The Alley
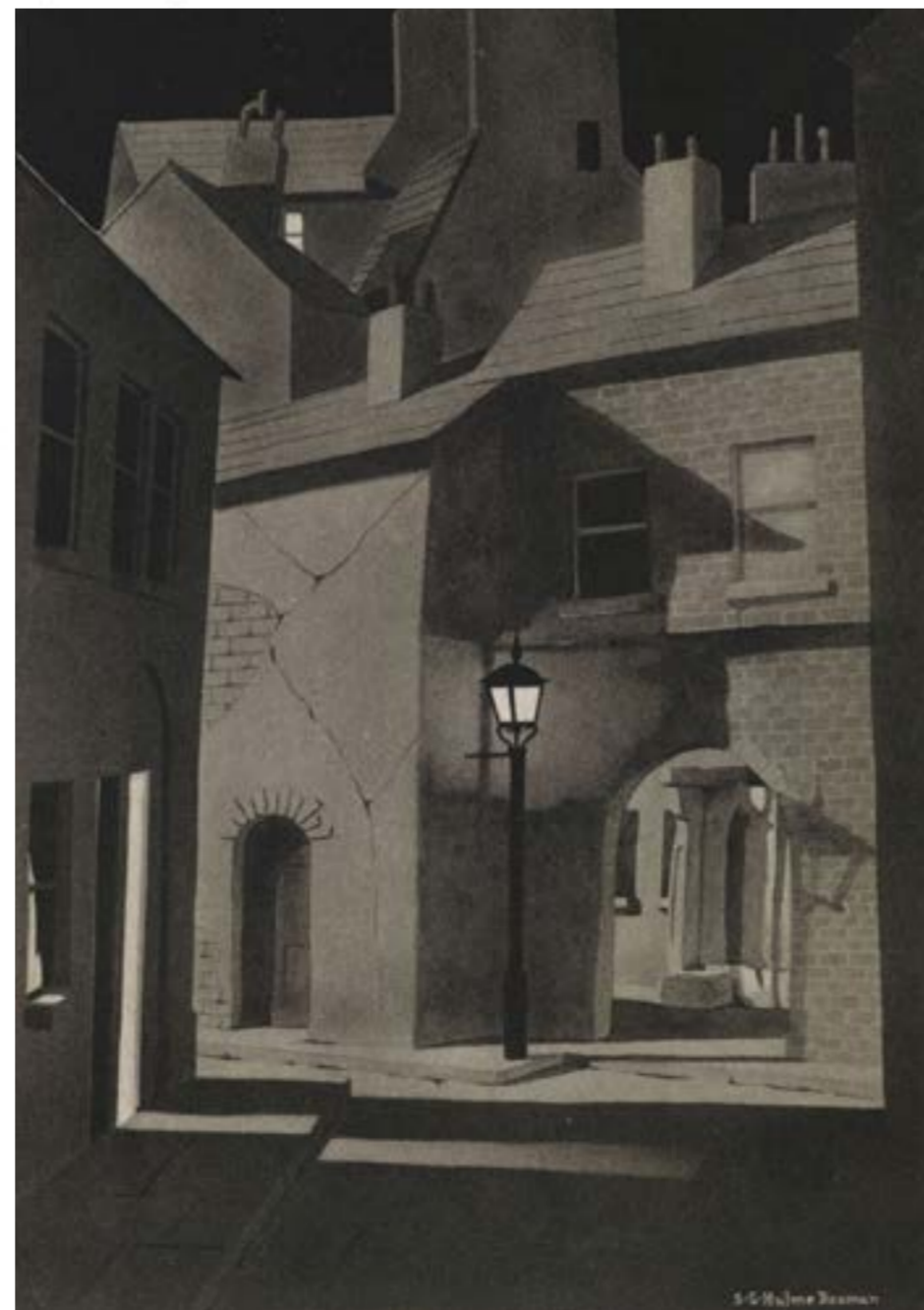
A life size immersive installation using light, texture and sound inspired by passages and alleys in Dundee.

The rough themes were secrecy, fun, spooks, an unearthly reality and playing on fears of people hiding in alleys.

The initial concept film drew inspiration from themes of uncertainty and ambiguity explored in gothic literature such as this illustration from *Jekyll and Hyde* (left) that contributes to the mysticism of alleys being a place for criminals, illicit dealings and predatory spirits.

