

Process Workbook
Set Design:

MODULE: SCENIC
CONSTRUCTION

STUDENT NO.: 2004210

NAME: BETHAN ELSBURY

Induction:

To begin this module, we were first introduced to the many tools we may be using throughout our construction tasks. After a demonstration we each were given the opportunity to try it out for ourselves. We went through a number of tools including a **Hand Sander, Plunge Saw and Rail, Jig Saw, and a Hand Drill**.

Something I struggled with the most was the Plunge Saw and Rail, I found the controls slightly more difficult to grasp than those for the other tools. Something important to remember that I picked up on was the plunge of the saw being after the machine has been switched on ready to cut, if you start the blade after plunging then it will most likely kick back.

Something worth remembering for the use of the Hand Drill is that when drilling a hole to put the settings at 2 on the switch and turn the dial to the drill bit symbol. When applying screws, it is to be switched to 2 and then choose a number from 1 to 12 on the dial depending on speed required.

I have a range of general experience with a number of tools already, but I still have plenty of room for more learning and development and there are many tools I have yet to discover and learn about.

I aim to watch the tutorial videos provided for the offered Festool equipment so that after Christmas break, I can begin making more freely, being completely prepared.



Safety:

Safety in the workshop is very important as we are told from day one whilst attending inductions. Inductions are set in place so that people can sample the tools and understand how to use them and what to avoid when doing so.

We have a collection of safety equipment that must be worn within the workshop. The essentials for all times are steel toe capped boots, goggles (eye protection) and suitable clothing (if not wearing overalls) being clothing with no loose material that can get caught. Also, it is required that you use earplugs or ear defenders to protect yourself from the loud noises of the power tools.

A piece of safety equipment that should be considered although may not be required is gloves, as it will protect you from splinters and potentially minor cuts.

Cuts can be very common during construction due to the use of multiple types of saws etc. Therefore, it is very important to follow any safety advice and requirements.

I have shown to the right a sample safety sheet that we are provided with on the Moodle page. The requirements are for one piece of equipment, it shows how many factors there can be about the storage, use, fitting etc.

It is very important to absorb the information provided and to follow it so that the likelihood of injury is minimised.



Instructions for the safe use of Flints Flying Irons

The information in this leaflet should be passed to the user of the equipment

This document is issued in accordance with the requirements of Section 6 of the Health and Safety at Work Act 1974, amended March 1988.

These instructions apply to Flints Flying Irons with Codes FHS012 and FHS012L

Working Load Limit 200kg

Use for which the article is designed

Flints Flying Irons have been designed for the flying of conventional timber scenery in the indoor theatre environment. It is assumed the fittings are attached to scenery flown on standard theatre counterweight or hemp systems or power flying systems fitted with soft starts. The use of the fittings for any other purpose would be inappropriate. The fittings should be attached to the scenery by a competent person familiar with the theatre environment.

Always

- ✓ Store the fittings in a area which is dry, clean and protected from corrosion.
- ✓ Inspect the fittings before putting into use or before being placed into storage. Any fittings found to be faulty should be marked as such and taken out of service and destroyed.
- ✓ Ensure fittings are selected and fitted by a competent person.
- ✓ Ensure the fittings are used in such a way that the failure of any one fitting would not lead to a dangerous situation.
- ✓ Ensure any fitting subjected to excessive load by way of shock loading or any other means is immediately removed from service and marked for destruction.
- ✓ Follow the fitting instructions with regard to fittings and timber thickness.
- ✓ Ensure the load is applied in the direction as stated in the instructions.
- ✓ Ensure the fittings are thoroughly inspected by a competent person at six monthly intervals or after any exceptional circumstance or according to an examination scheme.
- ✓ Individually mark the fittings and record their details together with the EC Declaration of Conformity.

Never

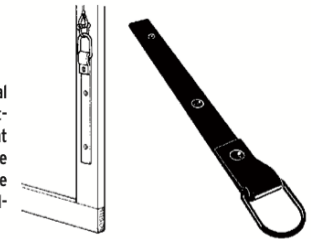
- ✗ Never exceed the Working Load Limit.
- ✗ Subject fittings to shock loads.
- ✗ Never use a fitting which is bent, modified in an unapproved manner, stretched, has nicks, gouges or cracks, has signs of heat or burning, or signs of corrosion.
- ✗ Apply a load without ensuring any shackles or rigging screws are correctly aligned.



FS 539611

Selection of Correct Fitting

If fitting the Flying Iron to the base of the flat select the lipped Flying Iron which has the additional security provided by the lip on the base. If the Flying Iron can not be fixed to the lower edge of the flat then the unlipped Flying Iron may be used.



Correct Fitting

Flying Irons should be attached to the base or lower part of the scenery and the wires should be guided by grummets attached to the top and intermediate rails or along the stiles.

The Flying Iron must be bolted to the timber

using 6mm diameter countersunk machine screws and tee nuts. The thickness of the timber must be at least 25mm and run the entire length of the fitting. The width of the timber should be at least 70mm in order to achieve the working load limit. The timber should be of best joinery quality and inspected to ensure it is free from defects such as knots or shakes. The corner structure of the scenery should be robustly constructed and if necessary reinforced with plywood plates, glued and screwed in place. The structure should be designed so that loads are evenly spread. The working load shown on the fitting does not imply that the structure it is fitted to can withstand the load.

Safe Use The load should be applied vertically in line with the Flying Iron. Bridles should not be employed. Before applying a load ensure any shackles and rigging screws are correctly aligned. Care should be taken during flying to avoid shock loads which may arise due to wires becoming slack if a piece of scenery becomes caught on a fixed object while flying in.

In Service Inspection and Maintenance The fittings should be kept clean and free of corrosion. They must be inspected every six months or after any exceptional circumstance or according to an examination scheme drawn up by a competent person. Inspect for illegible markings, distortion, wear, stretched or bent strap iron or D ring, nicks, gouges, cracks, corrosion, heat marks or any other defect. If in doubt replace the fitting or seek further advice.

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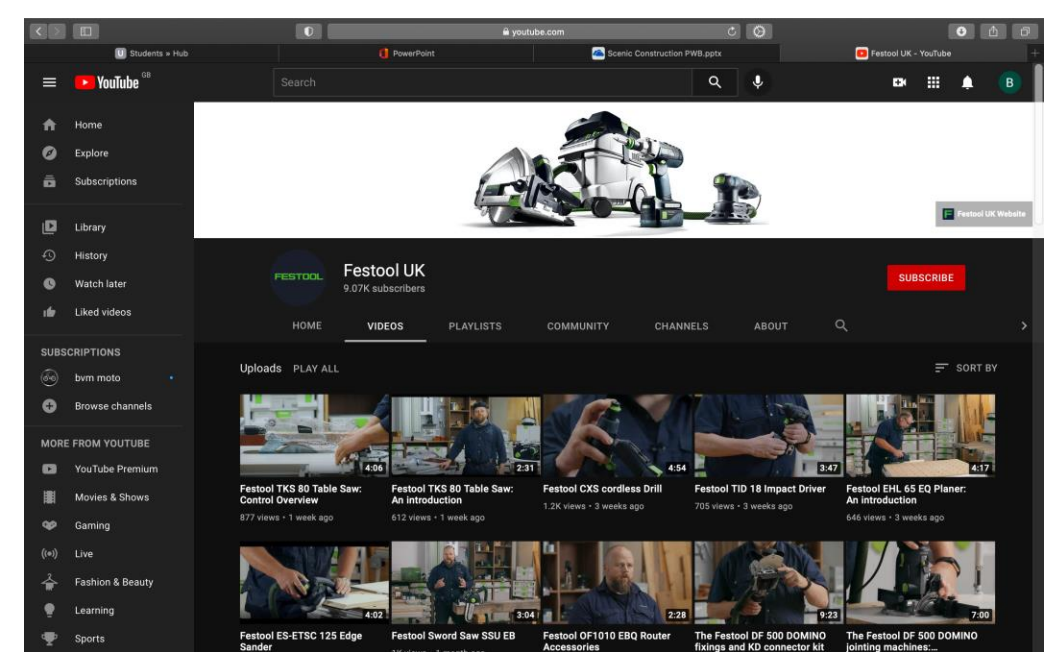
flints.co.uk

FLINTS
Theatrical Chandlers

Induction Videos – Festools:

From watching some of the Festool videos, about the tools we have access to in the workshop, these are some examples of points I have picked up on: (I will refer back to these videos to ensure I fully understand the tools I am using)

- Anything green on a Festool tool has a function!
- When using a plunge saw with the rail system, the depth of the cut can be easily changed on the dial on the side of the tool. It should be altered with different material thicknesses. You can also alter the angle (between -1 and 47 degrees) of the cut using the black clamps at the front and back of the tool and the green pin at the back.
- The non-slip guide rail allows splinter free cuts due to its splinter guard which can be replaced.
- The jigsaws also have available splinter guards that can be clicked into place and then made to fit the blade by simply cutting into it. (another interesting technique to avoid splintering on the surface of the wood is to cut from underneath however this is not always going to be a more convenient option)
- To instal a blade into the Carvex jigsaw, it's a simple as pushing and twisting it into place. When changing or removing a blade, it will be pushed out by the sliding release lever on the side. (this means you will never have to touch a hot blade after use)
- There are different blades accessible for cutting different materials.
- The jigsaw's have speed settings 1 – 5 or A for automatic.

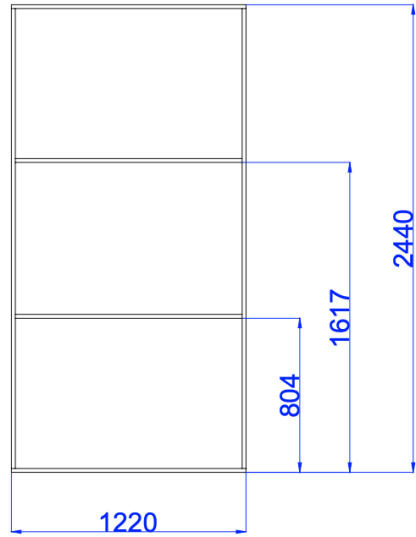


- When turning on the table saw the lights will indicate that it is doing a check to ensure everything is safe to start cutting before starting the blade. Solid green alone means its ready to use.
- You can set the space on the surface of the table to a specific width so that you can cut large pieces, to size more easily and accurately.
- The table saw also comes with a saw stop AIM system which means it will cut out at the sensing of soft material to reduce the amount of damage to fingers, hands etc. (Some softer materials can set this off therefore there is the option to turn it off in these situations)

Induction Images:



Hollywood Hard Flat x 2



Work Bench Cover Replacement: Additional task



Making Flats:

In set groups we were set the tasks of making two different kinds of flats, a Hollywood flat and a canvas Broadway flat.

