour key
- Cue lists
- Instrument/Gel schedules
- Invoices/Rental orders
- Work/Design notes
- Equipment Notes (especially moving lights)

Source: Given by tutor.

The Lighting Plan:

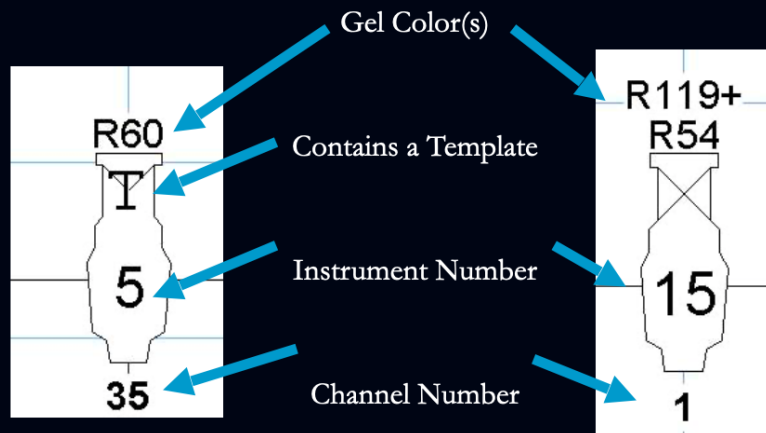
- Conveys information from Designer to Chief Electrician (and rest of Production Staff)
- Details and info about instruments: Type, Position, Orientation, Colour, Accessories, Circuiting
- Overall layout personal to LD
- Drawn by hand or with CAD
- Typically drawn to scale
- Should contain enough info to rig all lights in the absence of the designer
- Sketch of set, in relation to hang positions
- Trim height of hang positions
- Location of other equipment such as foggers
- Other lighting equipment related notes

Source: Given by tutor.

Instrument Symbols:

- Symbols used for simplicity
- Convey all applicable info
- Include a key to map symbols and instruments

Sample Lighting Symbol



More?

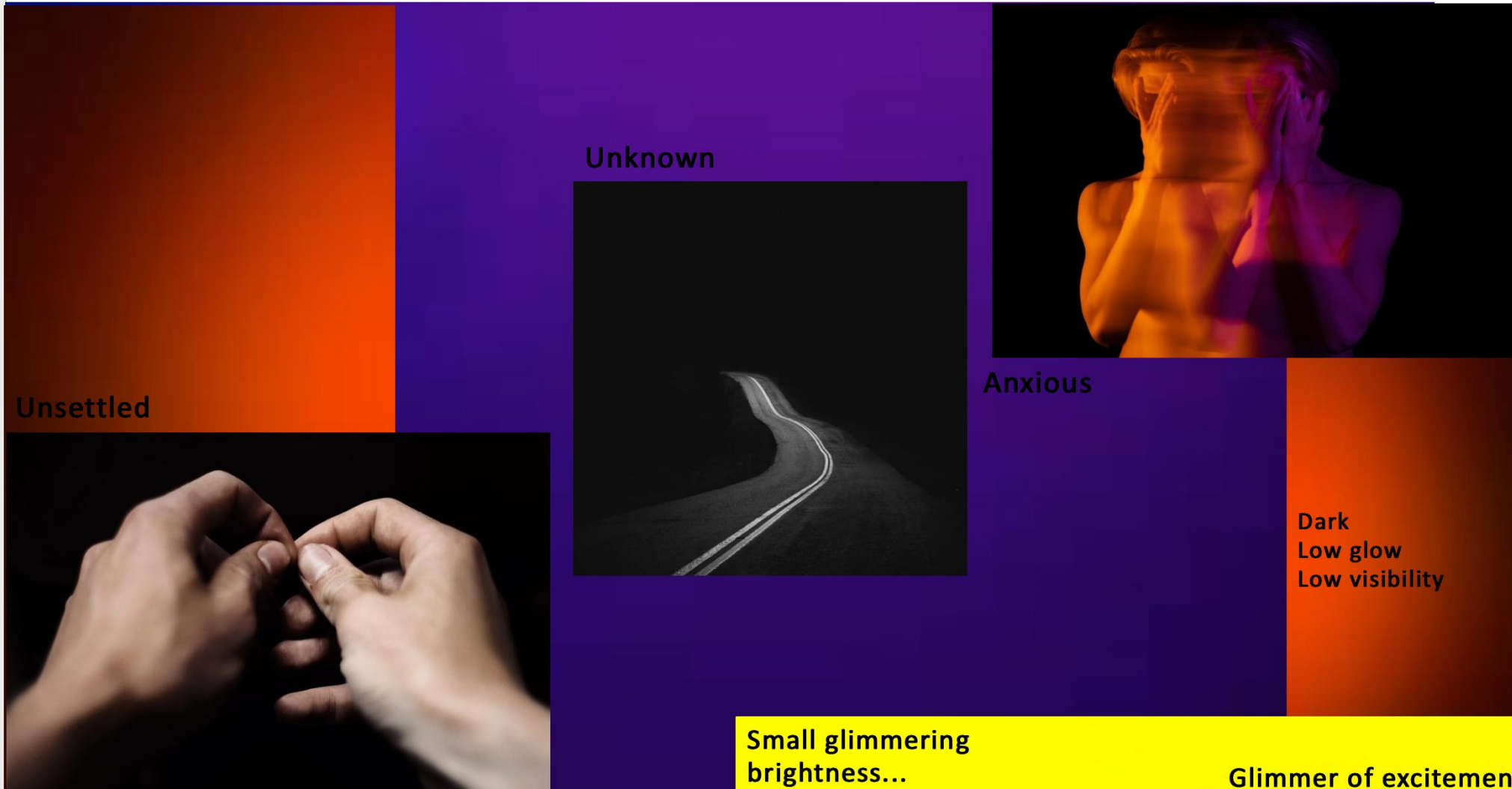
Key Plan Components:

- **Title Block:** Production, Designer, Director, What does this plate describe?
- **Legend:** What do the symbols mean? What is the data for each symbol?
- **Hang Position Names:** Trim heights
- **Booms:** Location in plan, Profile view of instruments
- **General Notes Section:** E.g. "Gel before focus"

Source: Given by tutor.

Small Task: My emotions during the different stages of my Uni experience...

At the start...



To display my ideas, I chose to use a basic mood board format.

At the start of Uni, I was very anxious going into a new place being around a new group of people as I find it unsettling going into the unknown. Although, I did feel some excitement as I was starting a course that I was very interested in.

I used colours that I felt represented my emotions first using dark tones of purple and orange. I particularly thought this orange was fitting with the edges blending out into an even darker tone. I felt it created an interesting visual representation of the type of lighting being stronger towards the middle and fading out. It was helpful alongside my few descriptions of the type of lighting I would consider using. The small section of yellow represents the glimmer of excitement that was present but for the most part overpowered by the other emotions.

I also collected a few images that I felt further supported the imagery of my discussed emotions.

The past few months...

Eagerness



Things are looking brighter...



Strong colour
Gradually getting brighter
Small glimmer of intense brightness
Balanced visibility

The next mood board relates more to my current mood/emotions that have been occurring over the past few months. Being strong frustration with the lack of interaction with others and large amounts of online work.

Also, I have felt an intense eagerness to get back out into the world and get back to a more normal routine. I am particularly eager to once again have access to the facilities that can help me to produce creative projects more successfully, allowing me to be more ambitious with my work.

However, as displayed here, the future is looking brighter, with Covid restrictions gradually beginning to ease and hopes that things will run through as planned.

Frustration



Where I hope to be at the end of the course...

Hopeful



**Bright
Strong glow
Increasing visibility
Growth**

Fulfilment



Achieving



Finally, where I hope to be is looking a lot brighter and fulfilling. Although I do not have a particular career goal within the industry just yet, I hope to be moving towards a career that I am passionate about. The entire development of my three mood boards have been a steady increase of brightness and hope.

Although I have trouble seeing exactly where I will be at the end of the course, as I do not find it realistic to try to predict it when it is years ahead, I can only hope it is bright like I have attempted to present it here.

SOUND:

What is sound?

- VIBRATIONS
- Frequency
- Pitch

Sound in Productions:

- Can help to create imagery (in situations where it can be difficult to create visuals when not using video) E.g. on a beach, you can add the sounds of waves, wind, seagulls and maybe people in the background
- Voice overs, that help tell the story (creating context for the storyline)
- General sound effects that cannot be created effectively by the actors E.g. footsteps, knocking, guns, and other necessary sounds
- Like in the play *Hamilton*, sounds can be used within music features in ways that provide details towards the progression of the story

Source: Given by tutor.

Task: Response to script

- Sound effects: Baby crying, door opening, doorbell, footsteps (heavier for male character – military boots), outdoor street (as she opens the door)
- Background noise throughout conversation: silent and empty – to create the uncomfortable air
- Slow introduction to subtle heartfelt music as the male character holds his baby for the first time and she finally stops crying
- I was picturing this as a scene in a film production. Therefore, the sound effects would be more subtle and natural than in a theatre production but still present to create the atmosphere. However, making the sound effects more prominent than usual could add to the lack of other noises, further enhancing the empty air.

Jobs in Sound:

- **Sound Designer**
 - **Associate Designer**
- **Production Sound Engineer**
- **Sound Number 1 (mixer)**
- **Sound Number 2**
 - **Number 3 or 4 or 5 etc.**
- **Operator**
- **Crew/Riggers**

Tips for Recording:

- **You can use a phone for simple self-done sound effects**
- **Providing a way of echo/background noise cancellation will increase the quality of recordings – hard, flat surfaces cause sound to bounce (unless the space is fitting for the sound effect)**
- **If recording in an outdoor space, you will need to get at least 5 minutes of recording to ensure you can gather 1 minute of usable, undisturbed recording**

Recording Studios:

- **They use foam wall padding that prevents sound from bouncing, soundproofing, the actor stands close to the microphone – all features for quality recordings**

Source: Given by tutor.

Types of Microphones:

➤ OMNIDIRECTIONAL

- Second most common (roughly)
- Detects noise from most/all directions

➤ CARDIOID

- Most common
- Detects noise mostly from the front, very little from background

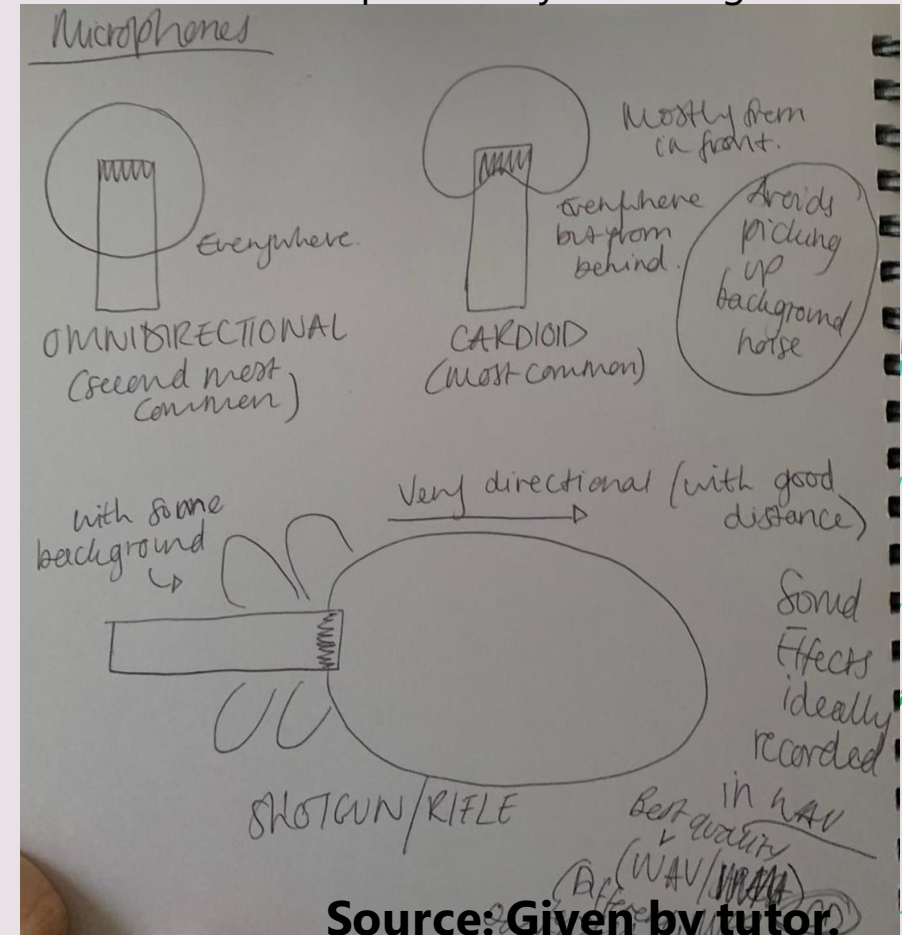
➤ SHOTGUN/RIFLE

- Very directional, narrow, front aim with good distance
- Detects noise at a good distance with some background noise

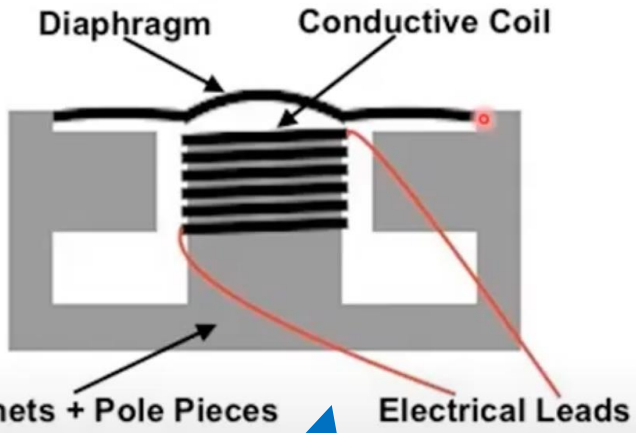
The basic function of a microphone is to convert sound to electricity.

The black discs found in front of microphones prevents breath from disrupting the recording.

For outdoor filming, a wind cover (fur or fabric covering the mic) will help reduce the disruption of wind which can overpower any recording device.



More Microphones:



Dynamic Microphones:

- As shown above
- The diaphragm is thin and often plastic
- The vibrations in the air vibrate the diaphragm
- The vibrations and magnetic energy mixed with the coil creates electricity
- Simplest but strongest of microphones

Source: Given by tutor.