The *Making Room* project by the artist/ architect group *Assemble* was very influential to this installation. I was part of a volunteer group who were taught to scan textures from buildings with photogrammetry to be cast in plaster at an installation in the V&A Dundee (right).

Research

Shortcuts through narrow streets, lanes and vennels in Dundee were documented using a wide range of resources available from the university.

This included recording film, feelings, photos, drawings and high quality audio from around 8 different locations to use as material for the installation.
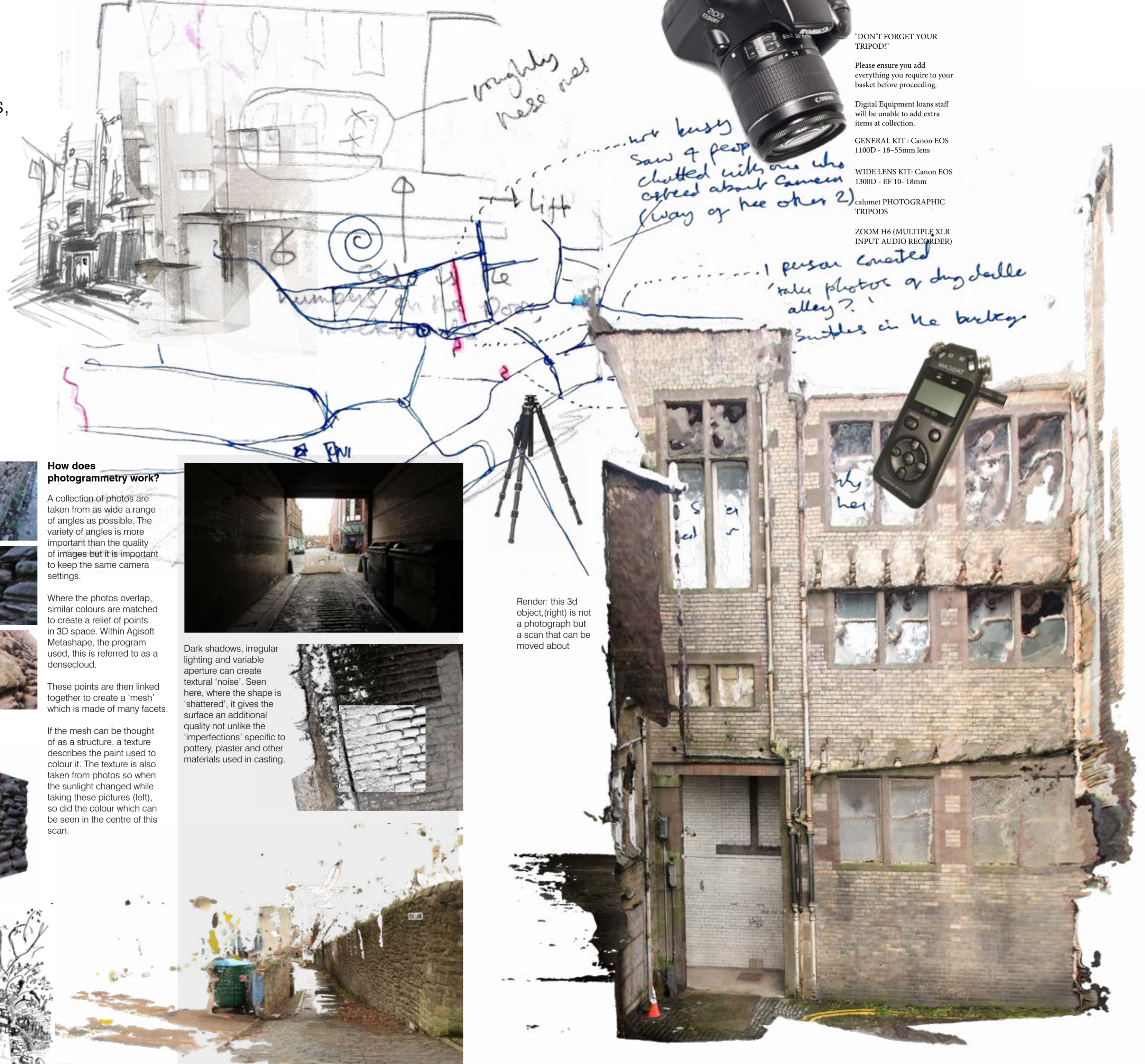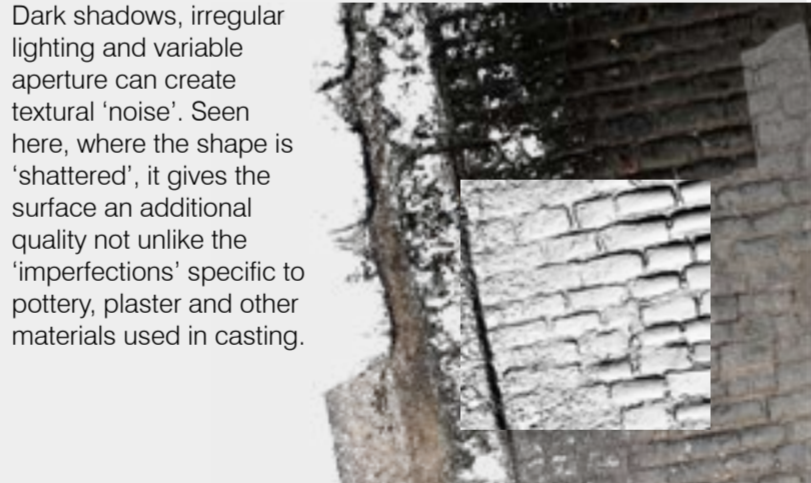
How does photogrammetry work?