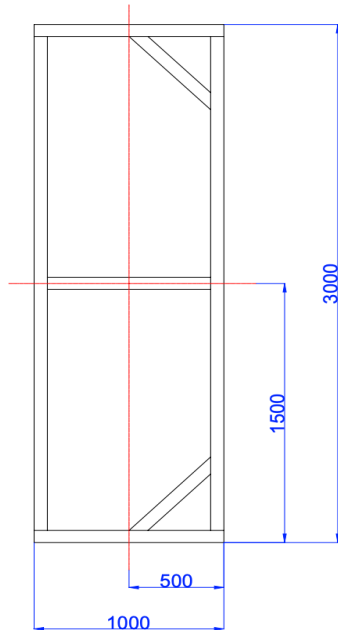
However, before these tasks we were asked to replace the ply bench cover as a starting project. We completed this task using a large sheet of ply, measurements of the table and previous ply covering for reference, a rail saw, jig saw and sandpaper to finish. The ply was fastened to the work bench with reused screws that we removed previously.

Next, we decided to attempt the Broadway flat, using scrap pieces of 3 by 1 pine wood. Using provided measurements we cut out the correct sized pieces using a plunge saw, remembering to trim the ends as it makes the result more accurate. Unfortunately, the rails were a few millimetres short meaning our result was not as accurate as we had hoped it would be but going on from this, we can be more careful next time to ensure our measurements and cutting are more accurate. I have made the effort to ask for techniques that can help with cutting accuracy, despite needing to get used to the tools we can use the technique of bringing the blade to the wood to see where exactly it will be cutting before committing to it.

I feel as though the team working arrangement could have been handled better between us, as there were large differences in levels of ability which I feel naturally will cause difficulty in maintaining equal involvement for each team, however it is important to make your best efforts to do so that each member of the team can do their bit.

Unfortunately, we never got around to completing a Hollywood flat, but we completed the two tasks we were able to.

Canvas Broadway Flat x 2



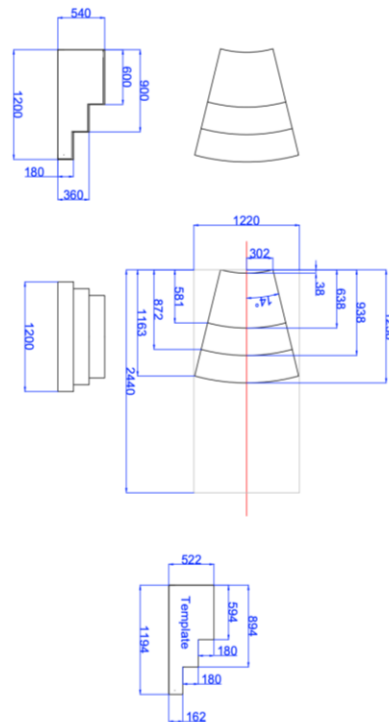
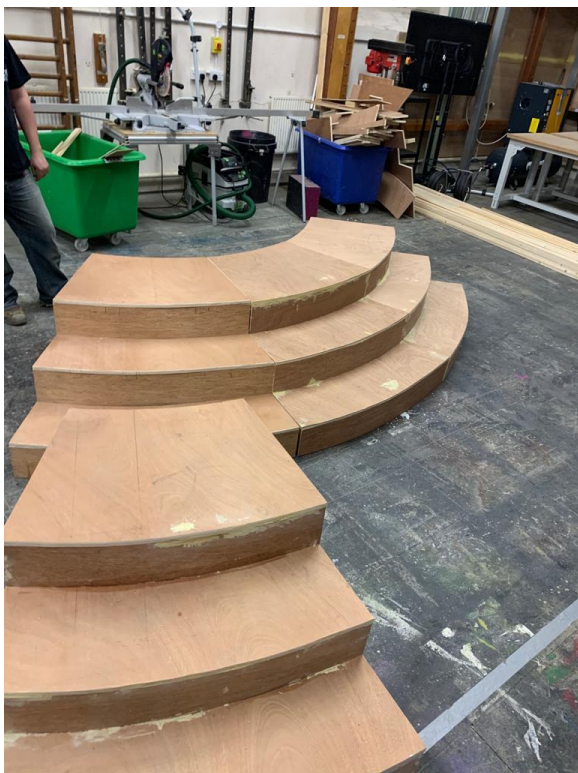
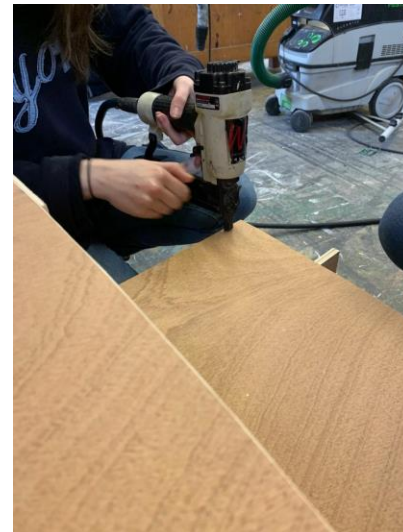
Making Treads:

Our next task included a higher level of pressure as we were each, again in groups, set the task of producing a set of treads that had to be finished within a certain time and will be used for a small production. Therefore, we experienced what it's like to have a set project that has a deadline and had to be functioning, therefore made to a high quality. There were a number of pieces that needed to be cut out ready to be assembled, consisting of three treads, two side pieces and a centre support, and then finally the rises. They were all cut from sheets of 3x1 PAR softwood and thin flexible ply for the rises. We used a number of tools such as a jigsaw, rail saw, hand sander, staple gun, plunge saw and drill. The wood was fastened using long staples and 3.5mm x 40mm screws.

To begin we were given the measurements of the treads we were asked to make and the large sheets of 3x1 PAR softwood. We first marked out and cut the treads, and then went on to do the side and centre support pieces. Something I expected to have trouble with but went very well was the cutting of the curved treads with the jigsaw. Fortunately, we chose the correct team member to take on the task and approach it carefully and sensibly, resulting in neat cuts. An area that we previously struggled with was accurate measurements, therefore this time we were extra cautious of our measuring, double checking them each time.

We began at a good pace and were working productively, however, towards the end of the second day of our two-day timeframe, we hit a few speedbumps and began struggling for time. First, we had made a few errors with the measurements for one of the support pieces, it was fixable, however the correction time unfortunately delayed us more than we had expected. Then when it finally came to assembling the pieces, there were more issues, relating to the same piece which required more correcting, and a few misdirected staples that needed removing. By this point we each began to feel the pressure and frustration and began to struggle. Fortunately, we were helped by others to ensure we could complete our set of treads in time for the deadline.

Treads Development Images:



Things to remember that I will take from these construction tasks...

- Always trim the marked edges of 3 by 1 pine. (they cannot be trusted to be accurate)
- Filler can be used to smooth over gaps or uneven edges. (will result in a neater finish)
- Always use factory edges where possible. (less cutting for you)
- Always consider pencil thickness and blade thickness for accuracy with measuring and cutting. (use thin pencil to mark)
- Sand down any rough edges. (for a better finish)
- Photograph everything!
- Never start a power tool blade against wood. (it will jump back)
- Mark out waste space when drawing measurements. (can improve cutting accuracy)
- Mark out everything, even if you make a grid. (mark bold lines to cut)
- When cutting large pieces of wood, try to catch it from falling or ask for assistance to do so. (Do not try to catch small pieces!!)
- Buy gloves to help avoid splinters.

My Personal Evaluation:

During the second project, being the task of making the treads, we had one less member than we did for our previous tasks. That left me in the position of having the most experience in this field due to having used some tools during A-levels and my foundation year. Although my level of experience was not drastically higher than the other members of the group it made me slightly more comfortable with using the tools and managing the task at hand. Therefore, I unintentionally fell into a leading position within the group, I felt this time round our atmosphere as a team was better than it previously had been, and I made effort to ensure that although I had led the others in some way, I did not want to be overpowering. I think I succeeded due to positive feedback from my fellow team members as well as knowing that we each had a strong involvement in the progression of the project. If we had more experience between us all I think we could have avoided or better handled some of our setbacks but overall, for the general skill level of our team I think we worked very efficiently.

In future I will make better efforts to not get so disheartened by any setbacks as they are common and can be unavoidable. I feel that my frustration towards the end had a very negative effect on our success and am disappointed with how I dealt with the situation. But on a positive note, I am proud of my teamwork skills and grateful for the teamworking skills of those in my team. Although there was room for improvement within this task completion, I believe our team used what little experience we each had very effectively.



Treads in use...

Unfortunately, the image quality is not very strong but here you can see Ian, who was involved in the production design that our treads were made for. As you can vaguely see in the background, they have been used for a curved stage front. We were shown the main cage feature at the centre which you can also make out behind Ian. This feature has been designed to rotate which he kindly displayed for us. He explained to us that the core philosophy of the production was to use sustainable, repurposed materials, therefore that what the production design consists of. This particular production in reference was a musical.



Future Plans:

Ian explained more that obviously due to Covid they have not been able to see their production in action just yet, but they are hoping to do so as soon as possible. Their aim is to complete a local tour in Wales aiming to hit 3 or 4 shows.

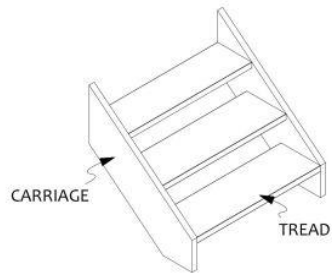
Tip:

A tip he shared to us was that maintaining contact with others is vital, letting people know your goals and ensuring they don't forget about you is hugely effective in the industry. Keeping certain contacts can also mean you are able to call on resources, possibly collaborate with others and have more ability to push things to be what you want them to be.

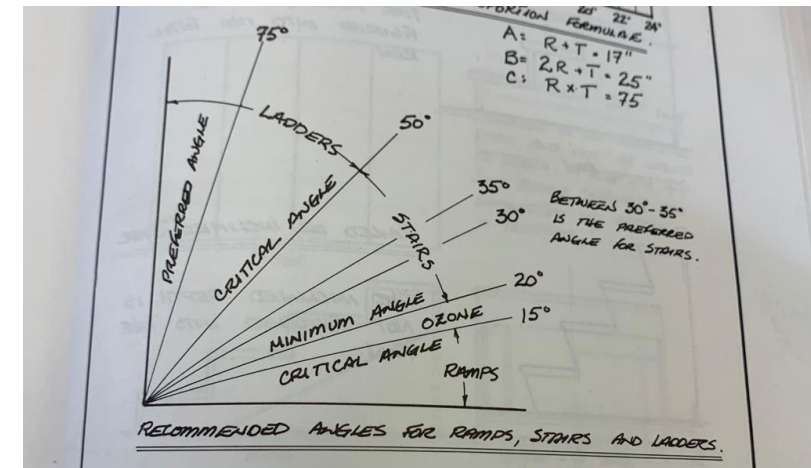
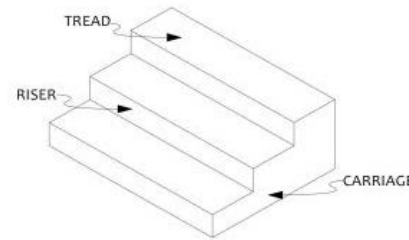
Making Treads for Theatre:

There are a few types of treads that can be found in different set designs, whether part of the setting for the story or simply a way to enter or exit. There can be "open-carriage" treads, "closed-carriage", they can be "independent" or "dependent". Open-carriage has side supports or "carriages" that follow the shape of the treads and rises. Closed-carriage treads have carriages that shape does not follow the shape of the tread, often appearing as a straight slope from a side view. Being dependent or independent refers to whether the stair set requires "the structure of the upper level" to provide sturdy support. An independent tread can be used without the upper level, but a dependent would not function without it. A commonly used material for treads in theatre is "¾ plywood".