- Most recognisable
- Dynamic microphone



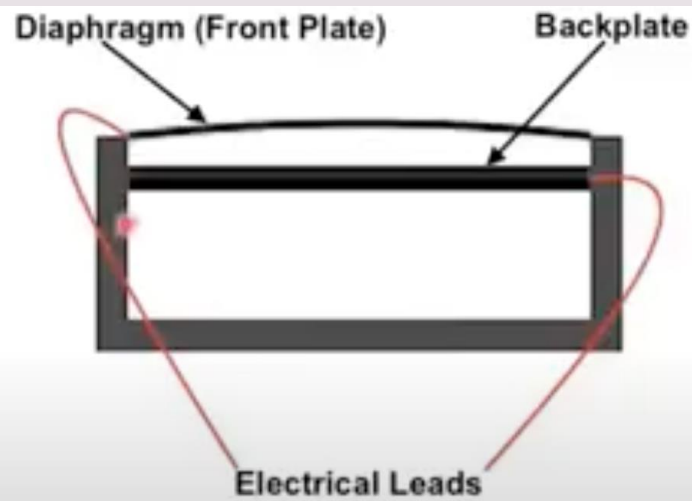
- Condenser microphone



- Shown on a shock mount
- Condenser microphone



- Dynamic microphone



Condenser Microphones:

- Generates electricity in a different way
- A capacitor (stores electricity)
- The diaphragm is covered in metal
- Repetitively takes in and pushes out, creating the sound waves
- Need a supply of electricity (phantom power switch - 48V)

Mic Level Sources:

- Smaller voltage



Line Level Sources:

- Standard, interconnecting voltage of sound speakers



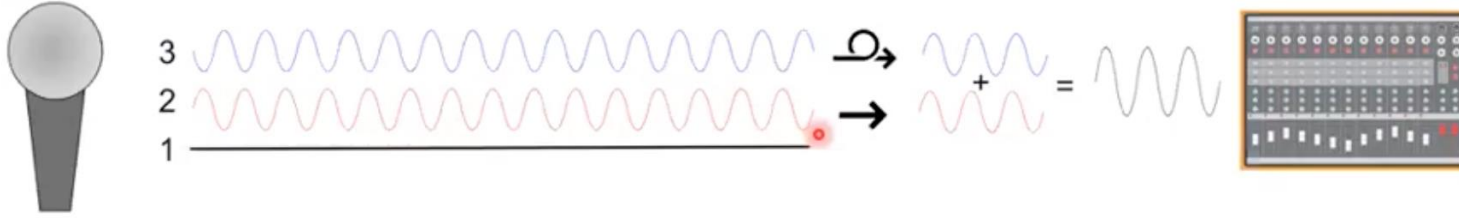
- Either/or cannot be mixed
- Interconnecting the two levels will not result in effective sound output as the two are too different

D. I. Box: (Direct Injection/Direct Input)

- Balances the level of any input to a standard level output
- Often used for mixing desks



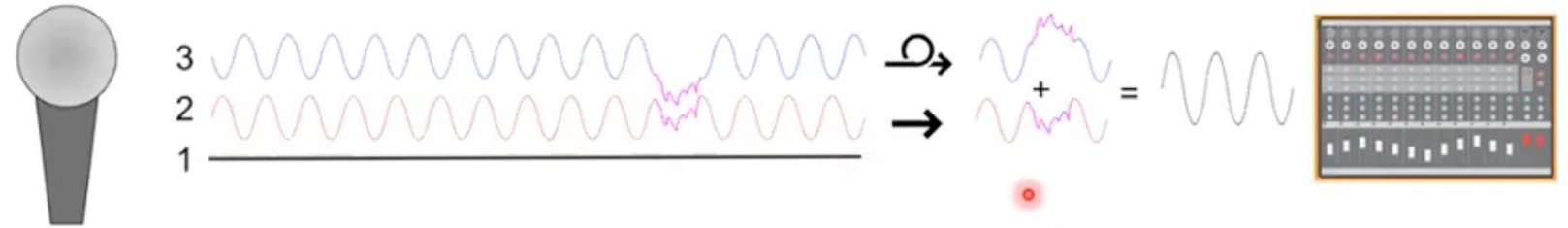
Audio Circuit:



If you have to use an unbalanced signal, keep it as short as possible. Long distanced signals should be kept balanced.

A Balanced Audio Circuit:

- Three connections
- Balanced connection
- Straight connection (1)
- Two audio connections (2+3)
- Connection 2 is from the back of the mic
- Connection 3 is a mirror image copy of 2
- Two copies of the signal
- When connected to a mixing table the mirrored version is flipped to be an exact copy of the original audio connection, this results in more electricity



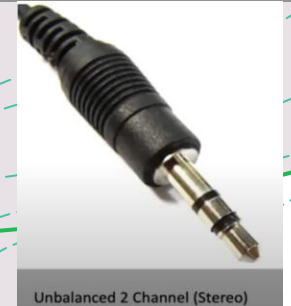
Interferences:

- Mobile interference
- Wire/cord interference
- An unbalanced connection has little protection against interference
- A balanced interference flips the interference as part of the connection and therefore the flipped version against the original version cancels out from each other eliminating the interference

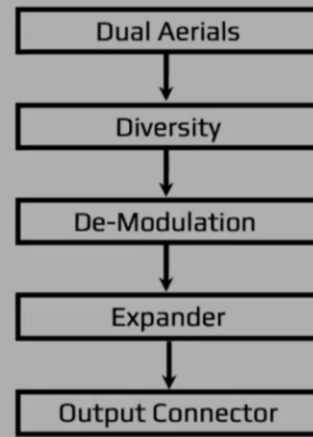
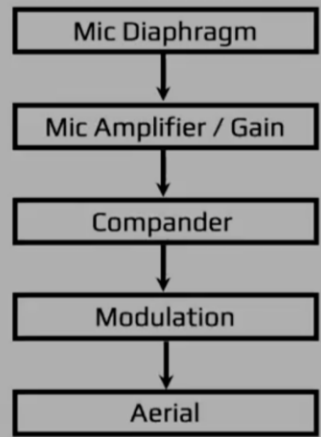
Some interconnecting appliances can be spotted as unbalanced or balanced. E.g. The Jack Plugs shown here, although sometimes it is not so easy to tell

Jack Plug:

Count the silver bits!



Parts of the Radio Microphone System:



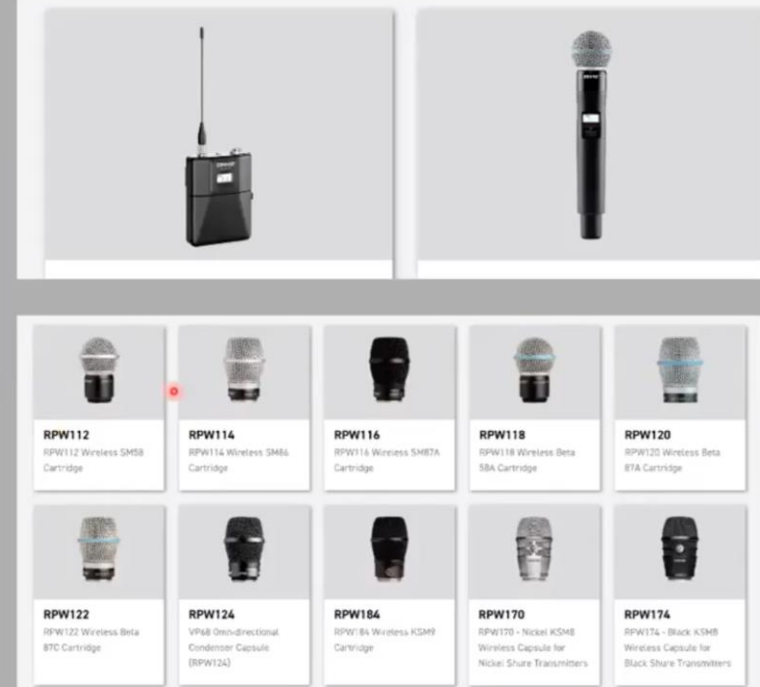
A Comander and Expander – make the sound quality better.

Mic Diaphragm

Output Connector

Regular microphone – much simpler than a radio microphone as shown above...

The types of radio mic



Types of Microphones Used in Production:

- Music Performance – not so focused on being as discrete, sound quality is a bigger focus
- Film – Very discrete, often not visible
- Theatre – Visible but subtle



- Along the hair line mics are effective but can affect appearance
- Mics subtly appearing under wigs/over ears are best for appearance and reasonable effectiveness
- Head set mics are good for volume quality

Source: Given by tutor.



Considerations For If Your Show Has Radio Mics:

- The system needs time and quiet to set up
- There should be someone backstage whose sole job is radio mics (and they need access to receivers)
- The sound crew need time to fit the radio mics to the cast
- The sound crew need a soundcheck with the cast every day
- Radio mics break so wait for radio mic clearance after every break

Radio License is needed:

Radio Licensing in the UK – Controlled by PMSE Dept of OFCOM

Spectrum is shared with TV Broadcast :

21	22	23	24	25	26	27	28	29	30
470-478	478-486	486-494	494-502	502-510	510-518	518-526	526-534	534-542	542-550
31	32	33	34	35	36	37		38	
550-558	558-566	566-574	574-582	582-590	590-598	598-606		606-614	
39	40	41	42	43	44	45	46	47	48
614-622	622-630	630-638	638-646	646-654	654-662	662-670	670-678	678-686	686-694
49	50	51	52	53	54	55	56	57	58
694-702	702-710	710-718	718-726	726-734	734-742	742-750	750-758	758-766	766-774
59	60		70						
774-782	782-790		863-865						

Source: Given by tutor.

Wilhelm Scream

- A reoccurring sound effect used in different productions
- Very famous scream
- Recorded in the 1920s/30s
- Used in many cowboy films
- What's thought to be the (or one of the) most famous first use(s) is when a character called Wilhelm is shot by an arrow while riding a horse which he then falls off of due to the shot
- Used once in every Star Wars film
- Used in many other films over the years

Sound Effects:

- There are existing sound effects that have been used in many films (E.g the Wilhelm scream)
- You can create your own
- You can use sounds for free with permission (using free site, with agreement to provide a thanks/reference to the owner)
- You can pay other owners to use their sound effects
- When recording sounds make a note to explain which is which so they're easier to navigate
- If recording outdoors, you may need to collect for more time than expected for possible areas that need editing like cars in distance or aeroplanes etc.

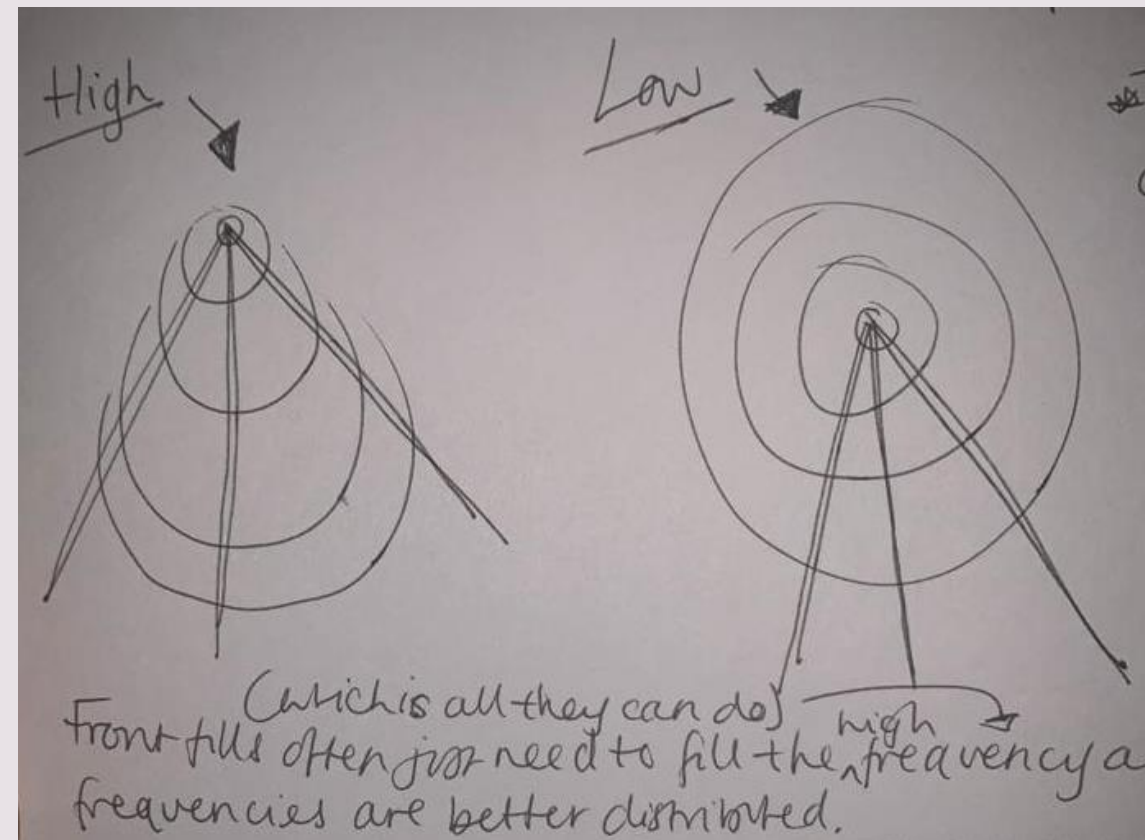
Audacity:

- Audio editing software
- With correct equipment can use to record
- Alter volume, mix different sounds, reverse sounds, put them back-to-back, make interesting effects

Source: Given by tutor.

Speaker Placement:

- To large speakers are often placed towards the front at the sides of the stage, smaller speakers are positioned further towards the back to reach those further away from the stage – these speakers are cued to play at a slight delay so that when the sound from the front speakers reaches them it is on cue with that timing.
- They often add very small filler speakers towards the front centre to ensure those at the front are getting the full sound quality – these filler speakers often only release the higher frequency sounds as the low frequency sounds travel far enough to reach these areas that the high



- High Frequencies travel at a 90-degree angle as shown in the diagram
- Low Frequencies travel at a 360-degree angle and tends to travel further

Source: Given by tutor.