A collection of photos are taken from as wide a range of angles as possible. The variety of angles is more important than the quality of images but it is important to keep the same camera settings.

Where the photos overlap, similar colours are matched to create a relief of points in 3D space. Within Agisoft Metashape, the program used, this is referred to as a densecloud.

These points are then linked together to create a 'mesh' which is made of many facets.

If the mesh can be thought of as a structure, a texture describes the paint used to colour it. The texture is also taken from photos so when the sunlight changed while taking these pictures (left), so did the colour which can be seen in the centre of this scan.

Dark shadows, irregular lighting and variable aperture can create textural 'noise'. Seen here, where the shape is 'shattered', it gives the surface an additional quality not unlike the 'imperfections' specific to pottery, plaster and other materials used in casting.

Render: this 3d object, (right) is not a photograph but a scan that can be moved about

Densecloud   Mesh   Solid   Texture

Experimentation

Combining digital and physical making was a way into becoming familiar with different facilities at university.

The Digital Proscess

Around 40 cross-sections at regular intervals were taken from the chosen textures, turning the 3D object into 2D planes that were laser cut.

Rose Lane

Seagate cobbles

1. Take photos of 'Alley'

2. Import to Agisoft Metashape

3. Create mesh of rough area 50cm x 50cm

4. Import to 3dsMax & align axis

5. Add a rail to the back of the face (top and bottom)

6. Add around 40 section places through the shape

7. Export the sections as a .dwg file to AutoCAD

8. Use 'PEDIT' to join all the lines

9. Space out lines evenly from top view

10. Open with illustrator (from a side view) & scale to proportional height of the card to be laser cut (in mm).

11. Stretch out the outline using 'transform individually' until aesthetically pleasing

12. Copy the scale joint details to align with the rail outline (in mm) using alt+drag (copy) then cntrl+d (repeat action).

13. Squash the proportional joints + outer line along the X axis with no overlap (considering the strength of the card width)

14. Superimpose the proportional outline of card to be laser cut (in mm) over the pattern (make sure the top and bottom intersect)

15. Copy everything and offset the card outlines (avoiding any intersection with the joint details) then flip horizontally (to offset the bend in the 2 sheets of card being glued together)

16. Scale to a realsize canvas the size of the card being cut, (add an outline of the canvas border) save individually and send to the lasercutter (set the canvass border outline to 'no cut' & use to align with the corner of the cardboard)