A CLOSED-CARRIAGE DEPENDENT STAIR



ANATOMY OF AN OPEN-CARRIAGE, INDEPENDENT STAIR UNIT



Sources:

- SJM (2012) Construction of Stairs for the Stage: 1: Design and Tech Theatre

<https://designandtechtheatre.wordpress.com/2012/09/28/anatomy-and-construction-of-stairs-for-the-stage/>

- Middle image: <http://www.rfdesigns.org/miser.htm> (will refer to this set again)

Safety Regulations (UK)

- Staircases should have a **maximum rise of 220mm** and a **minimum going of 220mm**
- They should have a **maximum pitch of 42°**
- Flights should have a **handrail on at least one side** if they are less than one meter wide and, on both sides, if they are wider than this
- Handrails on stairs and landings should have a minimum height of 900mm
- No openings of any balustrading should allow the passage of a 100mm sphere
- A minimum of **2,000mm of clear headroom** is required above the pitch line
- For further Regulations see Approved Document K (available to buy from planningportal.co.uk)

- Brindsmead. N (2020)

Source: Brindsmead. N (2020) Staircase Design: Expert Guide to Getting It Right: Homebuilding & Renovating

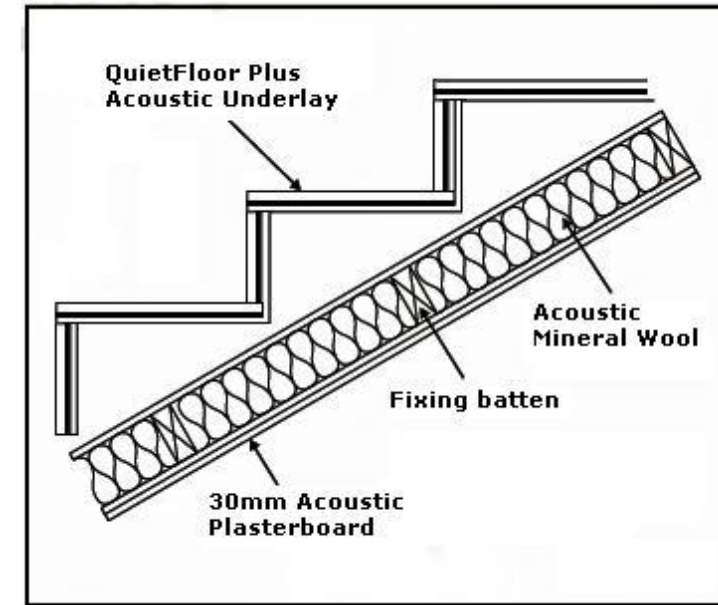
<https://www.homebuilding.co.uk/ideas/staircase-design-guide>

This is a diagram to show the suitable angles for treads, ramps and ladders.

Noise reduction:

Noise reduction can be achieved by using a few materials and pieces like, acoustic mineral wool, fixing battens, 30mm acoustic plasterboard and quiet floor and/or acoustic underlay. Soundproofing for your typical household stairs is necessary so that it does not become a noise issue for neighbours. When used for theatre, as you can imagine it could be quite disruptive for a performance if not attended too. Although, you might argue that having a noisy staircase might add to the narrative of the story somehow in some cases but even then, sound effects can be added later and can be more controllable when added in manually.

Source: Young, S (2011) Soundproofing of Stairs in Common Areas of Flats: Sound Service http://www.soundservice.co.uk/soundproofing_of_stairs.html



Moliere's The Miser:

This set design, shows a set of stairs as a main feature within the layout. From what you can see in the image it appears that the stairs possibly lead to an off-stage space, therefore they are a functioning set of stairs, made to fit the aesthetics of the narrative. The requirements are met in terms of railings as you can see it possesses a railing on each side. The structure appears more complicated than a basic set of treads and rises, but from what I can see I would say that it is a closed-carriage set of independent stairs, although being joined to the upper level it appears as though it could stand and function without it.

Source: Finkelstein, R (2014) Moliere's The Miser: Stage Designs of Richard Finkelstein <http://www.rfdesigns.org/miser.htm>



Materials Used in Scenic Construction: Materials in construction. It can provide necessary protection against the environment they will face or simply to make them have a better and more sustainable life in use. Mostly they protect against corrosion in common cases. "A protective coating is a layer of material applied to the surface of another material with the intent of inhibiting or preventing corrosion."

Source: Corrosionpedia (2017) Protective Coating

<https://www.corrosionpedia.com/definition/2301/protective-coating-corrosion>

Types of wood protective coatings (Wood preservatives):

- (Ronseal Total Wood Preservative) A highly penetrative, solvent-based wood preserver for exterior timbers. Perfect for use on garden sheds, fences, joists, doors and window frames.
- (Barrettine Premier Wood Preserver) A solvent-based exterior wood preservative that offers microporous protection against wood rot, fungi, decay and mould. Available in clear and an attractive range of wood tone colours.
- (Cuprinol 5 Star Complete Wood Treatment (WB)) A clear, water-based, all-in-one wood treatment for interior timber. Deep penetrating formula ensures effective treatment and lasting protection against insect attack, re-infestation and fungal decay.
- (Osmo Wood Protector (4006)) A wood protective treatment that is free from biocides and preservatives. Ideal for treating wood in high moisture areas, such as wet rooms, kitchens and bathrooms. Especially suitable for woods that are susceptible to blue stain, such as Pine.
- (Sadolin Quick Drying Wood Preserver) A clear water-based wood preserver suitable for new and bare timber. Perfect as a pre-treatment before applying a wood stain, paint or other wood finish. Provides excellent protection for interior and exterior joinery against wood destroying fungi and blue stain.

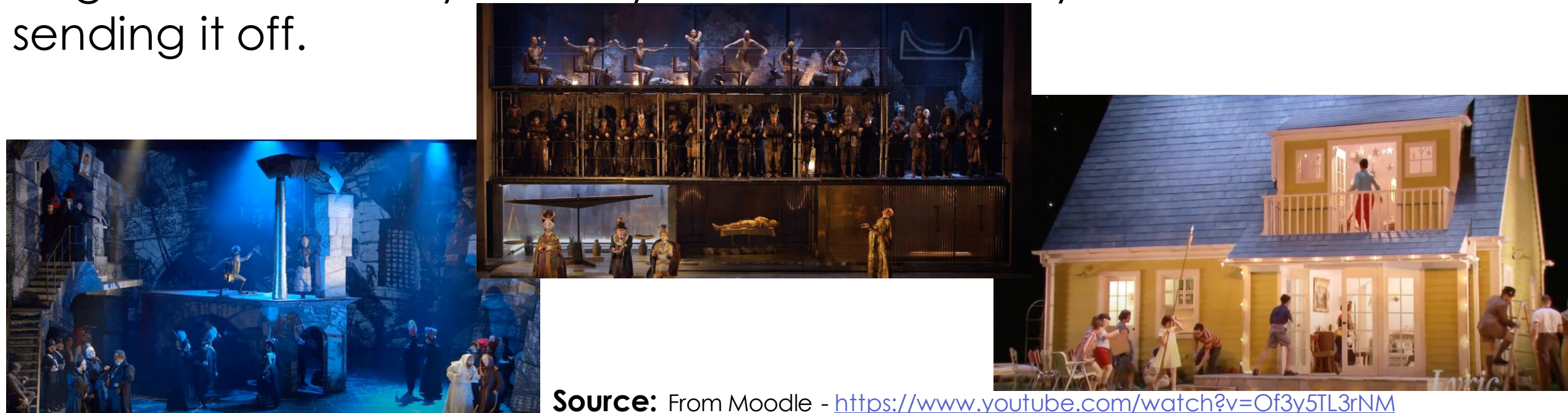
Wood is a commonly used material in scenic construction, specifically for theatre, therefore it would be helpful to know the different wood preservatives that can be used to protect the elements of a set.

Source: Goldsack. N (2019) 5 top wood preservers to protect & preserve: The Daily Bark

<https://www.wood-finishes-direct.com/blog/5-top-wood-preservers-to-protect-preserve/>

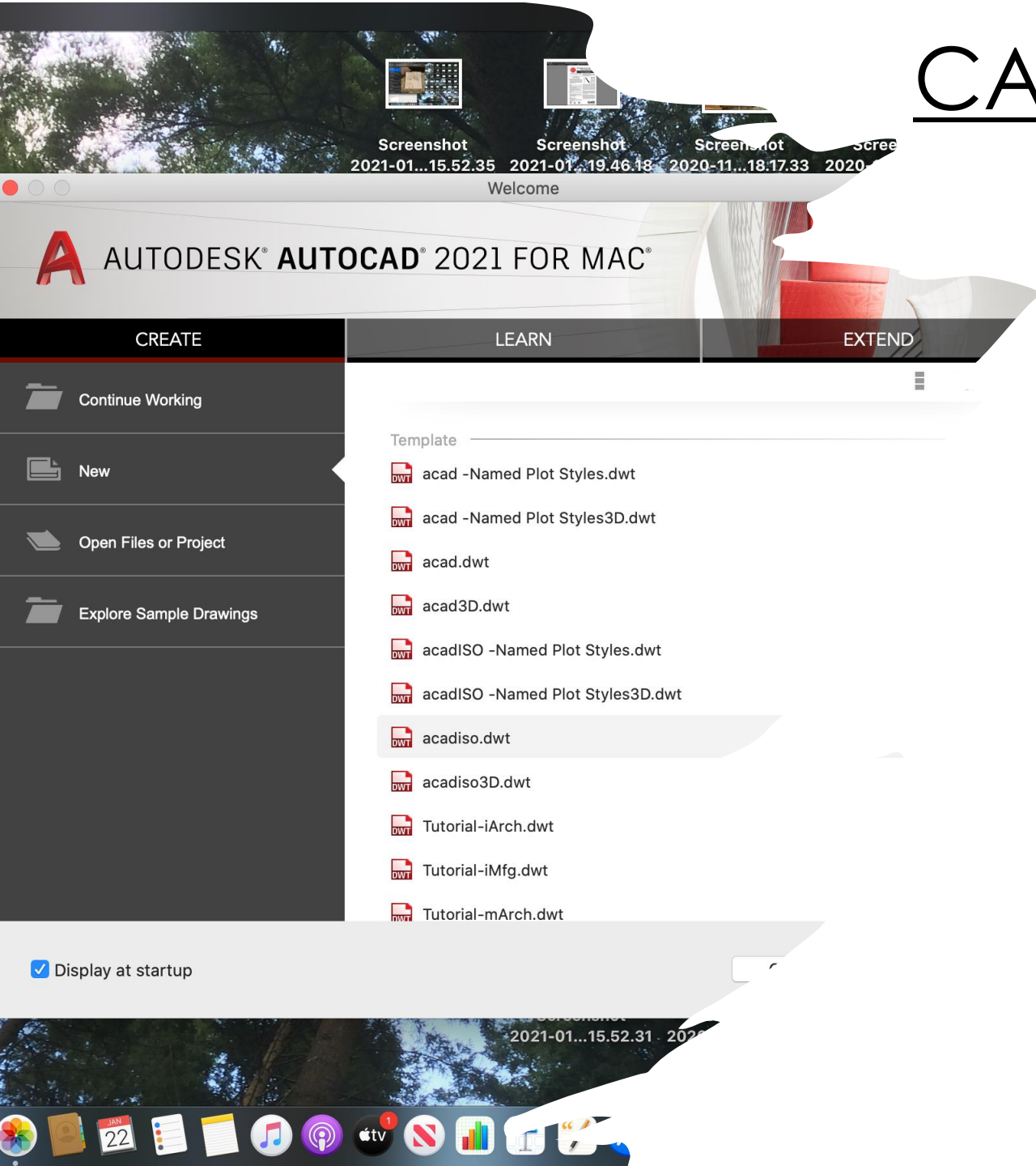
Cardiff Theatrical Services (CTS):

CTS are a company that make sets for all sorts of productions. Their workshop contains areas for all sorts of construction and design elements, even an assembly area where they can prebuild the sets before they go out to be used. They are made up of specialist workers responsible for the different areas of construction. They even offer the opportunity for the customer to see the set as it would be on stage to ensure they are fully satisfied with every detail before sending it off.