Types of Audio and Audio Quality:

- MP3, first to come around, commonly used (most phones record in MP3, with high settings set it can be a reasonable quality) Making smaller files by getting rid of some information (data compression) throws away things it doesn't think you'll be able to hear
- Wav files are the stage before MP3 has compressed the file
- When editing etc. You want the highest possible quality
- The more you compress audio the worse the quality (it progresses to the point when it almost sounds underwater) in some cases however you might be interested to try it out for a certain effect
- When information is thrown away from compression, it cannot be brought back
- When recording at MP3 (on a phone) changing volume means the recording device will be altering the recording volume as the volume of the sound changes

Sound Team Scheduling:

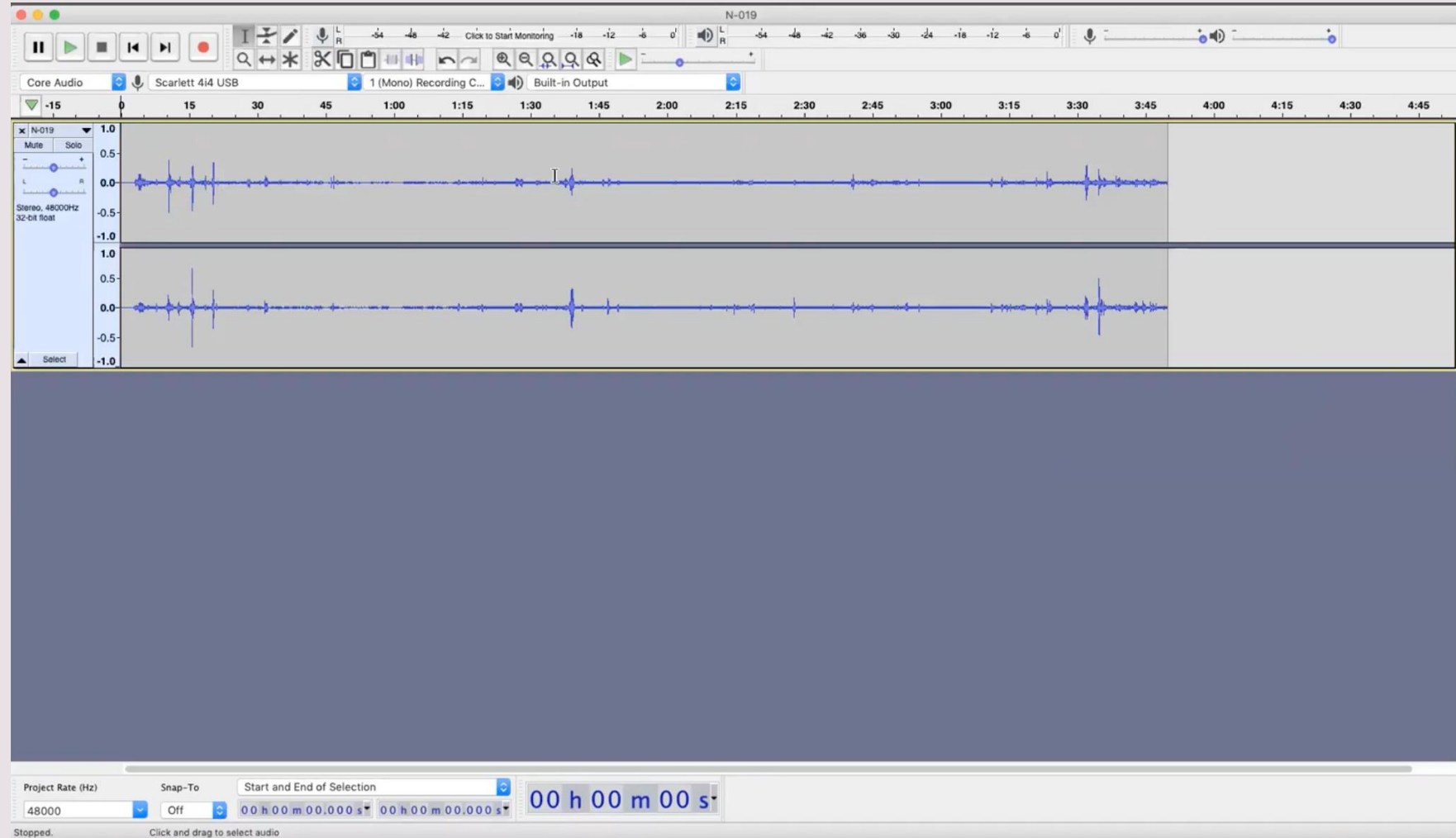
- **Sound Rig** – build the system in the space
- **Quiet Time** – Focus speakers to cover where you need and delay the system
- **Soundcheck** – Check mics with the people who will be using them
- **Sound Plot** – Plot sound effects with director and plot tech with everyone else
- **Sitzprobe** – A play/sing through for cast and band

Source: Given by tutor.

Sound Software Options:

Examples of sound software to consider...

➤ Audacity (shown in image)



➤ QLab

➤ DandB – Array Calc.

Source: Given by tutor.

How Does Sound Travel?

- The vibrations through the air travel from sound source and cause other surrounding things to vibrate
- In terms of hearing the sound will reach our ear drums and the vibrations of our ear drums are what allow us to hear
- Small sounds do not change the air pressure as much as big sounds
- E.g. Very big sounds like the low frequencies of concert speakers, if standing close enough can cause you to feel the air and other things around you to vibrate/move with the sound (music) you can even feel it vibrating your body
- Volume = how much the air is moving
- Low frequency = the air is moving/changing slowly
- High frequency = the air is moving/changing very fast
- The human ear can hear up to 20 kHz (20 waves – as shown in diagrams) per second
- Higher frequencies are easily heard when young, but this ability decreases as you get older

Source: Given by tutor.

Types of Sound:

As shown to the side...

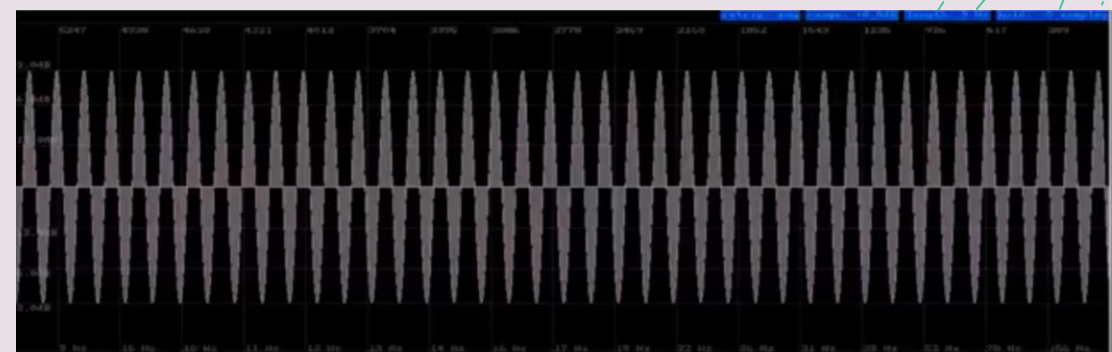
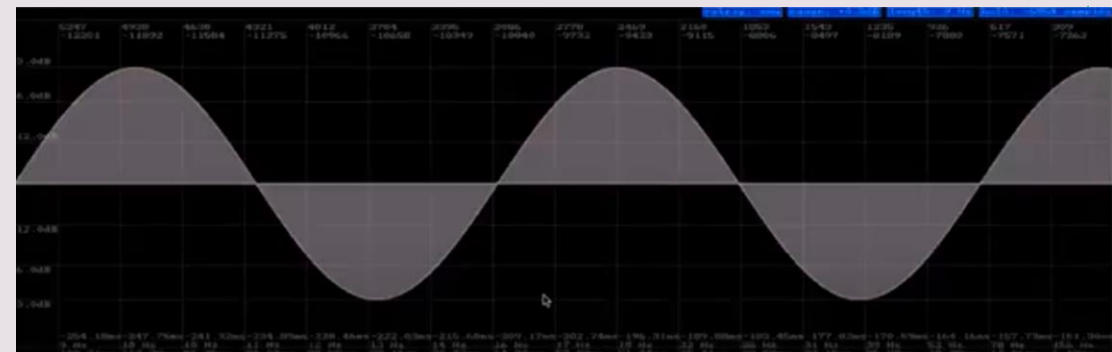
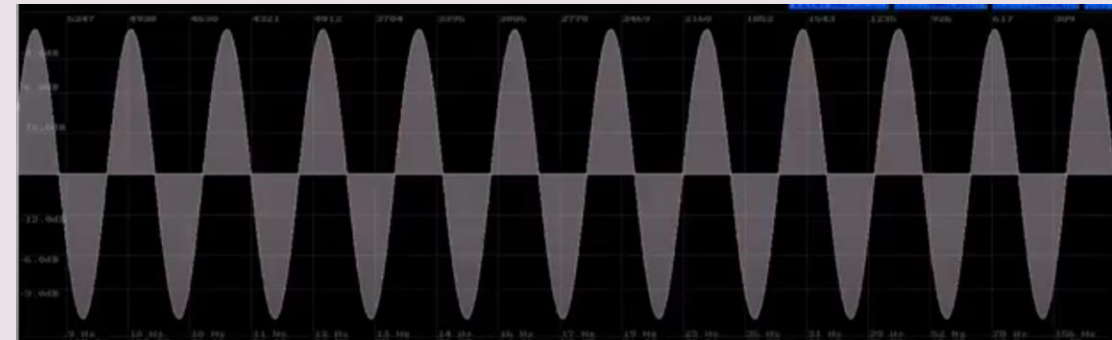
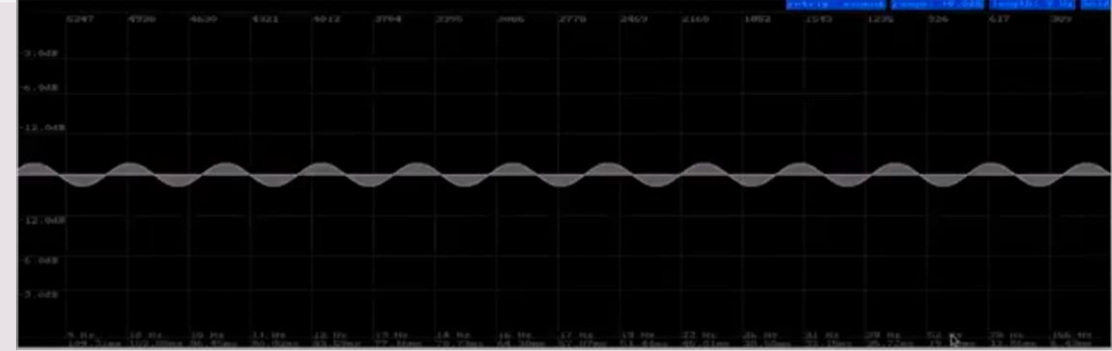
➤ Low Volume Sounds

➤ High Volume Sounds

➤ Low Frequency Sounds

➤ High Frequency Sounds

Source: Given by tutor.



Simple (Analogue) Mixing Desk:



Channel 2 Line input
Channel 2 Mic input

Channel 1 Line input
Channel 1 Mic input

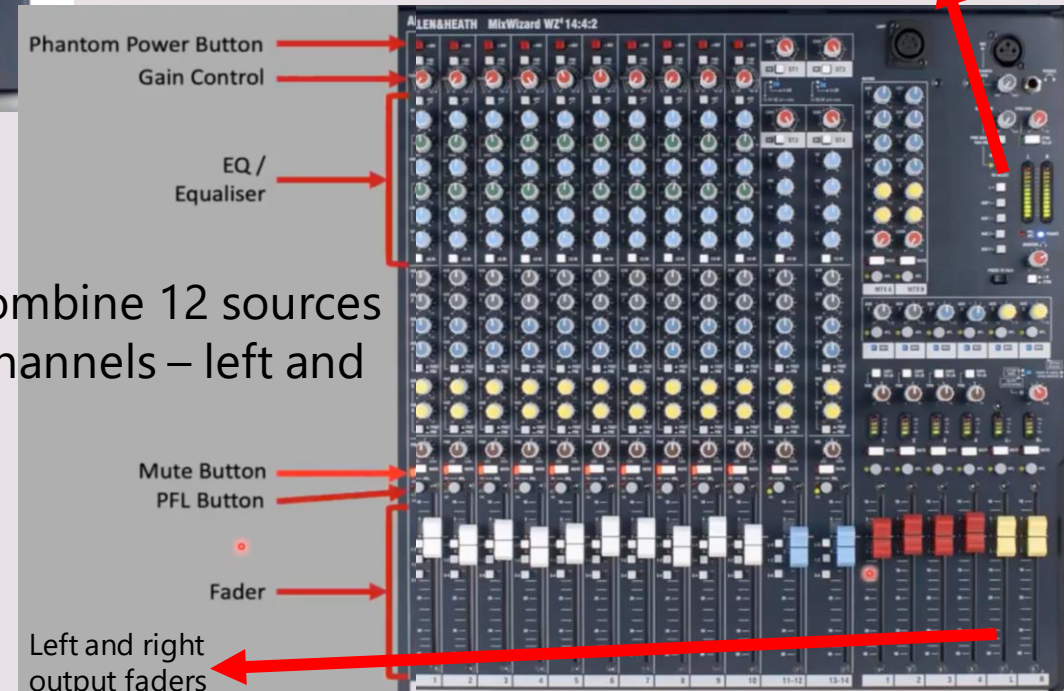
Bar Graphs
showing volume

Left Output XLR Right Output XLR

- This mixer can combine 12 sources
- It has 2 output channels – left and right (stereo)

Familiarising yourself with this basic desk layout will allow you to gather enough information so that you can recognise many aspects of other more complicated desks.

Source: Given by tutor.