(handwritten list:)
1. take photos
2. Import 2 metashape
3. Create mesh
4. export .dwg.
5. open & Scale to Size in 3ds
6. add rail to the back of face
7. add Sections
8. export Sections as .dwg
9. Space Sections out in rhino
10. 'Join' sections in rhino
11. export as illustrator file
12. Fit to Cardboard dimensions
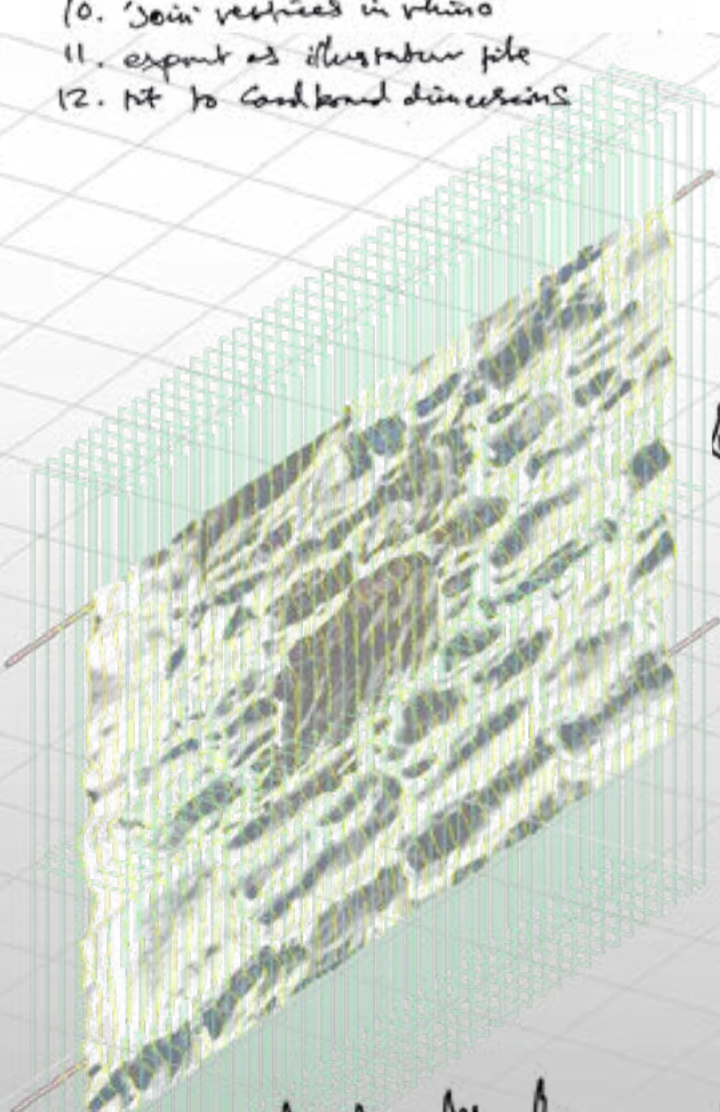
Rose Ln Side Elevation

Interactive Textures

These early prototypes used different types of card to create a variety of textures, imagining different scales in proportion to the human body.