Source: From Moodle - <https://www.youtube.com/watch?v=Of3y5TL3rNM>

CAD



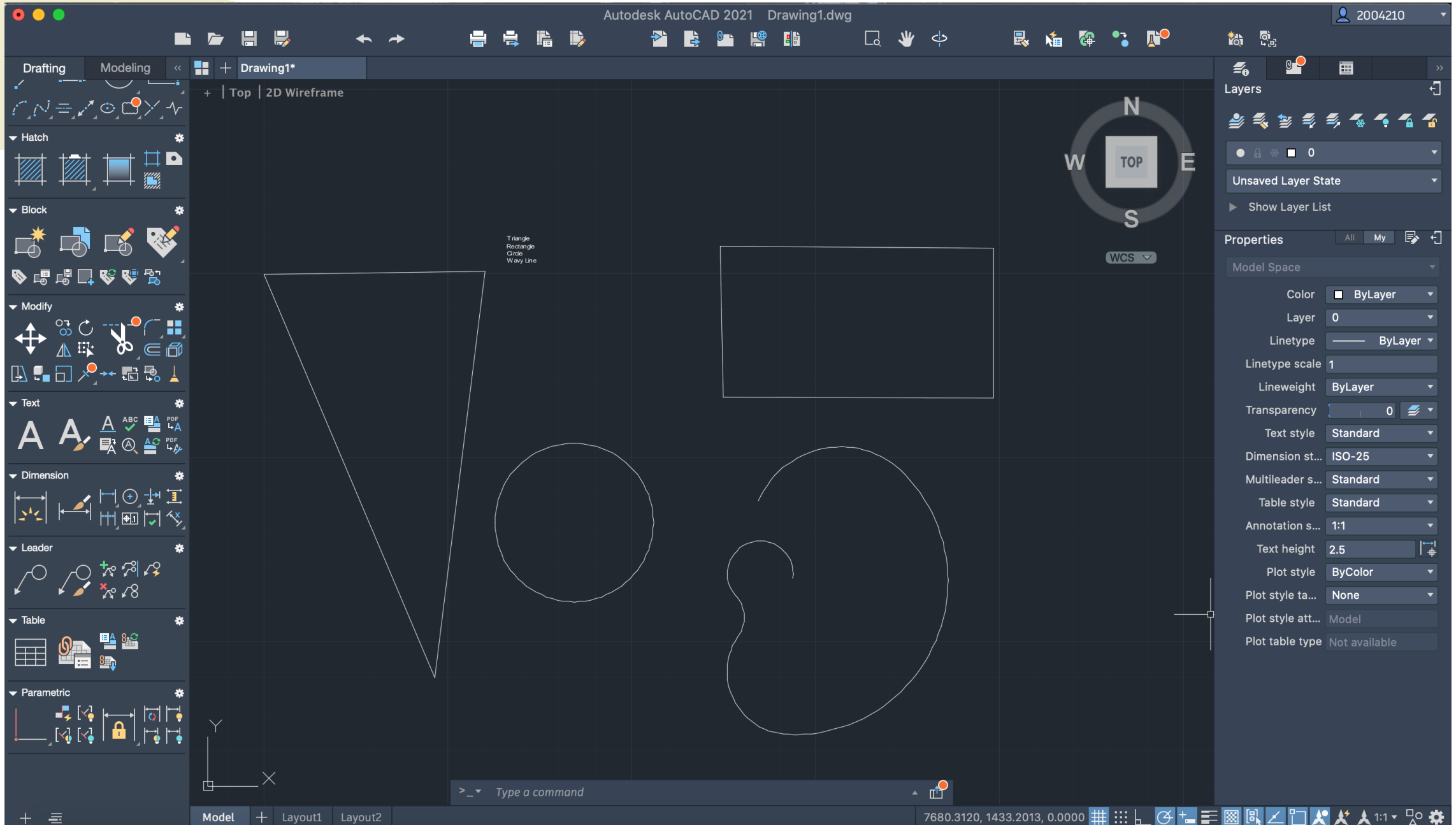
We were introduced to Auto Desk CAD, a tool that will prove vital during design and construction as it is used to display a design, so that you can communicate ideas with others involved in the project. It is also used to produce the final measurements and dimensions for manufacture.

I have experience using CAD but not specifically with the Auto desk software. I think this will benefit me going further in the module, but I am eager to learn how to use it to produce more advanced and interesting products.

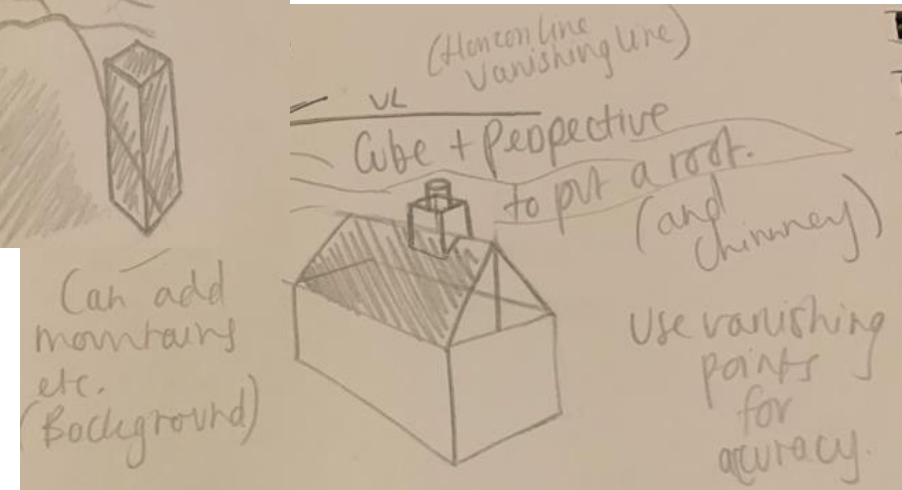
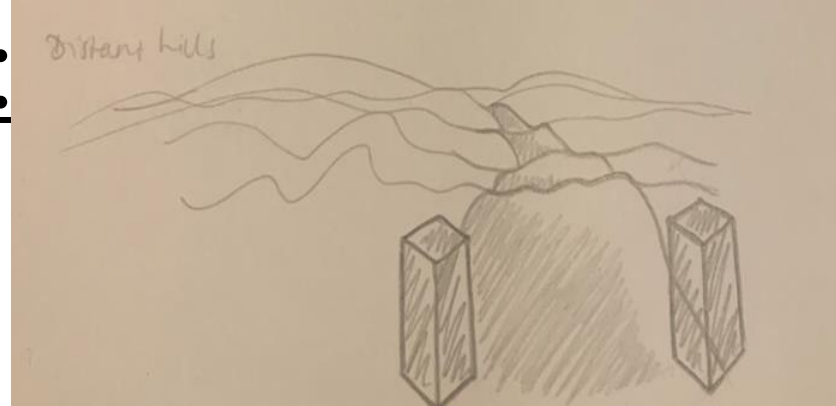
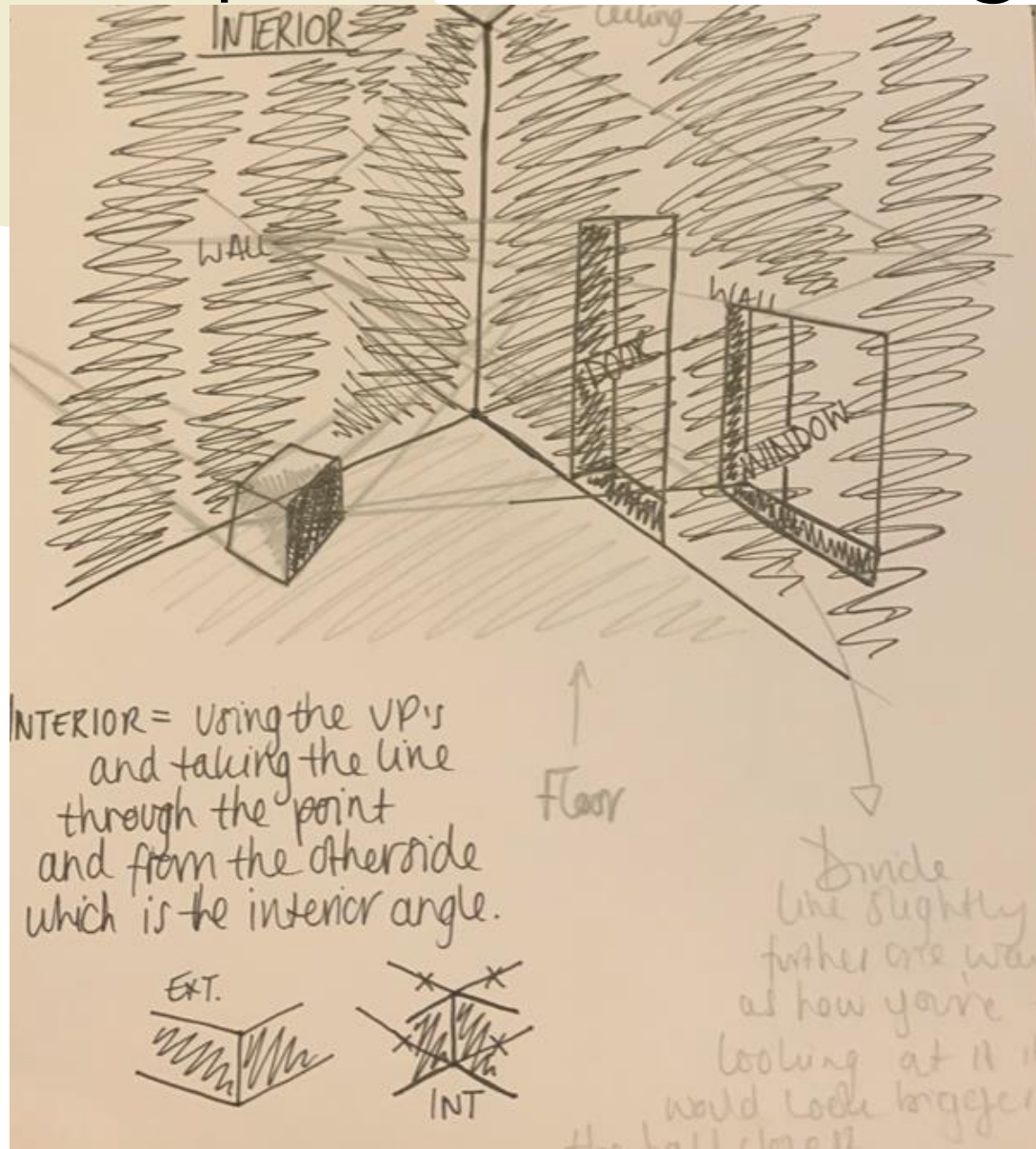
Although already familiar with CAD, it has been a while since I have used it and I plan to familiarise myself with this particular format, and hopefully will be supported by my previous experience meaning it will mostly consist of reminding myself of what I already know. I can then continue to expand my skills further.