Phantom Power Button
Gain Control

EQ /
Equaliser

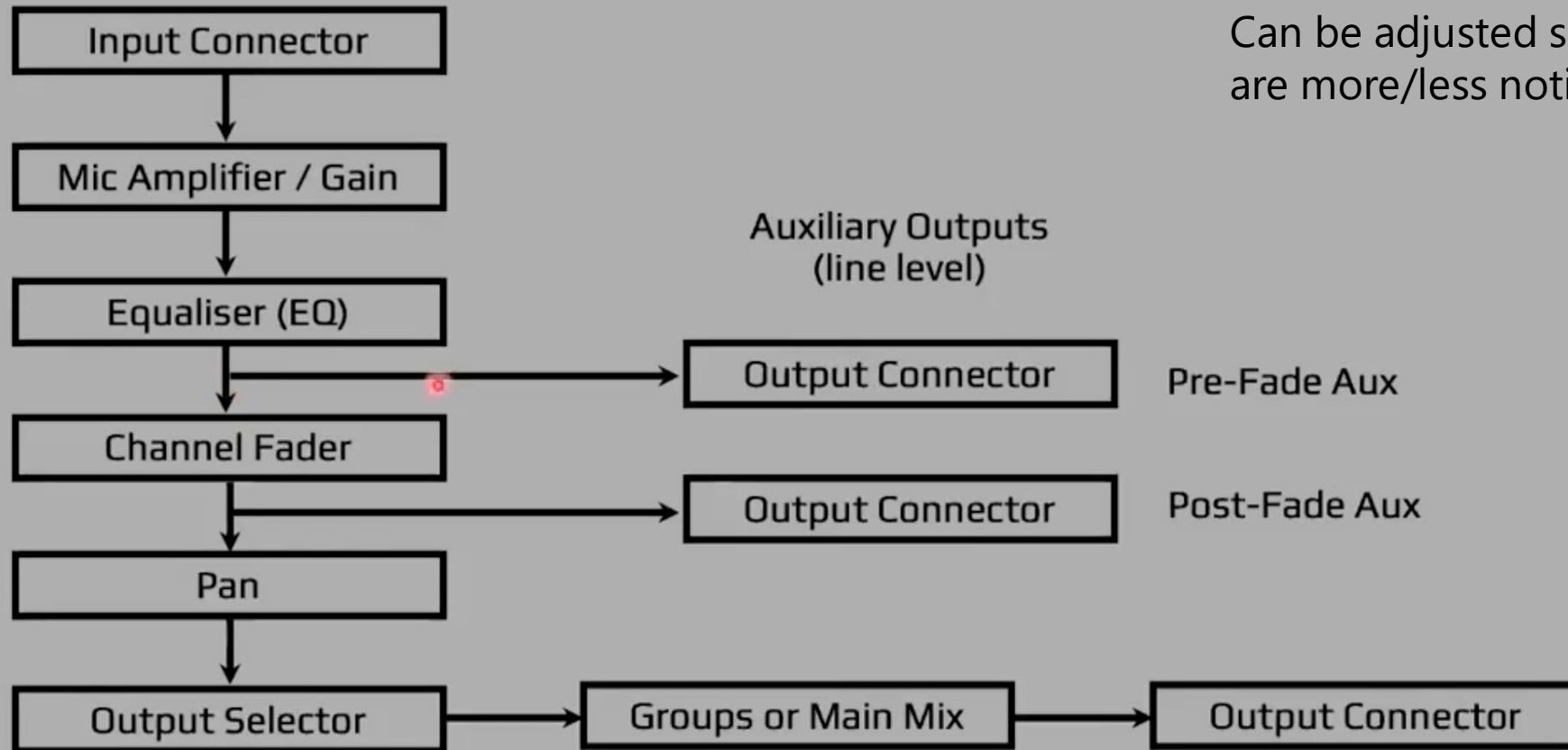
Mute Button
PFL Button

Fader

Left and right
output faders

Aux Outputs: From the mixing desk

Aux outputs are used to split a signal to send it to multiple places:



Can be adjusted so that some aspects are more/less noticeable than others.

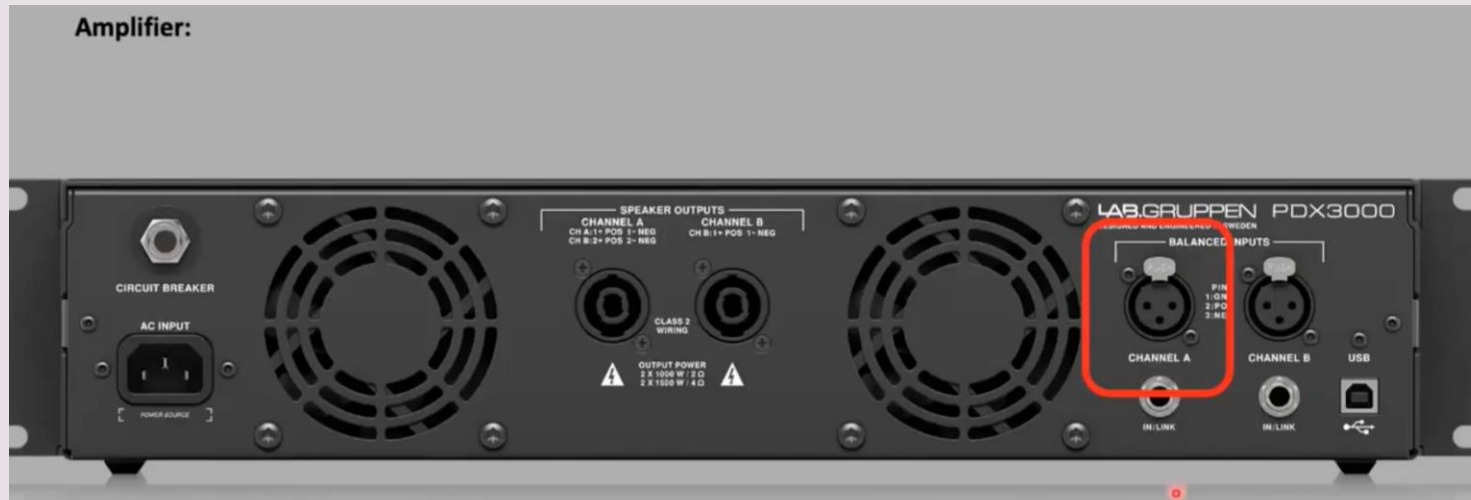
Source: Given by tutor.

Amplifiers: Simply there to make the signal bigger

Amplifier:
Makes signals bigger



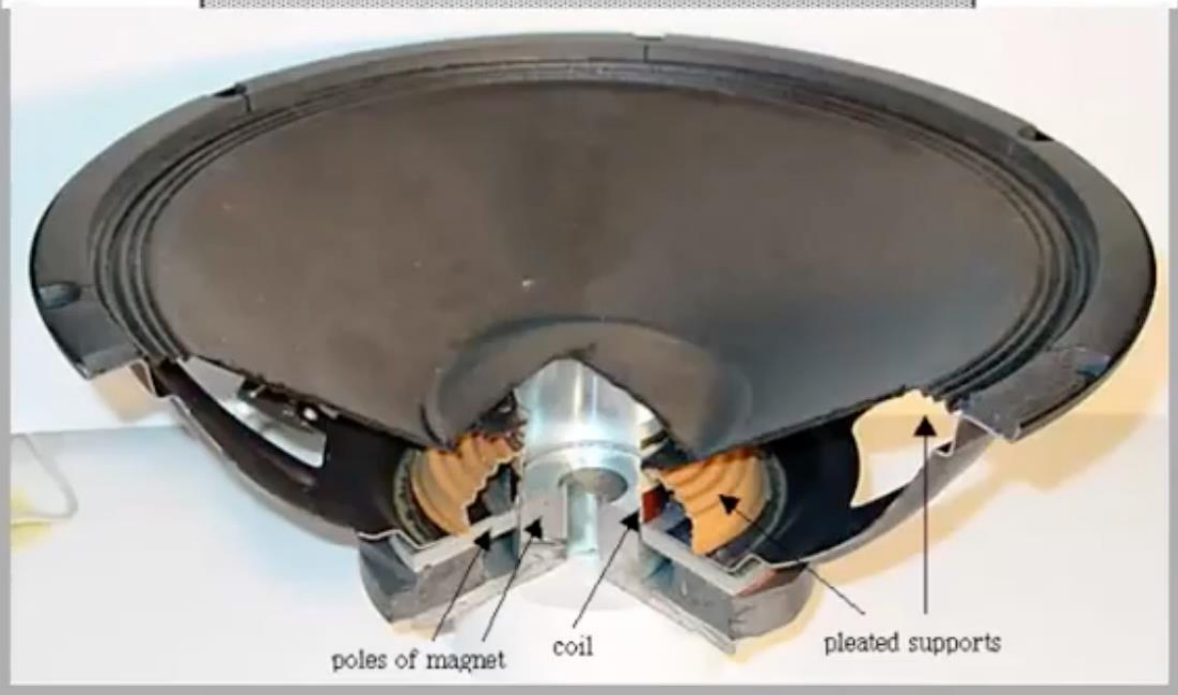
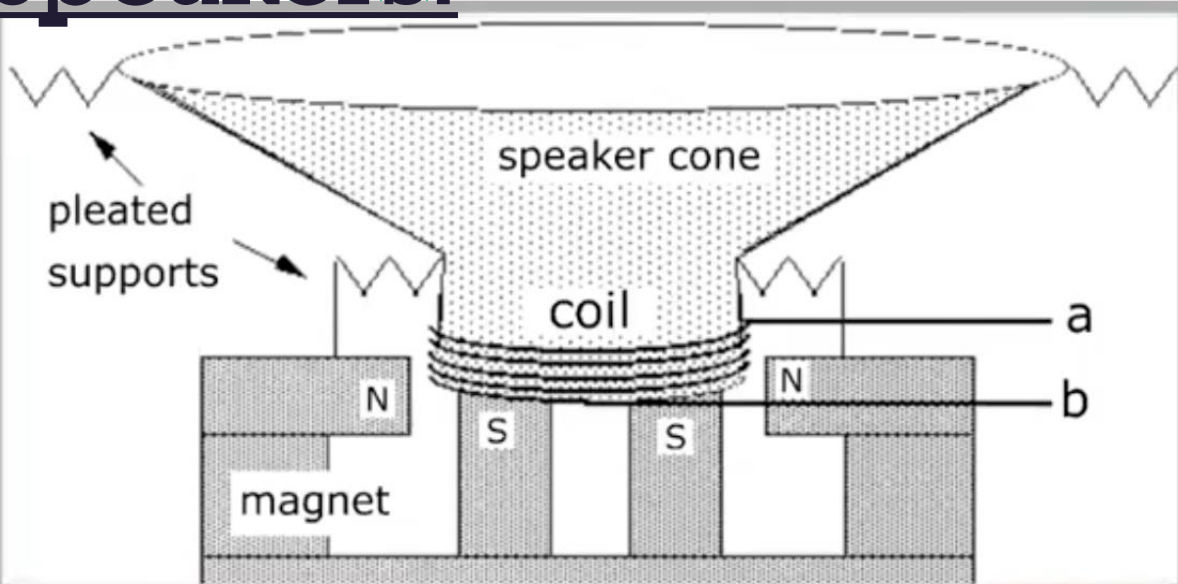
Amplifier:



This is a 2-channel amplifier, so everything is doubled

Source: Given by tutor.

Speakers:



- Cone – like a diaphragm
- Where a microphone takes in sound and turns it into electricity, a speaker takes the electricity and turns it back into sound
- Uses the same technique as a microphone but reversed
- Without an amplifier there would not be enough of a signal to create the necessary movement/vibrations
- The connection between the amp and speaker must be thick enough to handle the current
- You have to correctly match the correct amps to speakers

- **SOURCE** – the sound is collected as electricity
- **MIXER** – the different types/aspects of sounds are mixed together
- **AMPLIFIER** – it is then passed through the amplifier onto the speaker
- **SPEAKER** – the speaker transfers the electricity back into sound

Video Design:

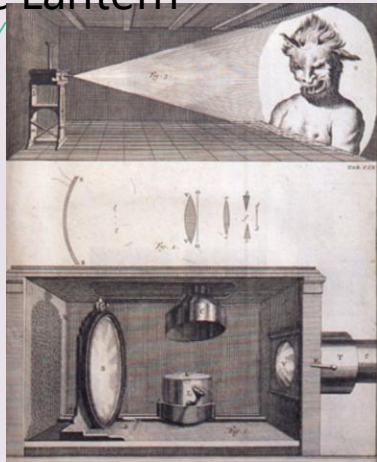
- A creative field of stage craft
- It integrates film, motion graphics and live camera feed into the fields of theatre, opera, dance, fashion shows, concerts and other live events
- It has only recently gained recognition as a separate creative field, originally it would often be taken on by a scenic designer or lighting designer
- Now those practicing video design can be known as Video Designers, Projection Designers or Media Designers
- Can sometimes also be named cinematographers or Video Directors
- As a new field of stage craft, practitioners often create their own definitions, rules and techniques
- Filmmaking and video production content has been used in performances for many years
- As well as large format slide projection delivered by systems such as PANI projector

Source: Given by tutor.