I have already installed the software, ready to use and plan to experiment with it to gain some familiarity before we are required to use it for any future work.

Practicing the Basics of AutoCAD:



Perspective Drawing:

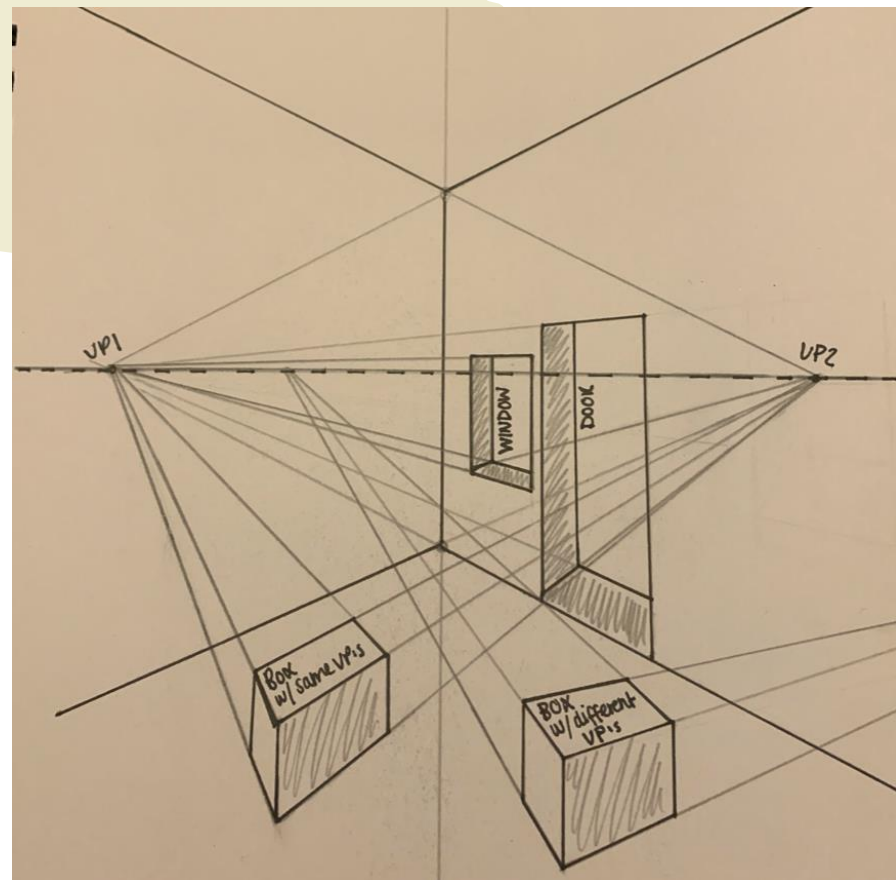


Notes:

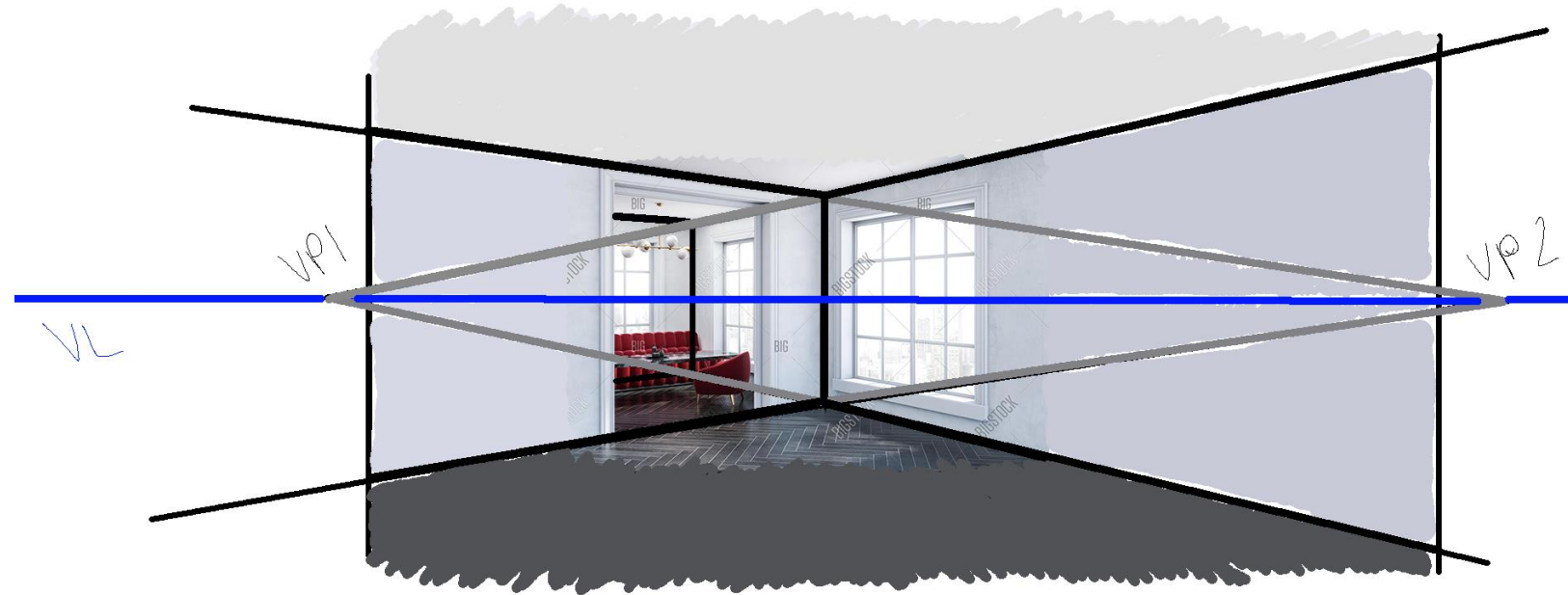
- Vanishing points = there's always 2, unless it's a one-point perspective (above, below, in front)
- Perspective means the lines CONVERGE but never meet
- Any parallel lines meet the same VP's
- If you put a box in a room, it will help you find the VP's
- If the VP's are off the page, you can predict the lines by angling them slightly down/in, things look smaller the further away they get, therefore, you want to show this

As shown above there are many aspects of perspective to consider depending on the subject of the view.

Perspective Tasks:



These are my two practice tasks using vanishing points and vanishing lines. The one to the left displaying an interior space I made up including two boxes, one parallel and therefore using the same vanishing points and the second using different vanishing points.



The image to the right is of a random image if a room that I chose to practice a set extension using the perspective principles of vanishing points etc.

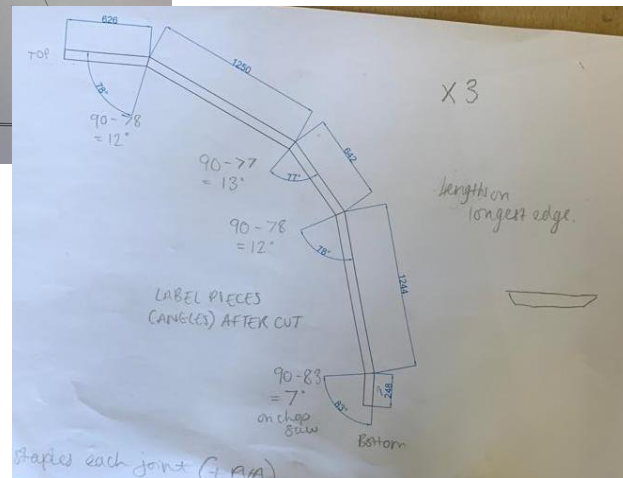
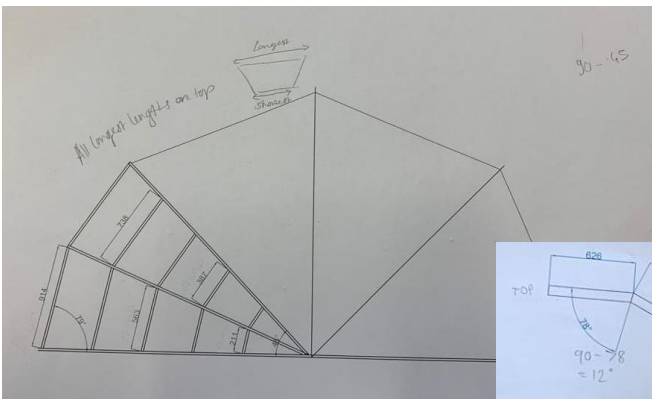
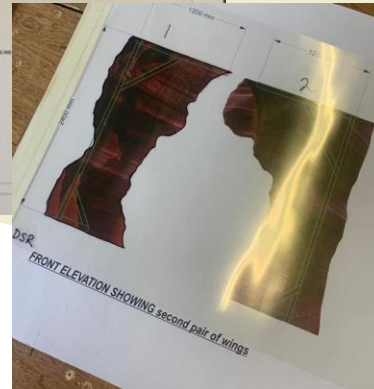
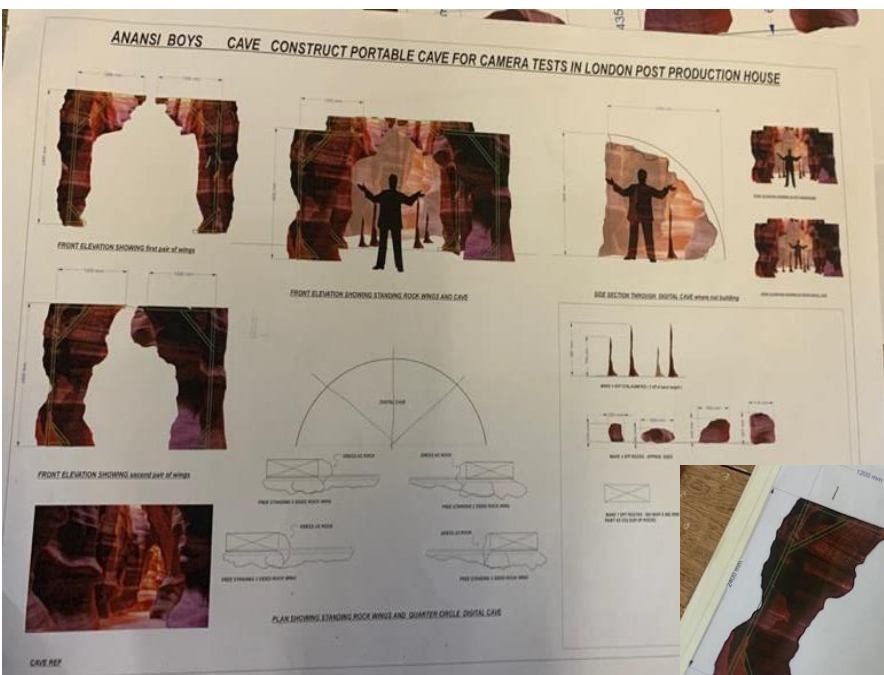
I found these tasks very helpful in helping me understand how you can use vanishing points to extend or predict the correct perspective for any square spaces.

Making a Sandstone Cave:

When returning to scenic construction after the long break due to COVID restrictions we were first given the opportunity to familiarise ourselves with the tools once again. Remembering the safety regulations and other points from our induction and previous projects.

Our next project we were given was to make a sandstone cave. We will make flats, the skeletal structure of the dome, each in groups taking a section that will join to the rest and then finally, we will go on to the polystyrene layers that we will fasten with contact adhesive before carving into it with a wire cutter. The last step will be to add the material finish and colour.

Here I have shown all of the technical drawings etc. Displaying the visuals that we are aiming to achieve at the end.



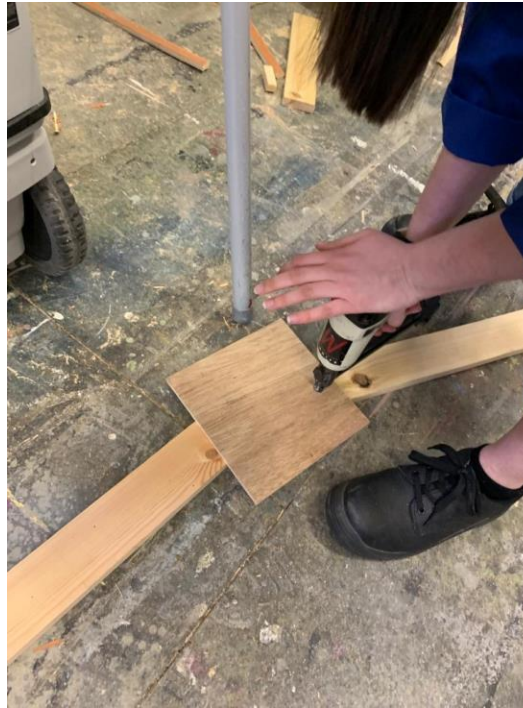
Making The Flats:

- Working in groups of four we began with making one of the flats
- First, we traced the outline of the piece onto acetate ready to be projected onto the play at the correct size so that we could copy the tracing onto the wood
- This was much more efficient than working out how to enlarge the shape with measurements as it is an organic shape
- After creating an outline, we clamped the wood onto a work desk and used a jig saw to cut along the line
- Finally, we made a frame to fit the piece of thin ply using 3 by 1 pine, screwing the pieces together with PVA and using PVA and a staple gun to fasten it to the ply when



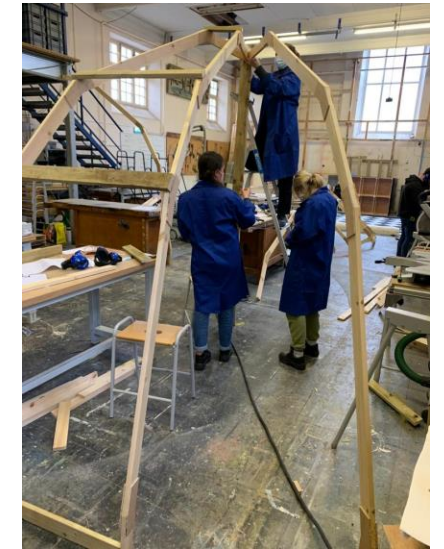
Making The Ribs:

- Next, we began constructing the ribs of the dome, each group was set to put 3 together
- Again, we used 3 by 1 pine cut at the correct angles to create the arch shape (as the angles were bigger than what the plunge saw could reach, we took the bumper away from 90 degrees to work out how we could do it that way)
- These pieces were fastened using PVA and two wave pin staples per joint. To add extra stability, we also made thin ply squares to go on top, we cut them with the table saw and again we used PVA, and they were stapled in place using regular, smaller staples (they were positioned to match with the grain as this makes it more effective)
- This was added to each joint of the rib, and each was planed afterwards to fit the shape of the structure



Constructing Our Segment of the Dome:

- Each group was set the task of creating a segment for the dome
- We gathered our three ribs and began attaching the rest of the structure
- The joining struts connecting the ribs together were cut from scrap pieces of similar sized pine
- They were again set in place with PVA and screws
- We had some issues with the original placement of the pieces and had a situation where we had to undo what we originally did and start again as we did not realise at first that the joining pieces had to be angled correctly with the wood to be as stable as they should be
- We used another large piece of spare pine to ensure the ribs were positioned at the correct angle etc. This made the construction of the pieces much easier
- However, our measurements for the second half we did is not entirely accurate, in future I will be more careful of ensuring my measurements and placing is accurate
- Fortunately, the error of measurements should not cause major issues with the final piece but we will learn from our mistakes



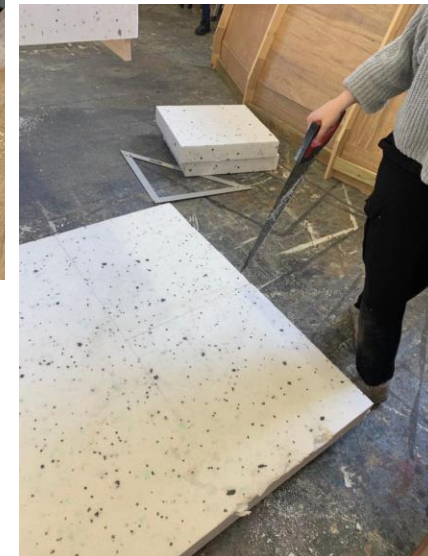
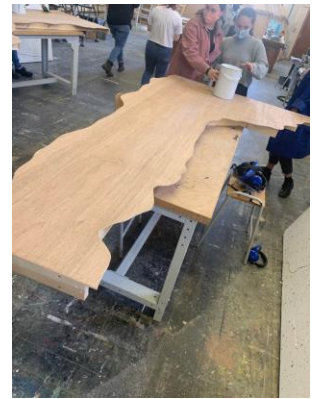
Cladding Our Segment:

- The final step of completing our segment was to clad the structure from the inside
- We used thin pieces of ply cut using either the plunge saw and rail, or table saw
- We measure the different sections of our structure and then cut the pieces to size
- Next, we had to return to the structure to match up the pieces, because of the angled gap between the ribs we had to cut the piece to size and then work out the angle that would fit, gradually getting narrow towards the top
- We did this for each section, we found an effective method of matching the pieces which allowed us to eventually get into a rhythm (for each task we often split into two pairs between the four of us to speed up the process, this turned out to be effective)
- We managed to complete the segment in good time and to a good standard, the pieces are held in place by more PVA and smaller staples
- There are some areas where finishing touches are necessary however, such as reducing the hazard of any staples ends that have come through the wood



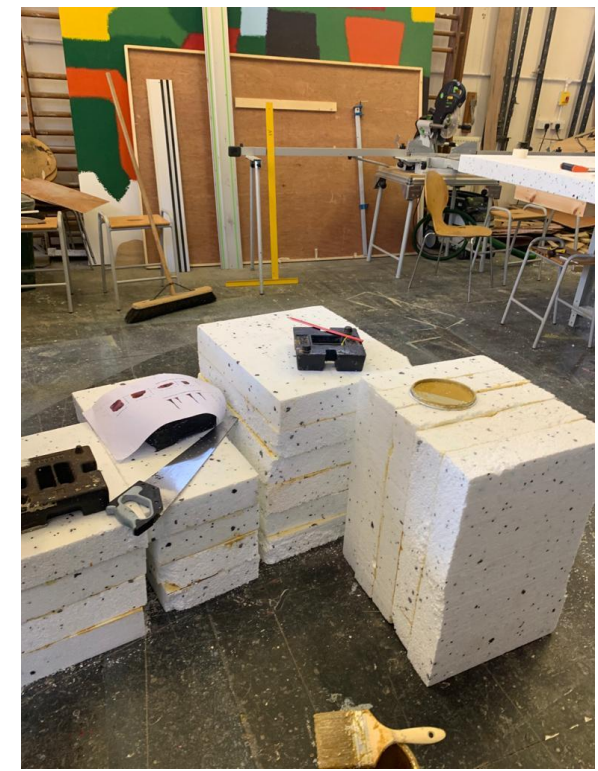
Adding the Polystyrene Layers:

- We used large, 100mm thick, sheets of polystyrene to stick on top of the flats we had previously made
- We stuck them down using a very strong contact adhesive, therefore we had to add a thin layer of the glue on each side that will be stuck, let it sit for 10 minutes before lining the pieces up making sure they are correctly positioned before being placed down. Once the two sides meet, they are permanently stuck
- I used this type of adhesive once before for prop making, it is very effective but of course must be used carefully
- We also started sawing rectangles of polystyrene, 6 of the same size so that we could layer them and carve into them using the wire cutter afterwards to create boulder features (we used the same adhesive to do so)



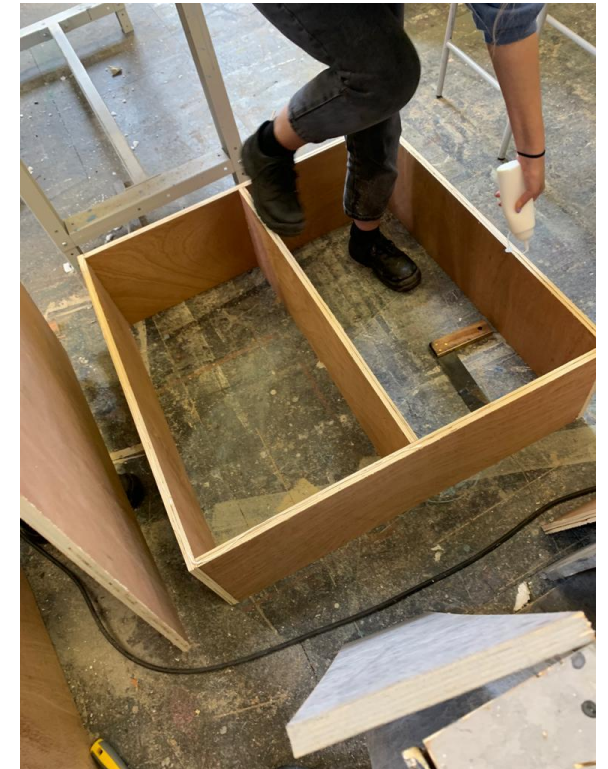
Making Boulders:

- We cut out rectangles of polystyrene and layered them together like shown previously, with the contact adhesive
- They were left for some time with weights on top to hold them together as much as possible
- We drew a rough outline of the shape to follow on the top layer
- And then finally they were ready to be shaped with the wire cutter, cutting horizontally
- I found the most effective technique was to gradually sculpt away the material to create a more realistic shape and surface
- In between it was helpful to use a wire brush to soften the edges even more and achieve more natural curves
- The same technique will be used for the polystyrene layered over the flats



Making a Box:

- This last task we were set was fairly simple
- We needed four boxes stable enough to stand on, we cut the needed pieces from reused 3x1 PAR softwood (same as the treads)
- We cut out one 900mm x 900mm piece for the lid, two 900mm x 282mm and three 864mm x 282mm pieces
- Two side pieces were shorter than the others because we took into consideration the thickness of the wood that would be overlapping from the two longer pieces, the additional 864mm x 282mm piece was used as a centre support
- We had some trouble lining things up to be perfectly flush at the end, however managed to reduce the over-hang by using a clamp when stapling the final edges
- Again, these separate pieces were all fixed in place using PVA and staples



The Polystyrene Strongbow Stone Wall:

This project is very helpful for how to approach the texture and dimensions of our stone cave project. The requirements for the advert was that they needed to make a 30ft long dry-stone wall with a place suitable for a goalie to fit into. The entire wall was made from polystyrene, they used a hot wire cutter as we will be doing for our cave and as we've started doing for the boulders. The benefits of this tool as discussed in the video is how the wire can be shaped however you wish before being heated to use. They also used a wire brush to soften the edges rounding them off more effectively. Another thing they did which I found interesting was how they made it into a few different sections so that it could be transported more easily and then put back together when in place.