Different Projection Methods/Technology:



The Magic Lantern



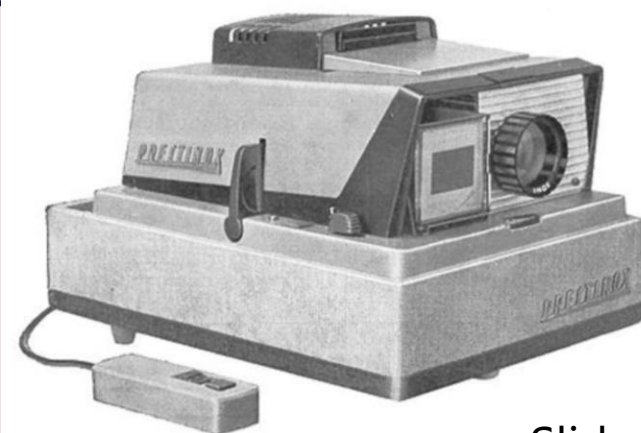
The Slides



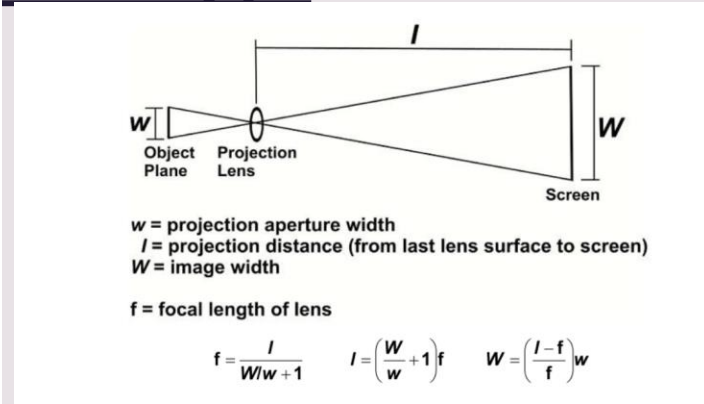
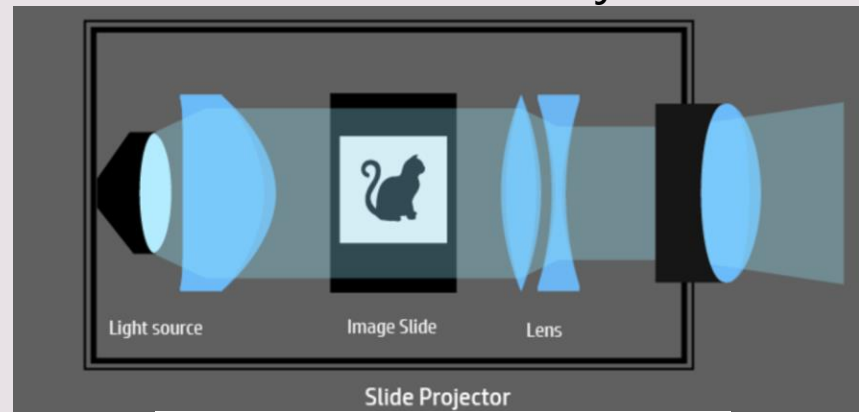
Large Format Projector



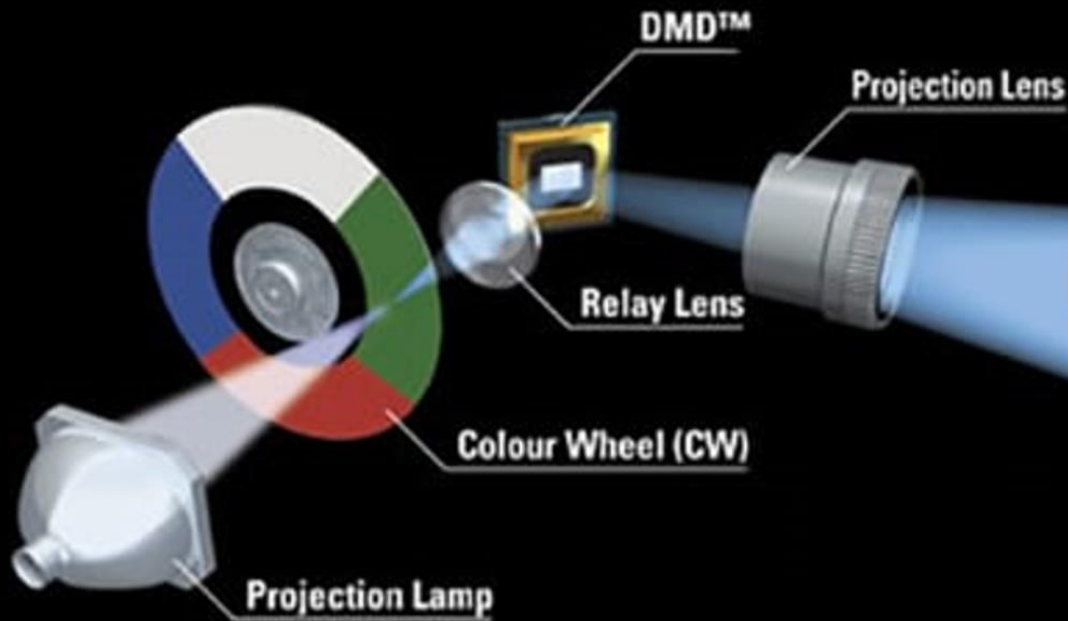
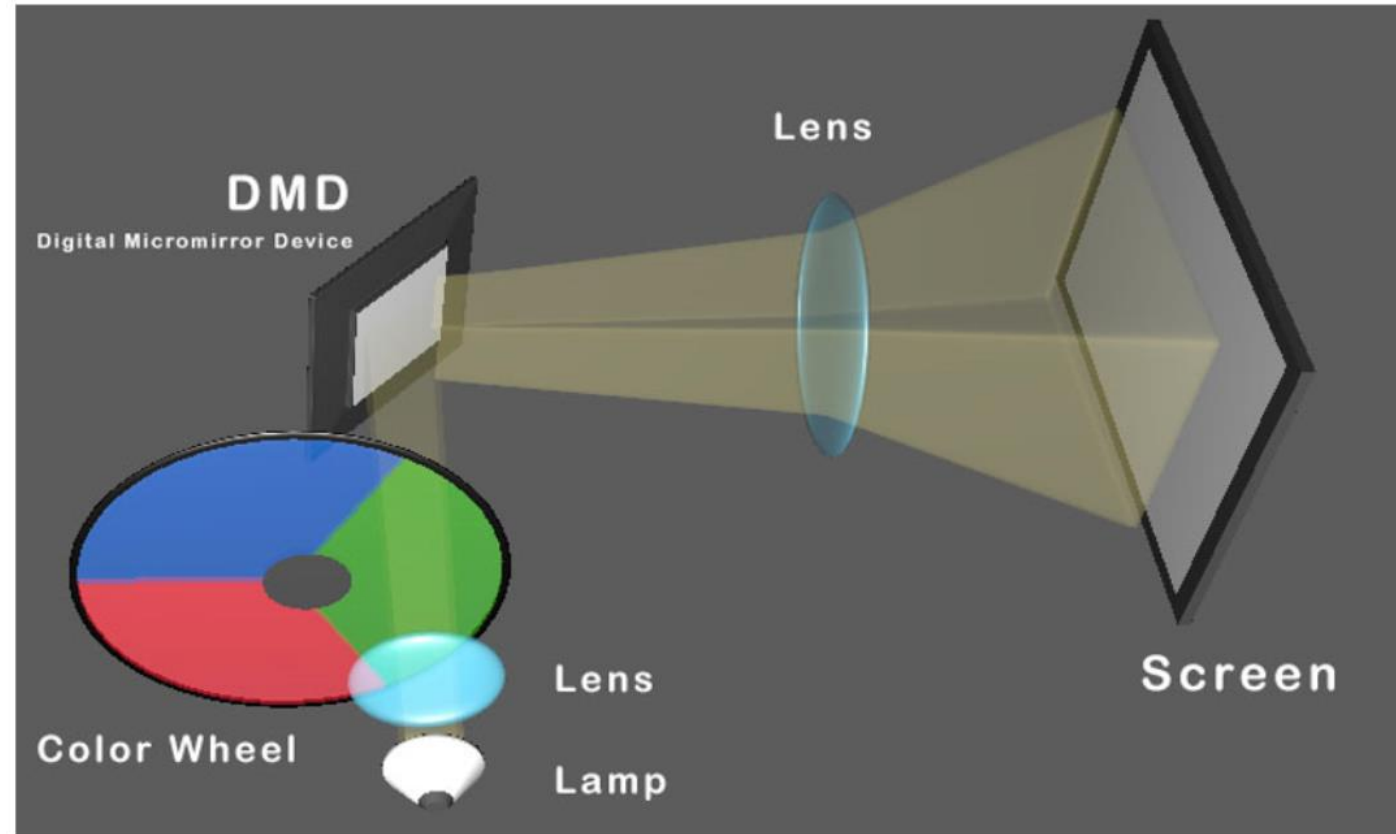
Source: Given by tutor.



Slide Projector

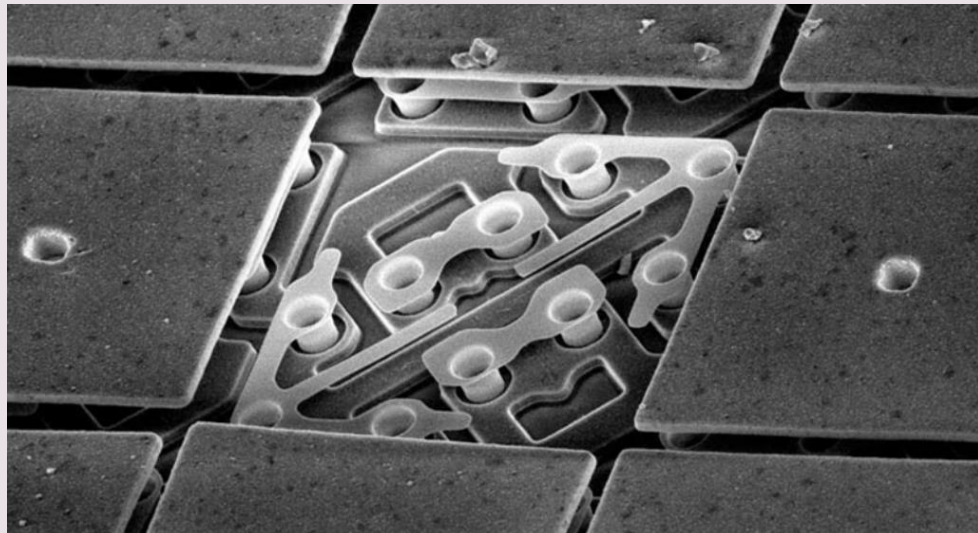
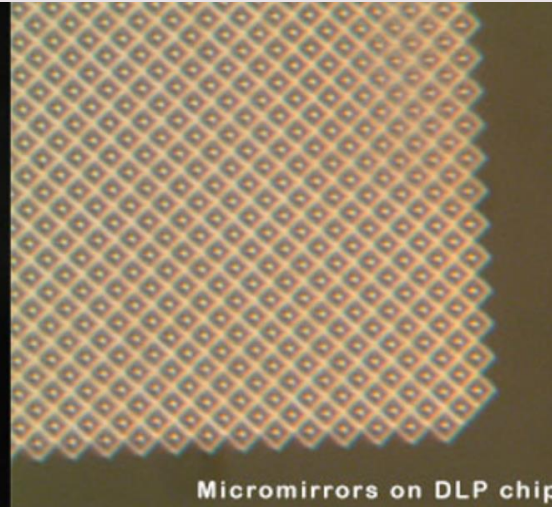
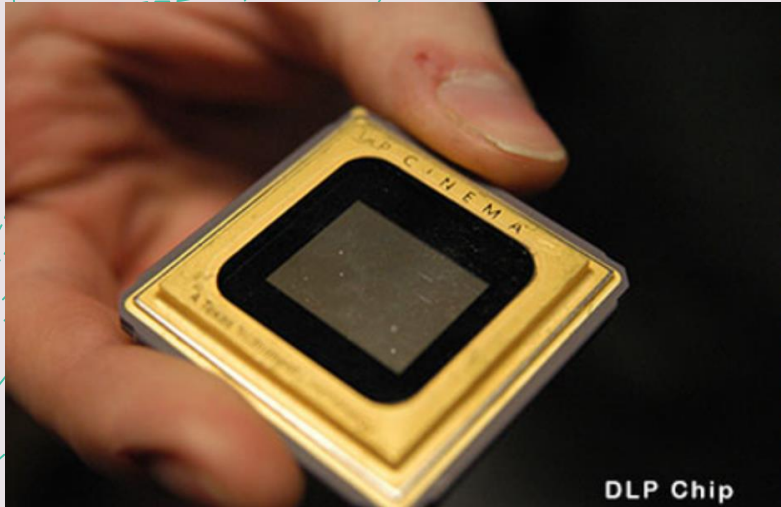


Different Projection Methods/Technology:



Source: Given by tutor.

Digital Micromirror Device:

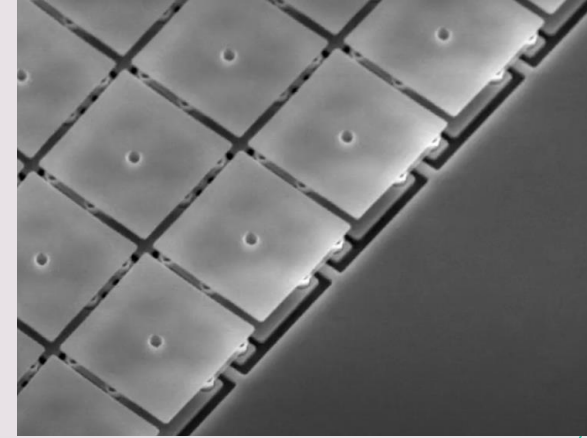


"A DMD is an optical micro-electrical-mechanical system (MEMS) that contains an array of highly reflective aluminum micromirrors." - Benjamin Lee (2008, revised 2018) Introduction to ± 12 Degree Orthogonal Digital Micromirror Devices (DMDs), Texas Instruments

https://www.ti.com/lit/an/dlpa008b/dlpa008b.pdf?ts=1620904197651&ref_url=https%253A%252F%252Fwww.google.com%252F

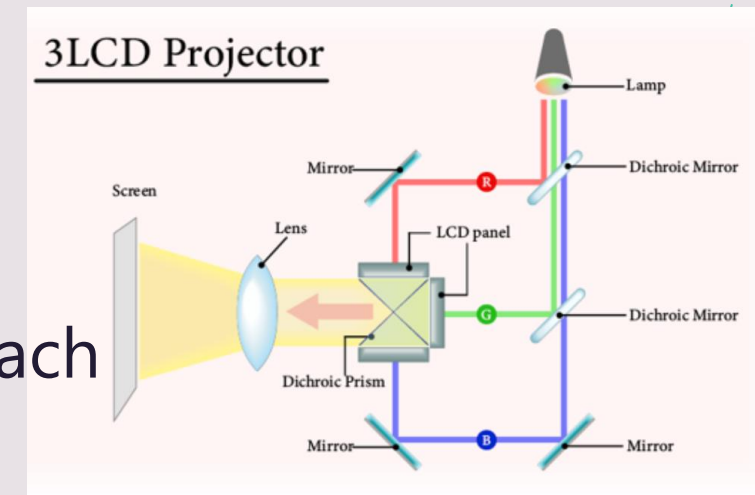
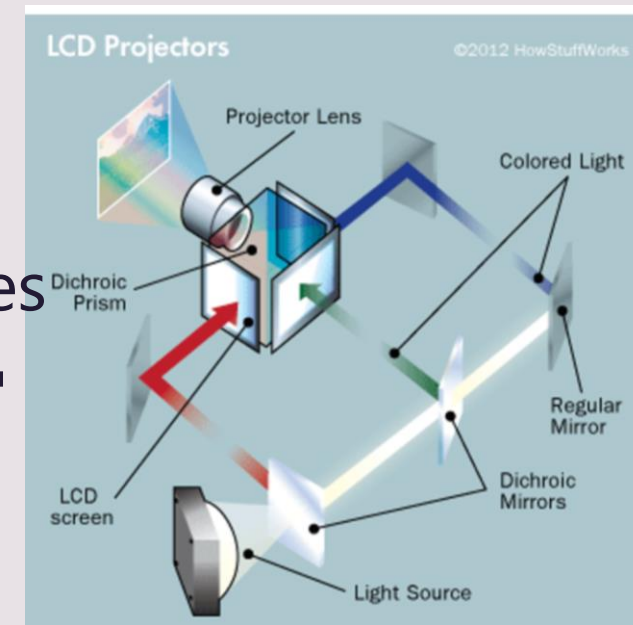
DLP Projector: (notes from YouTube video)