A few bits were added on later to have more noticable dimensions and depth around the edges of it, there were even some on top made to appear as though they were just stacked there like you would see on an everyday stone wall. They picked up on the little details to make it as believable as possible. After completing the carving and shaping they first added a drivet render that acts like a concrete layer to set the surface ready to be painted. With colour added into it, the render also served as a perfect base colour to then add shadows and highlights on top of it to create the depth. They mixed a number of colours like brown, red, green and yellow in tiny proportions, with the greys to get the colour accurate and even give it an aged effect.



Source: Polystyrene / Styrofoam Strongbow Rock Wall by Sculpture Studios (2013) YouTube: Aden Hynes Sculpture Studio <https://www.youtube.com/watch?v=PzVDEqrJoil>

Cladding Flats

Canvas/Cloth - All fabrics used on stage must be fire retardant. DFR (Durably Flame Retardant) cloth is available and recommended.

Hardboard/Masonite - Cheap but not the best, as it is not durable, likely to flex/bow and heavy.

Plywood – In comparison to hardboard it is more expensive but durable and lighter in weight.

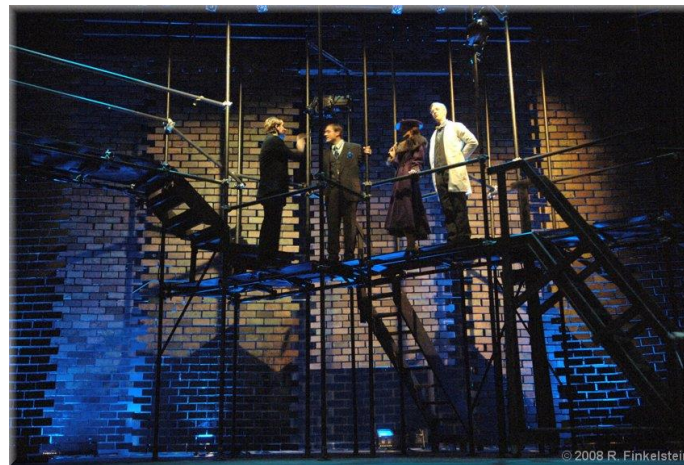
(MDF is not suitable for making flats)

Reference: Primrose. J (2016, updated in 2018) Flats - Types and Methods: Theatrecrafts.com

<http://www.theatrecrafts.com/pages/home/topics/scenic-stage-design/flats-types-methods/>

Using Metal in Scenery Construction

This performance displays the use of scaffolding type features which the characters trust to hold their weight, from what I have learnt over my years in education I know that metal is one of the strongest types of material to use in these circumstances and is necessary to ensure the safety and support of the characters during their performance. Wood is also very strong and supporting, but I can imagine the storyline depends on the appearance of the scaffolding as well as the practicality.



For some occurrences other materials are made to replicate the appearance of others, from what I've seen in prop making for example, objects commonly made from foam are made to look like deadly weapons. In this circumstance, using any other material but making it replicate another would take away from the practicality. Only metal in the thin stature it is shown could provide the necessary support and strength for its use in the performance.

Image Reference: <http://www.rfdesigns.org/urinetown.htm>

More on metal features...

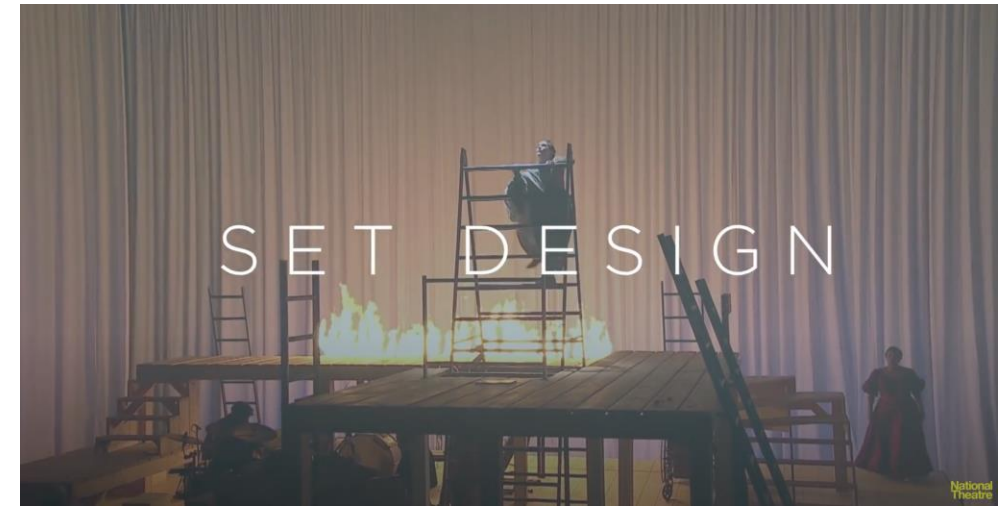
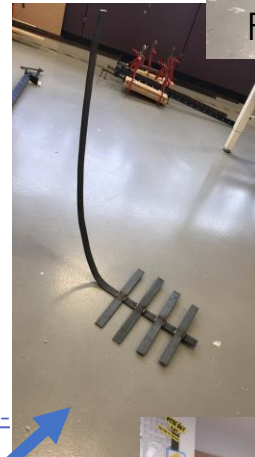
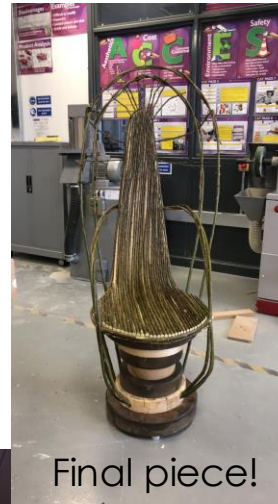
Steel has a unique combination of properties that make it an ideal construction material.

Steel offers a number of significant advantages relative to other building materials, including:

- speed of construction
- safety
- value for money
- robustness and ductility
- prefabrication
- reduced weight
- architectural expression
- configuration adaptability
- Sustainability

Reference: Australian Steel Institute, Advantages of Steel Construction <https://www.steel.org.au/focus-areas/steel-in-architecture/advantages-of-steel-construction/>

What I have learnt over the years about metal is that it is malleable and durable and that's why it can be a very convenient option. I once designed a chair that I wanted to make entirely out of wood, however, I ended up creating a metal skeleton structure within it. I made a steel skeleton to sit within the structure matching the ergonomics of my chair design. Without the skeleton it would not have been suitable to sit on.



This particular production of Jane Eyre, discussed by the National Theatre has a very powerful atmosphere despite the simple structure and material use. In this set design they have used mostly metal, although the main structure has been clad with wood to maintain the visuals they wanted. They used metal due to their additional use of fire in the play. Naturally, the wood would be at risk of breaking and collapsing if burnt, using metal throughout reduces that risk. Although it is still possible that the surface wood could burn the metal within it ensures that the damage would not become hazardous to the actors.

Source: **YouTube Video: Set Design | Jane Eyre | National Theatre at Home (2016) National Theatre** https://www.youtube.com/watch?v=UVTRWx8_CKA

1st Angle and 3rd Angle Orthographic Drawings:

"There are two ways of drawing in orthographic - *First Angle* and *Third Angle*. They differ only in the position of the plan, front and side views."

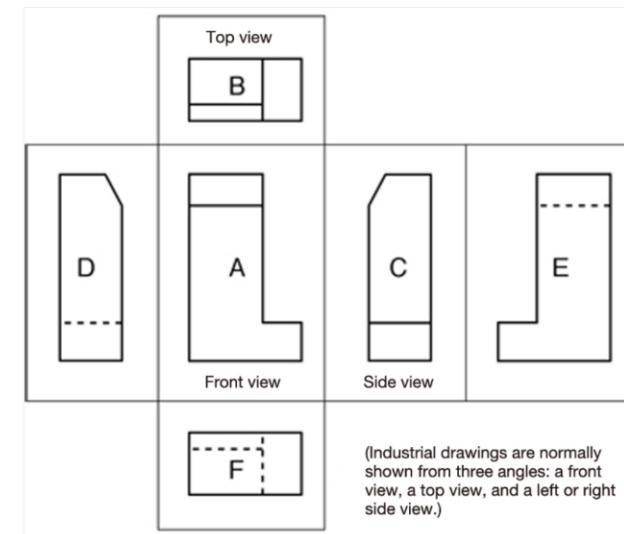
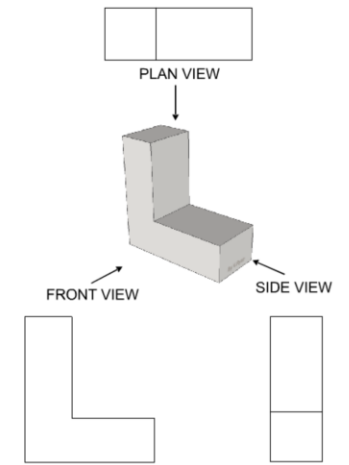
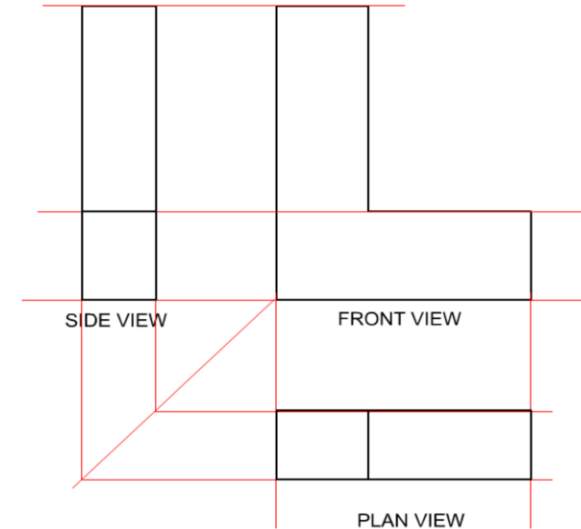
Here is an example of a first angle orthographic, I got the image from the same site.