- Switching the mirror on and off at a high speed to allow a grey level to appear
- Lots of small mirror grids on the chip as shown in the image
- They are sat on top of a mechanism that allows them to move as the do
- LCD projection loses half of its light unlike DLP which means you can use a much smaller light source whilst still achieving the necessary quality
- Therefore, you do not need as big a power supply or lightbulb, which reduces costs



LCD Monitor:

- Often a prism film is used, it increases the perpendicular component, as the back light emerges at a number of angles
- A simple description would be that it's a "sandwich of glass"
- Uses molecules known as liquid crystals
- Light travels at different speeds along different axis
- When the two correct layers are placed at a 90 degree angle over one another the light will pass through – if placed both at the same angle the light will not pass through (light polarization)
- Each pixel is made of red green and blue
- There is also a transistor that controls the updating of each row



Extras:

➤ Benefits of lamp projectors:

- They are cheap
- They are easily replaced (and it is cheap to do so)

➤ Advantages of laser projectors:

- Turns on instantly with no warming period
- Laser lasts longer
- Energy efficient
- Brighter and consistent light output

Source: Given by tutor.

Choosing a Projector: Factors to consider

- Throw distance – available distance between projector and projection surface
- Noise Level – measured in decibels (dB) many projectors have an 'eco' mode which saves energy and lamp life, by running the lamp slightly dimmer - this also reduces fan speed making it quieter
- Projection Sizes:

- **SVGA:** This resolution is at 800 x 600 pixels.
- **XGA:** This resolution is at 1024 x 768 pixels.
- **HD 720p:** This resolution is at 1280 x 720 pixels.
- **WXGA:** This resolution is at 1280 x 800 pixels.
- **SXGA:** This resolution is at 1280 x 1024 pixels.
- **HD 1080p:** This resolution is at 1920 x 1080 pixels.
- **WUXGA:** This resolution is at 1980 x 1200 pixels.
- **4K:** This resolution is at 4096 x 2160 pixels.
- **8K:** This resolution is at 7680 x 4320 pixels.

Example of Projection used in a Production:

- Combining projection with other media
- Projection backdrop, with physical elements and shadow silhouettes caused by lighting arrangements. As shown in the image "it is being used to create the moon. In other parts of the show, it also provided clouds or stars. The blue light, the ruined buildings, and the tree shadows are created using stage lighting and shadows." Kizer. M (2019)
- I find this stage design very interesting and effective; I like the use of mixed media and how it comes together to set the scene so well. It's a very good example to consider for how simple yet effective the use of projection can be in a production and how it can be used with other media to help tell the story or simply set the scene.

Source: Kizer. M (2019) Projections on Stage Part II: Making Good Use of Ordinary Projectors, Broadway Educators
<https://broadwayeducators.com/projections-on-stage-part-ii-making-good-use-of-ordinary-projectors/>

A Midsummer Night's Dream

Plymouth State University

October 2007

Written by William Shakespeare

Directed by Caroline Nesbitt

Costume design by Meagan Kimball

Technical Director: Bob Bruemmer

Scenic Design, Lighting Design, and Projections by Matt Kizer



QLab: A few things to remember...

- A Queuing programme for sound and video (can also experiment with lighting)
- List the different elements, can be images, sound, light, text, recordings
- Things can be dragged in from your desktop
- Offers the ability to use different screens (projectors), you are then able to alter the queuing list for the chosen screen
- Must assign elements to the correct screen
- When creating a fade in queue you must put the original queue at 0 opacity so that it can fade up from nothing to a higher opacity
- Adding a fade creates a smoother transition between different displays (particularly ideal when referring to backdrops for productions)
- The fade option can be found on the list down the left side, you can then change the opacity in the box towards the bottom
- Altering the fade time will create your desired speed of fade whether you want it very gradual or more abrupt
- Different sized images will need to be altered to fit the screen as you want (smaller images queued after larger images will result in the previous image showing from behind)
- There's the option of an easy fix to make the size so that the image is stretched to fit the screen (this option can be found close to the opacity option)
- However, you can also change it yourself to make it fit how you want using "Custom Geometry"
- Auto follow means the queues will automatically run through
- You can add affects to adjust colour etc. You can also add other interesting affects
- You can create loops in "Time and Loops" - can be added to a chosen section and can even choose how many times it will repeat
- Sound can also be edited in similar ways with fades and timings etc.

The Crucible

Intolerance

Hysteria

Reputation

Goodness

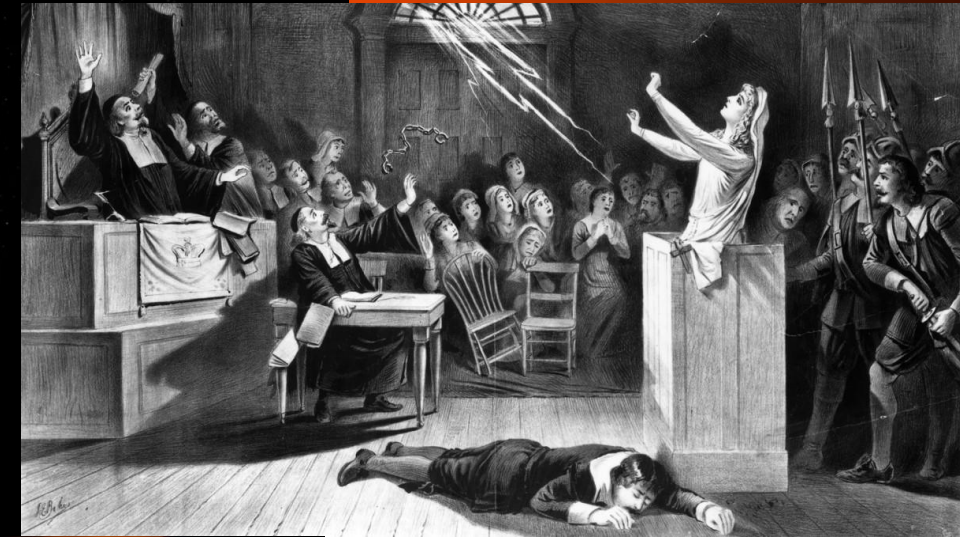
Judgment



VIRGINIA -
SUMMER 2016

-
Reenactment,
Recreation --
Woman's feet
and hemp
rope on tree,
hanged until
dead. Fall,
eastern North
America.

Salem Witch
Trials, hanging
for crime,
noose on
neck. Witches



Stock video
making gold in factory,
Molten Gold being
poured into Ingot
moulds

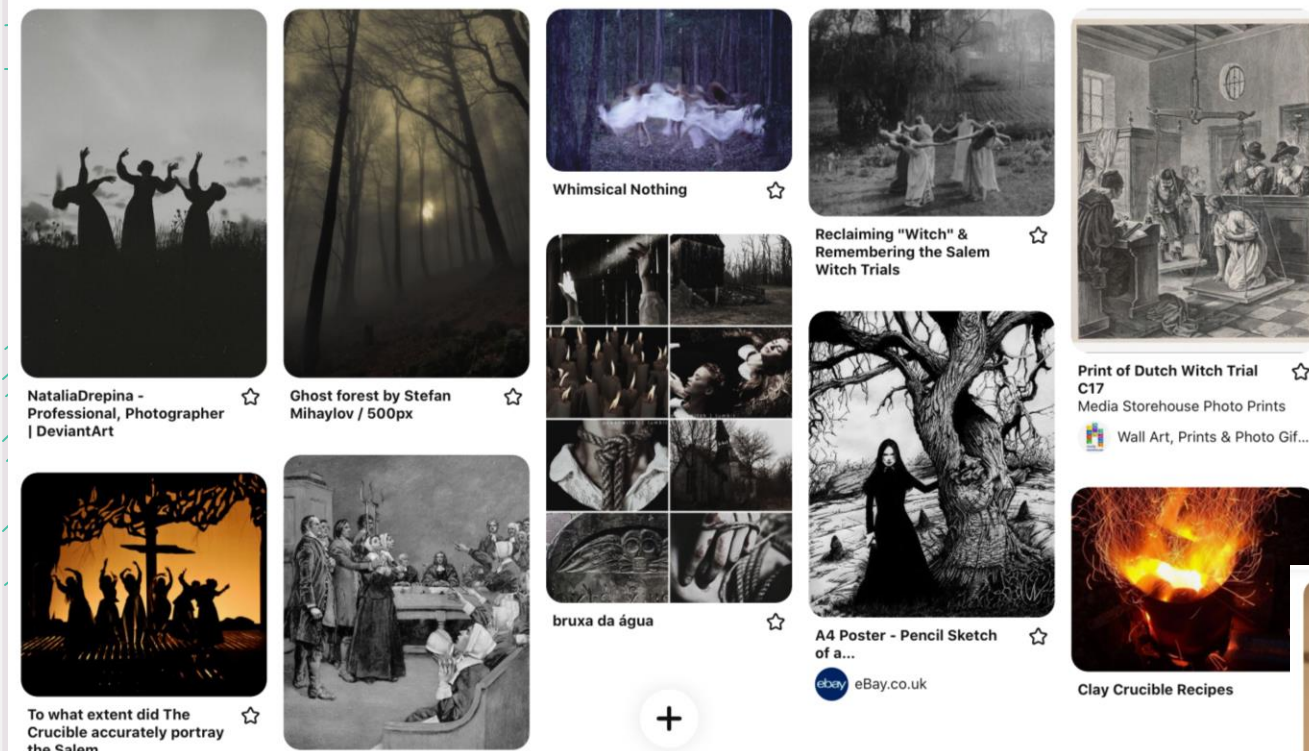
Sources for Mood Board:

- The-Crucible-a-play-with-a-message-for-our-times
- <https://www.sparknotes.com/lit/crucible/themes/>
- <https://www.history.com/topics/colonial-america/salem-witch-trials>
- <https://www.tulane.edu/~salem/Salem%20and%20Village.html>
- crucible-brochure-2019-20
- <https://www.legendsofamerica.com/ma-andover/>
- <https://quizizz.com/admin/quiz/59e8f05e96128a1000c23d51/the-crucible-act-i>
- <https://wallpapersafari.com/w/YOFnIM>
- <https://www.shutterstock.com/search/dark+orange+gradient>
- <https://unsplash.com/photos/RO3-oMM3s8A>
- Links to shutter stock clips

Project Ideas:

- After completing a mood board, taking a few key points and ideas from the *SparkNotes* page summarising the story of *The Crucible*, I have gathered a very general idea of the type of atmosphere and style I might want to use for the project.
- I have joined together with another student, Freya as a pair to share ideas and thoughts about the story and how we could present our own interpretation of it.
- The main ideas that came from our discussion were to use dark tones, heavily focusing on the witch theme within the story and we found an interest in the idea of using shadow art etc, also considering the idea behind shadow theatre, to possibly create images/clips of our own for the project.

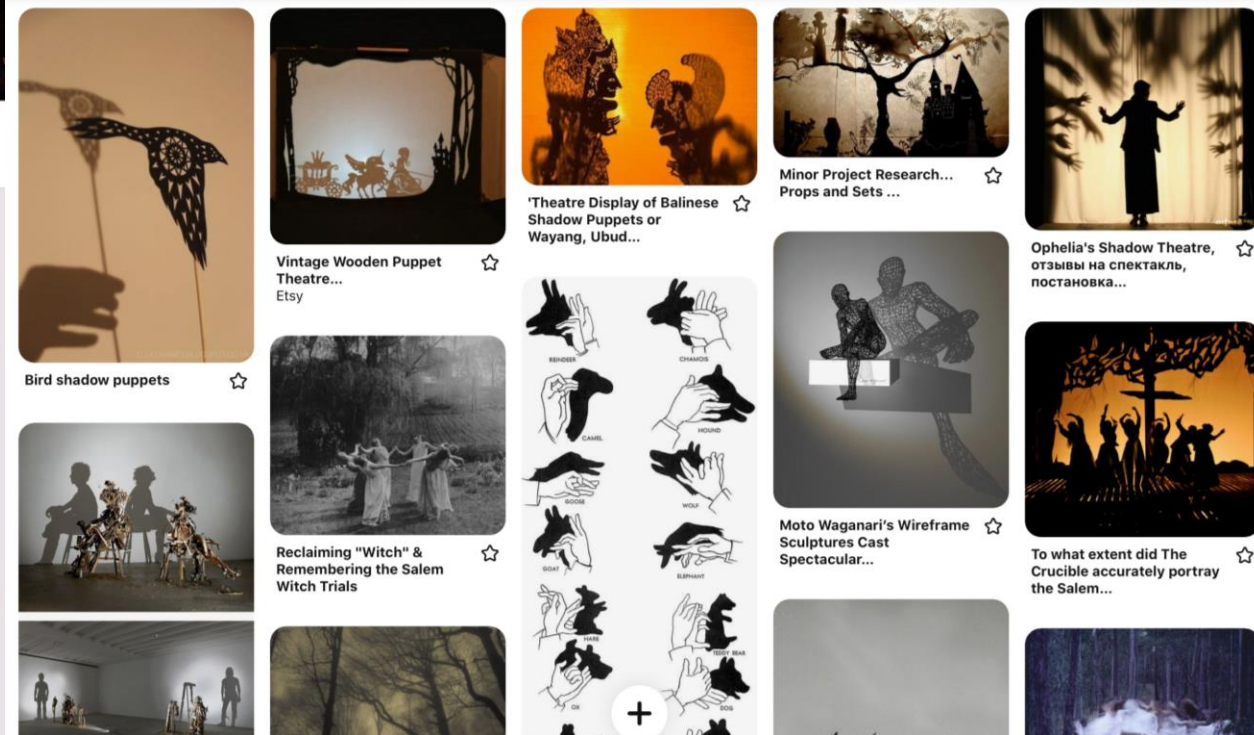
Pinterest Board:



- There are a number of techniques we could potentially experiment with, I think it could be very effective if we go forward with the idea, heavily relying on lighting and then creating silhouettes

- Here I have made a Pinterest board to gather more ideas and imagery that might inspire me for the project

- I started looking more into shadow art/shadow theatre also



Gathering Main Ideas:

What are the main events/details of the story?