- V. Ryan (2010) First Angle – Orthographic Projection, Technology Student <https://technologystudent.com/designpro/ortho1.htm>

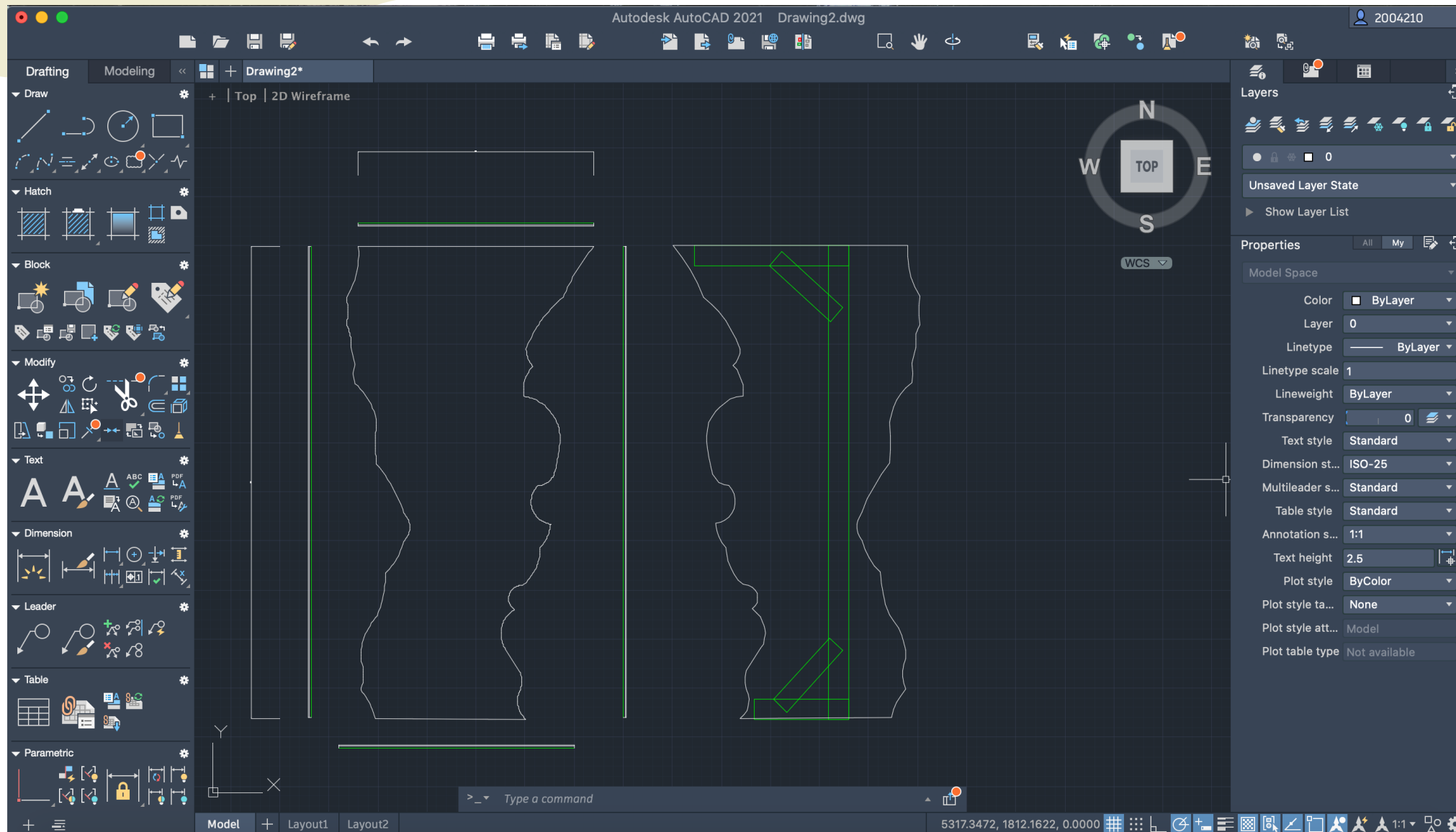
"It is particularly important to note that the top view is to be placed above the front view. If the views are wrongly placed, it could be mistaken for a first angle projection or not provide accurate information. (In a first angle projection, the top is placed below the front and the right-side view is placed on the left.)"

This site states how the two can be mistaken easily and how they are very similar, but the layout of the different views is different.

- MAU Art and Design Glossary <https://art-design-glossary.musabi.ac.jp/third-angle-projection/>



Cave Flat: 3rd Angle Orthographic (AutoCAD Practice)



This was a good opportunity to practice using AutoCAD. Its very simple and there are ways it can be improved but this has proven that I am able to make a very basic orthographic.

A Revolve:

Revolve as stated in the dictionary:

"to move in a circular or curving course or orbit: *The earth revolves around the sun.*

to turn around or rotate, as on an axis: *The wheel revolves slowly.*

to proceed or occur in a round or cycle; come around again in the process of time; recur."

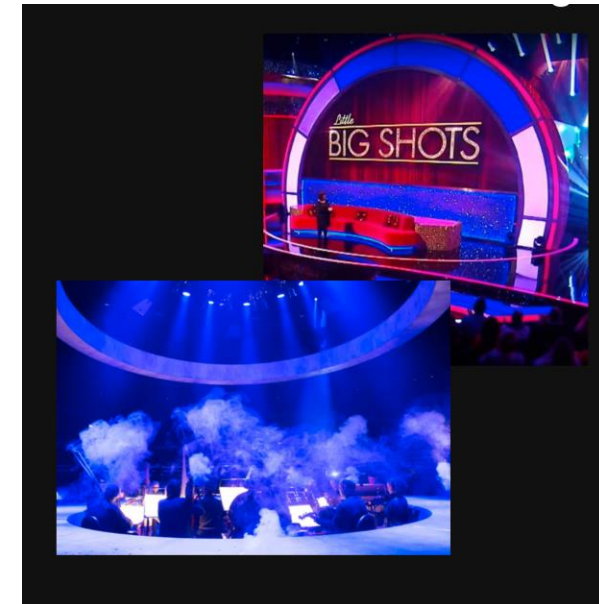
- Dictionary.com, revolve <https://www.dictionary.com/browse/revolve>

A revolve in construction is a structure that allows an element to turn in its place or revolve.

An interesting example of a revolve used is in the production of Hamilton, on Disney+, I was able to watch the scene and how it is used in the production. I found it effective in helping to direct the focus on the central character at the time. Those around her create a suitable formation to fit the revolve allowing the choreography to blend with the space.

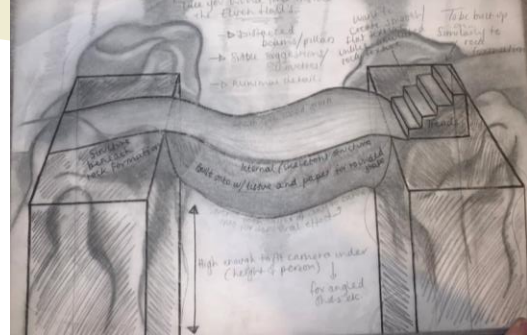
There is a site called The Revolving Stage Company where they "provide a huge range of electronically controlled revolving stages and podiums, as well as display plinths, revolving advertising and information columns, ring revolves and revolve surround staging, all designed to make an impact." Therefore, it is possible to use revolves in a production with the easier option of hiring one instead of having to make one yourself.

The Revolving Stage Company - <https://www.therevolvingstagecompany.co.uk>



I have previously looked at this set when designing my own model for a "Missing Scene" project. I was set the task of creating a small section of my own that would fit into the space that I chose being The Elven King's Halls from the second Hobbit film. I chose this set idea because I am fascinated by organic design, and it is the area that I enjoy working in the most.

With the increased experience and knowledge gained from this module I can start to see how this particular model might be constructed for a production.



- Similarly, to how I've constructed the model, a simple skeleton structure would be suitable to build on to
- Unlike my plans for the model, I would add more wooden box structures within the stone features, these would fill the majority of the central space for me to then layer on polystyrene (like we've been doing for the sandstone cave) ready to be carved away to create an organic stone like surface
- This technique could also be used to create the surface for the vine/tree bark like texture of the bridge
- For the background I considered using green screen/CGI to create a sense of a vast, cave like space, I have displayed these ideas using photoshop

Peter Gynt: National Theatre

I found it very impressive and interesting how they used the space for this production. Having a permanent set up throughout the whole performance that displays half a grassy hill and half a simple suggestion of a dark, wooded space. There were also additional elements that came into view as the story progressed, used in such a way that these elements alone brought into the space already in place was enough. This one set was designed to produce 27 scenes.

I not only like the efficient simplicity, but I like the stylistic and naturalistic approach. I can imagine the construction was fairly simple also. I would say the grassy hill could be put together as a simple wooden platform with the subtle rise as it goes further back. This would require a number of support pieces underneath and possibly some soundproofing to reduce the noise when in use. However, I can imagine the layer of what I can assume is fake grass on top would help soften it as well as providing the accurate surface material for the aesthetic.

The background features could be a large painted forest backdrop with a stylistic approach and then the rest could be made using large white flats with some additional details and dimensions.



Source: Peter Gynt | Designing Theatre (2019) YouTube: National Theatre <https://www.youtube.com/watch?v=K1eFxlCWRI8>

The Grand Budapest Hotel:

The art department of The Grand Budapest Hotel "utilized the abandoned structure of an old department store" in Gorlitz, Germany. I can see that this set was in fact an entire redesign and refurbishment of an abandoned building, where the filming took place throughout. My favourite thing about this set idea is that they took something that already existed and transformed it, bringing it back alive to create a very real place for the production. The majority of which appearing to be fixing up, painting, reflooring etc.

Strictly speaking they took something old and abandoned and they gave it a makeover and by doing so they had an entire building accessible for the filming. Another reason the set and overall visuals of the film is so memorable is because of the bright warmth of the colour scheme which is not what you'd initially expect from a story of that time.



Sources:

Rodrigues, S (2020) House Beautiful, These "Grand Budapest Hotel" Filming Locations Make for Great Home Decor Inspo

- <https://www.housebeautiful.com/lifestyle/g32451695/the-grand-budapest-hotel-filming-locations-decor/>

The Making of The Grand Budapest Hotel (2020) YouTube: Josip Dolo

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

Final Personal Evaluation:

After doing more in the workshop and having built up my knowledge and experience from research tasks and construction projects, I feel I still have plenty of room for improvement but am already seeing gradual improvement.

Something I struggle with the most is managing mistakes and setbacks. It is a big part of the process and although I am already beginning to understand how common it is I know that I can still work on improving how efficiently I work towards fixing the mistakes to ensure I achieve maximum quality, and with minimum frustration.

Also, after working with several different people, I am starting to see that I can manage well in a team but find it easier to work more efficiently with some more than others which was as expected.

Overall, I am eager to learn more and increase my skillset with projects to come.