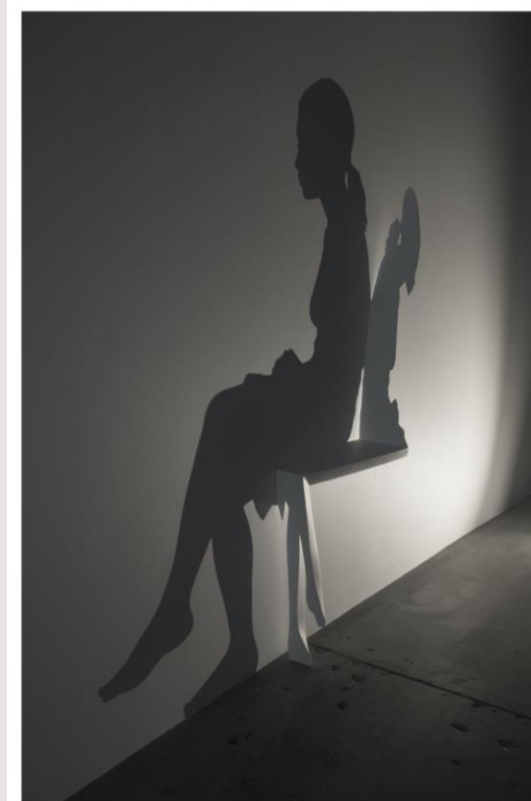
Source: Given by tutor -

<https://www.sparknotes.com/lit/crucible/summary/>

- Set in Salem, Colonial Massachusetts
- Hysteria of Witch Hunting
- A group of girls goes dancing in the forest and are accused of being witches (Abigail Williams is the girls' ringleader)
- While dancing, they are caught by the local minister, Reverend Parris (Parris's daughter Betty, falls into a coma-like state, rumours of witchcraft fill the town)
- John Proctor, a local farmer, wants to restore the town (meanwhile hiding his affair with Abigail, she still desires Proctor but he does not feel the same)
- Betty wakes up and begins screaming. One of the girls confesses to communing with the devil, and she hysterically accuses various townsfolk of consorting with the devil (Later, Abigail and Betty join her)
- The town falls apart
- The trials begin, and Abigail accuses Proctor's wife Elizabeth
- Proctor fears exposing his affair with Abigail (assuming she is lying because she is jealous)
- Proctor finally confesses the affair with Abigail (sacrificing his good name to save his wife)
- The characters have lost all sense of reason
- Elizabeth forgives her husband for adultery
- Abigail has run away, taking all of Parris's money with her
- Danforth insists on recording and publishing Proctor's confession
- Proctor recants and rips up his confession (In doing so, he is signing his death warrant, but preserving the good names of his friends, and exposing the hypocrisy of the witch hunts)
- The play ends with Proctor and Rebecca Nurse, who has also refused to confess, being led to the gallows

Kumi Yamashita: Shadow Art

- Kumi Yamashita is a Japanese artist who has created some very interesting light and shadow pieces
- I like the interesting technique of using materials in the way that she does to project shadows onto a flat surface
- Something I also like about her technique is how this technique uses lighting as in general it can have strong impacts on a space visually but in this case the correct angle is essential to create the art piece
- I think for our project it would be effective if we experiment with this technique to create our own images and tell the story



CHAIR 2014
H110, W50, D15 cm
Carved wood, single light source, shadow



CLOUDS 2005
H200, W120, D10 cm
Cut aluminum plate, single light source, shadow

Source: <http://kumi-yamashita.com/light-shadow>

Shadow Puppets: Chinese Shadow Theatre

- As previously mentioned, we considered the idea of shadow theatre, being another possible option to experiment with
- We could use simple materials like cardboard and a white sheet or even tracing paper to create our own small scenes
- I like the creativity that this would allow us to have, adding more details and possibly a stylistic approach to the project

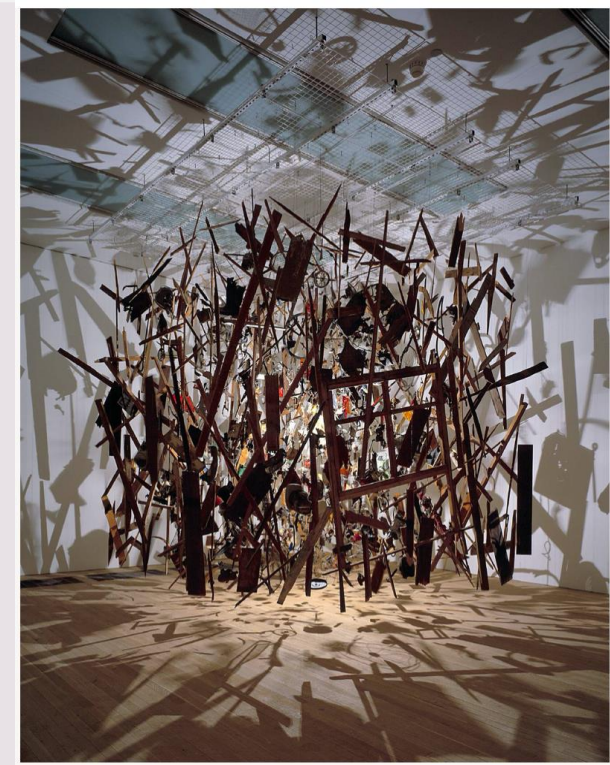


Images from Pinterest.



Cornelia Parker: Shadow Art

- Here is another interesting approach to using shadows
- It's a piece by the artist Cornelia Parker, using objects and lighting to create a piece of work that extends further than the physical structure
- In this particular circumstance the art piece relies on the space, this is something we will also need to consider for our project
- Also, the second image shows shadows made from different glasses. I like that this highlights the interesting effects that can be made from using everyday objects



Story Board:

Creating a storyboard will help us to decide on the few images/clips we want to create to tell the story with visuals we can create. Here are some potential points in the story that we could represent:

- **The girls dancing in the forest**
- **Betty falls into a coma**
- **Riots and chaos over suspicion of witchcraft**
- **Trials begin**
- **Proctor's wife is accused**
- **The affair comes out**
- **Abigail runs away**
- **Proctor refuses to confess to false accusation made toward him**
- **Proctor is sent to the gallows**

Further decisions:

- Girls dancing in the forest
- Betty falls into coma
- Betty wakes up
- Confessions of communing with the devil
- Riots and chaos over accusations of witchcraft
- The affair comes out
- The witch trails
- Sent to the gallows
- Hanging

Future Plans:

We have decided that we would like to create displays and puppets ourselves, so that we can create the visuals we have in mind.

Materials:

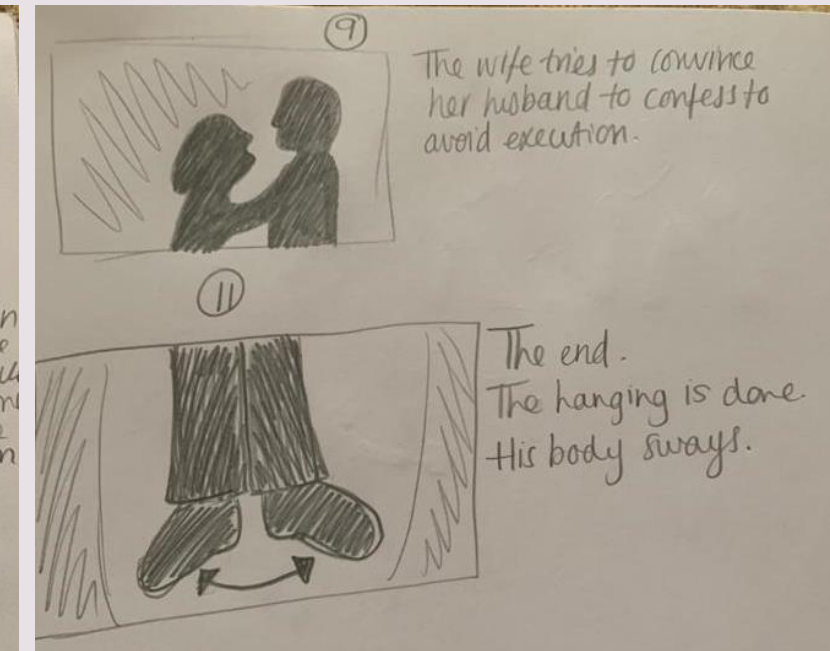
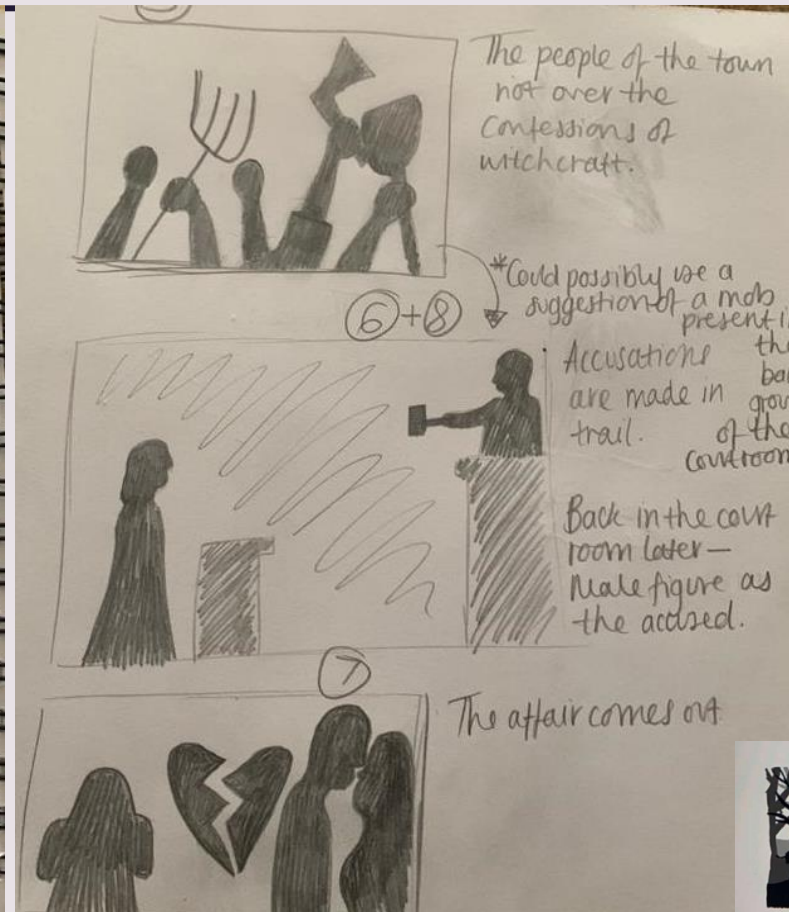
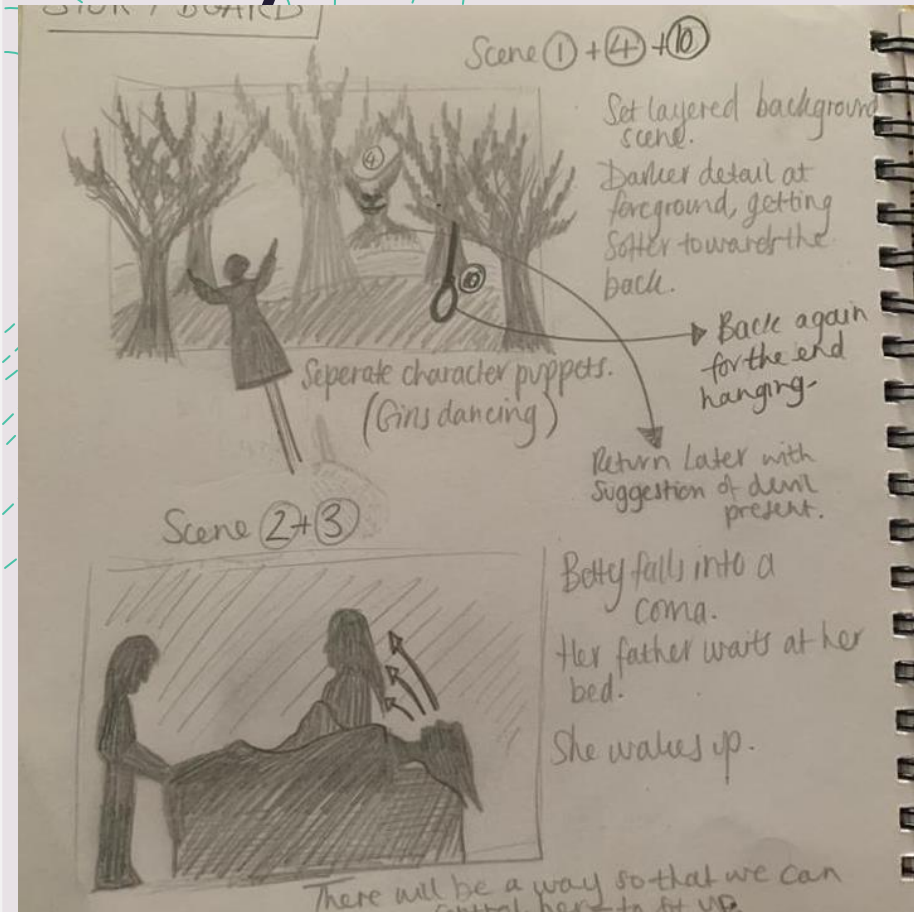
- Cardboard
- Paper
- Tracing Paper
- A white sheet
- Lamp/Light source
- Sellotape
- Scissors
- Skewers

Looking at the plans we have made so far, I think there will be opportunities to reuse some puppet characters, backdrops, and other visual features in a way that tells the story with a few extra details added more subtly, later on.

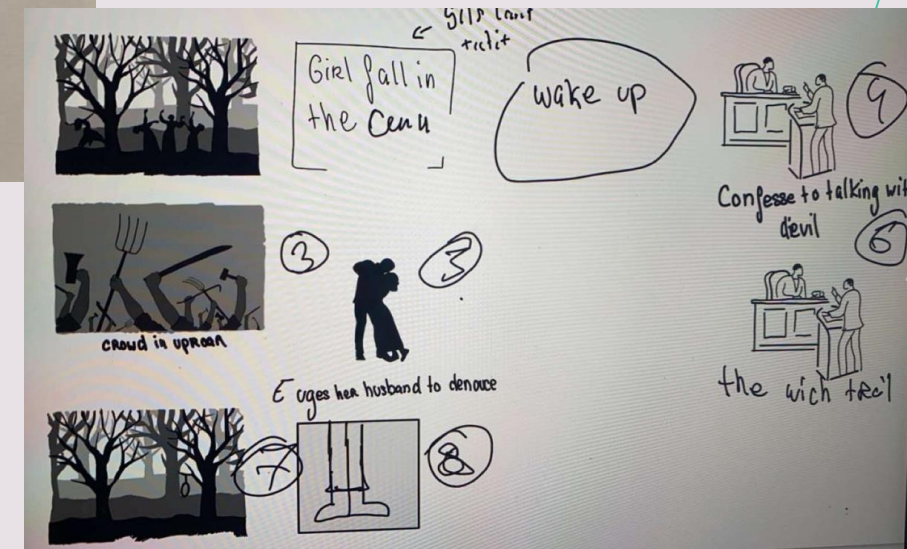
For example, we have realised that we can use the forest backdrop in more than one shot for scenes such as the girls dancing in the forest, the confession of communing with the devil and the hanging at the end.



Story Board Sketches:



- Here I have done some quick sketches to display our general plans for visuals that we plan to display with a mixture of silhouette displays and shadow puppetry.
- Also, I have shown the digital sketches by Freya that are very good examples of the type of visuals we are aiming to achieve with images and clips taken ourselves.



QLab Experimentation:

- I have shown a photo of the small QLab sequence that I put together to experiment and get to know the programme better.
- I think it could support the eerie atmosphere of the visuals we plan to create, if we add the presence of flames to represent the chaos and destruction that is happening in the town due to the witch trials. I found a suiting clip from Pexels, a free site that you can download clips from. I used it in my experimentation, and it proved very effective.
- I have found it very helpful to see what is possible and what techniques we could use to make our final piece more effective.
- For this experimentation I used images from Pinterest and a few clips from the site called Pexels.



Sound:

- So far, our ideas for sound are that we would like to find a piece of music that plays throughout to create atmosphere
- We would like to look into classical music with a dark tone
- We also have considered the possibility of using sound effects such as crackling fire for example
- We started to look classical music in the background, something preferably dark and intense
- We were able to find 3 that could possibly work:

- **Requiem mass in D minor K626**

<https://www.youtube.com/watch?v=qiMcXzfm9Mg>

- **Requiem Mass in D Minor K 626 III Lacrimosa**

<https://www.youtube.com/watch?v=JoR4jeB6OI0>

- **Beethoven moonlight sonata**

<https://www.youtube.com/watch?v=4Tr0otuiQuU>

- **Camille Saint-Saens danse macabre**

https://www.youtube.com/watch?v=YyknBTm_YyM

- We have discovered that we are able to download a track and then use that in the background for our projection display. We would like to begin putting together the visuals before-hand so that we can sample the music options we have gathered with the visuals to get a clear idea of which works best.

Idea Development:

Here we have experimented with a few different character ideas considering what we can add to make the different characters more recognisable. For the character Proctor we considered what clothing might be worn by farmers in that time, the 1600's. Again, for his wife we considered what women commonly wore specifically one that is a farmer's wife. The other girls might be determined by different hair lengths/styles etc. Something they would all have in common was clothing, being the dresses and bonnets.

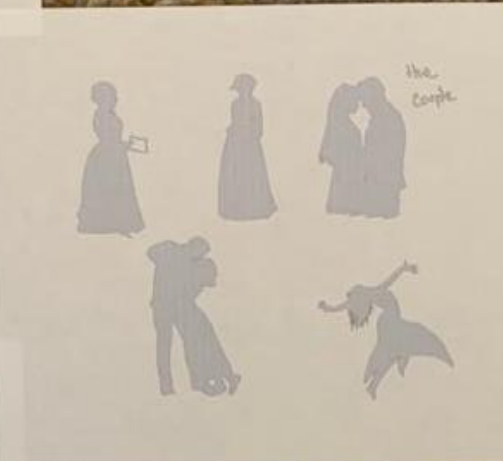
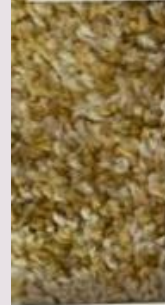
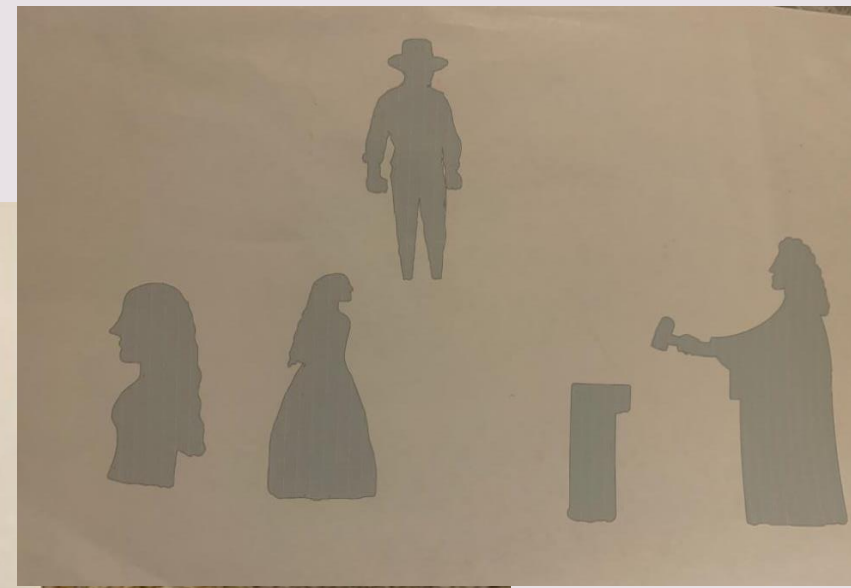


Another silhouette we knew we would need is that of a couple in a romantic embrace, we wanted this to create the imagery of the affair and considered having the wife in the back more distant.



We made some small samples to begin with and saw how they would work creating silhouettes. From what we have with our samples we decided that we could create more accurate silhouettes with the potential of better detailing if they were bigger. We also plan to print out digital sketches that we have to use as templates again improving the accuracy.

- We decided to print out the silhouettes to use as templates so that our cut outs could be more accurate
- We also considered using the backdrop print outs as they were
- We plan to experiment and see what works
- To make the scale more realistic for what we want to achieve in the time that we have we decided to keep it smaller
- Using a pillowcase as our cotton screen instead of a full bed sheet
- We are aiming to gather all of our imagery first, then we will add effects to alter the contrast
- Next, we will put everything together on QLab
- And then finally, we can choose what track we want to put behind it



Putting the final QLab piece together:

- Here we have some of the images that we captured using print outs of digital sketches and our silhouette characters, we also gathered some small clips to either collect screenshots from or to use as they were
- I have shown some with the added effects of altering the contrast of the images to make them more defined and atmospheric
- We captured these images using a pillowcase taped to the legs of a chair with phone torches propped up behind
- The printed out, backdrops were slotted into the pillowcase, whilst using the forest background we had both the backdrop in the pillowcase and the puppets pressed up behind it



Requiem Mass in D Minor K 626 III Lacrimosa

<https://www.youtube.com/watch?v=JoR4jeB6OI0>

This is the track we chose to play throughout our QLab piece.

We felt it created a suitable tone for the story and added the extra dramatic flair that was needed.



Audition
12 - yt1s.com - Requiem Mass in D Minor K 626 III Lacrimosa (1).mp3

	Number	Q	Target	Pre Wait	Action	Post Wait
▶	12	yt1s.com - Requiem Mass in D Minor K 626 III Lacrimosa (1).mp3	⬆️	00:00.00	03:08.96	00:00.00
📺		girls dancing image	⬆️	00:00.00	00:00.00	00:00.00
↵	2	fade girls dancing image		00:00.00	00:05.00	00:00.00
📺	3	fire vid	⬆️	00:00.00	00:47.80	00:00.00
↵	3.5	fade fire vid	3	00:00.00	00:05.00	00:00.00
📺	4.5	girls dancing vid	⬆️	00:00.00	00:26.62	00:00.00
↵	5.5	fade girls dancing vid	4.5	00:00.00	00:05.00	00:00.00
↵	5	fade girls dancing vid	4.5	00:00.00	00:05.00	00:00.00
↵	7	fade girls dancing image		00:00.00	00:05.00	00:00.00
↵	6	fade fire vid	3	00:00.00	00:05.00	00:00.00
📺	8	coma image	⬆️	00:00.00	00:00.00	00:00.00
↵	9	fade coma image	8	00:00.00	00:10.00	00:00.00
📺	15	fire vid 2	⬆️	00:00.00	00:47.80	00:00.00
↵	16	fade fire vid 2	15	00:00.00	00:08.00	00:00.00
↵		fade coma image	8	00:00.00	00:03.00	00:00.00
📺	10	waking from coma vid	⬆️	00:00.00	00:07.01	00:00.00
↵	11	fade waking from coma vid	10	00:00.00	00:03.00	00:00.00
↵	17	fade fire vid 2	15	00:00.00	00:03.00	00:00.00
↵		fade coma image	8	00:00.00	00:03.00	00:00.00
📺	10	waking from coma vid	⬆️	00:00.00	00:07.01	00:00.00
↵	11	fade waking from coma vid	10	00:00.00	00:03.00	00:00.00
↵	17	fade fire vid 2	15	00:00.00	00:03.00	00:00.00
📺	13	riot image	⬆️	00:00.00	00:00.00	00:00.00
↵	14	fade riot image	13	00:00.00	00:05.00	00:00.00
📺	18	courtroom 1 image	⬆️	00:00.00	00:00.00	00:00.00
↵	19	fade courtroom 1 image	18	00:00.00	00:03.00	00:00.00
↵	20	fade courtroom 1 image	18	00:00.00	00:03.00	00:00.00
📺	21	lover.s image	⬆️	00:00.00	00:00.00	00:00.00
↵	22	fade lover.s image	21	00:00.00	00:03.00	00:00.00
📺	23	lovers 2 image	⬆️	00:00.00	00:00.00	00:00.00
↵	24	fade lovers 2 image	23	00:00.00	00:03.00	00:00.00
📺	25	fire vid 3	⬆️	00:00.00	00:47.80	00:00.00
↵	26	fade fire vid 3	25	00:00.00	00:03.00	00:00.00
📺	27	conflict image	⬆️	00:00.00	00:00.00	00:00.00
↵	28	fade conflict image	27	00:00.00	00:03.00	00:00.00
📺	29	conflict image 2	⬆️	00:00.00	00:00.00	00:00.00
↵	30	fade conflict image 2	29	00:00.00	00:03.00	00:00.00
↵	30.1	fade conflict image	27	00:00.00	00:03.00	00:00.00
↵	30.5	fade conflict image 2	29	00:00.00	00:03.00	00:00.00
📺	31	courtroom 2 image	⬆️	00:00.00	00:00.00	00:00.00
↵	32	fade courtroom 2 image	31	00:00.00	00:03.00	00:00.00
↵	33	fade courtroom 2 image	31	00:00.00	00:05.00	00:00.00
📺	34	hanging vid	⬆️	00:00.00	00:04.71	00:00.00
↵	35	fade hanging vid	34	00:00.00	00:05.00	00:00.00
↵	36	fade yt1s.com - Requiem Mass in D Minor K 626 III Lacrimosa (1).mp3	12	00:00.00	00:10.00	00:00.00

Basics
Triggers
Time & Loops
Audio Levels
Audio Trim
Audio Effects

Name: yt1s.com - Requiem Mass in D Minor K 626 III Lacrimosa (1).mp3

Duration: 03:08.964 Target: bethanelsbury Desktop yt1s.com - Requiem Mass in D Minor K 626 III Lacrimosa (1).mp3

Pre Wait: 00:00.000 ☐ Flagged

Post Wait: 00:0

Our QLab Final Piece:

Here is the final queue list of our project. We used images and clips of our own, made from the shadow puppet technique we experimented with. We also used a fire clip, the same one that I used in my experimentation on QLab previously, taken from a free site called Pexels. Also as previously mentioned we chose the song **Requiem Mass in D Minor K 626 III Lacrimosa** a well-known classical song that adds to the dramatic atmosphere of the story. We were able to download the track and then put it into QLab for our final piece.

We have used simple techniques in QLab focusing on adding fades and altering the opacity of the different imagery so that some can be seen at the same time as other, possibly one more subtle than the other etc. I think we have managed to achieve a smooth blend throughout the visual display with suitable transitions from one section of imagery to the next appropriately with how the story progresses.

As neither myself or my project partner Freya are very experienced with QLab we have relied on using simple techniques effectively to achieve interesting visuals, and I think we have managed to do so.

Focusing on the stylistic shadow puppetry approach we chose, again we kept it relatively simple, but I like the effect that the images have, the natural distortion of some adds to the unsettled atmosphere of the story. With the added effects of the increased contrast etc. It added an interesting dark tone to the images and even brought out the subtle texture of the cloth which I think all works very well to assist the dark narrative.

For the presentation of our project, we felt it better to trigger the queues
ourselves. We rehearsed the timing along with the music and felt it fit very well.
At the very end we also included a fade of the music, we decided it was an
effective way to allow the visual story to come to an end. The decreasing
speed of the song also added a dark distortion which we felt was very
affective specifically with how the story ends.