How does it feel to walk through? People were asked to describe how much space they needed. The scale of the alley needed to be immersive; these panels have a variety of spacings and thicknesses that you can only see from certain angles.
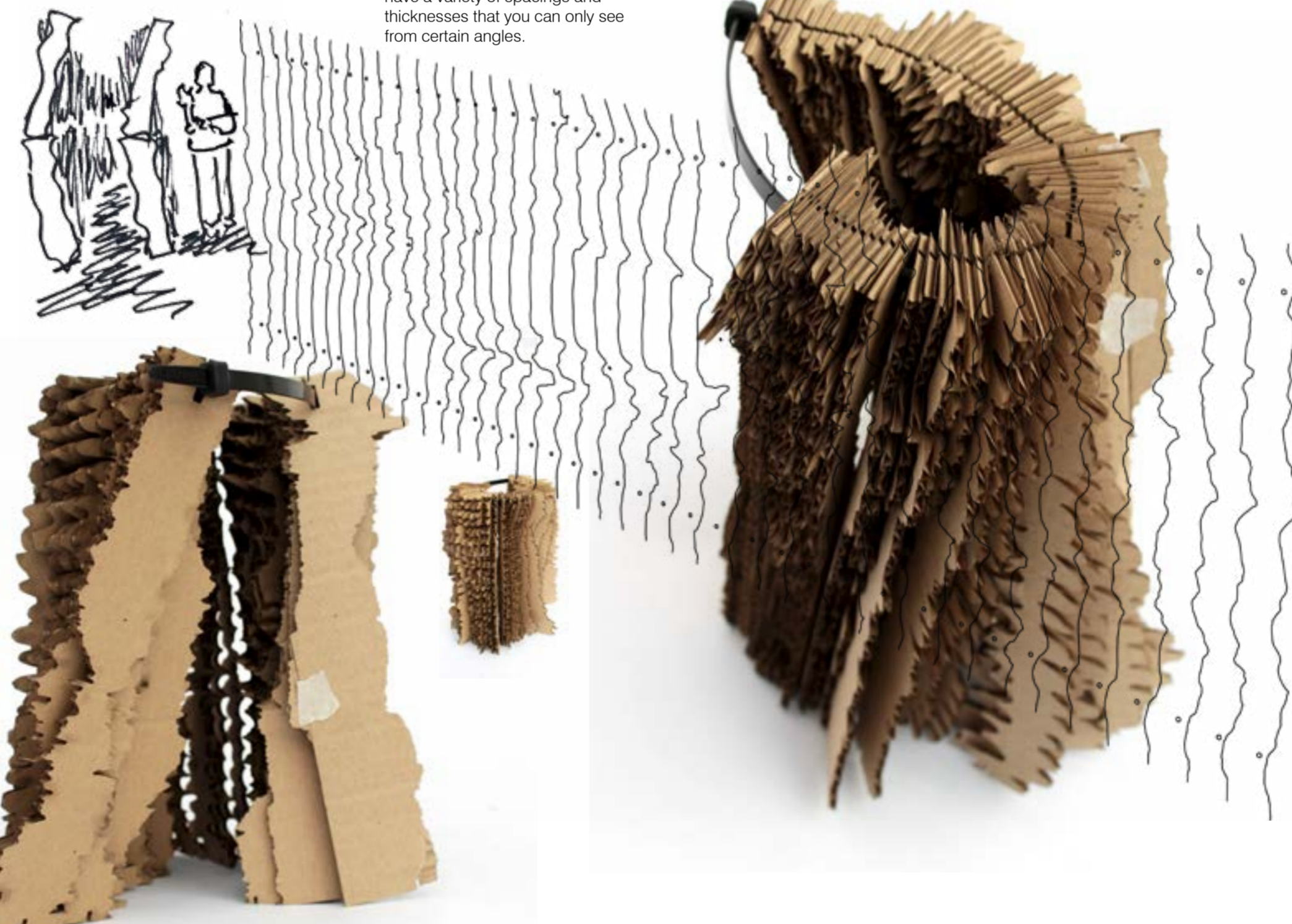
Light Models

Intense dusk colours during the winter months influenced the long shadows and colours used in the projections.

Light experiments with a small model showed that shadows fill out the body of the model, creating harsh contrast.

Adding an audio reactive element to the project was supposed to make the transition into the space more engaging by giving visual feedback.

The further someone walks into the installation, the louder and brighter the projections play, making the experience more intense inside the alley than from a distance.

An ultrasonic sensor attached to a small circuit board called an Arduino is used to gauge how far into the interactive someone has walked.

This value is then used to change the opacity and volume of film playing through a program called Processing.

The display of the laptop is then projected onto the textured panels, creating dramatic shadows and colour.
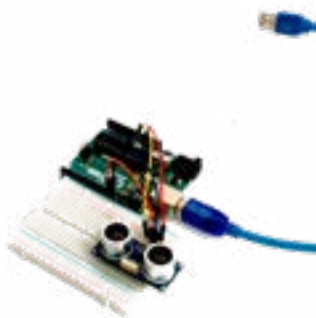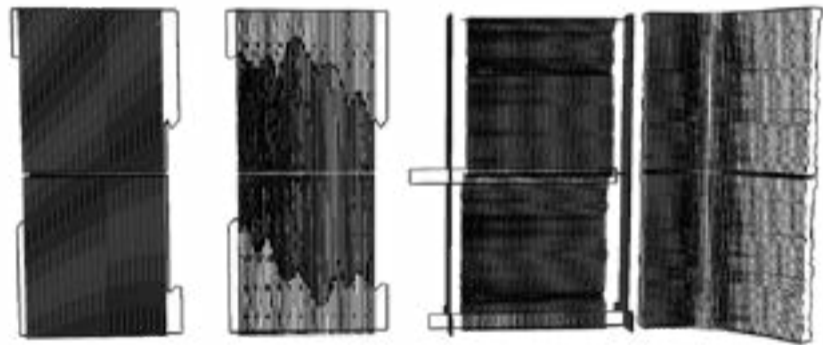
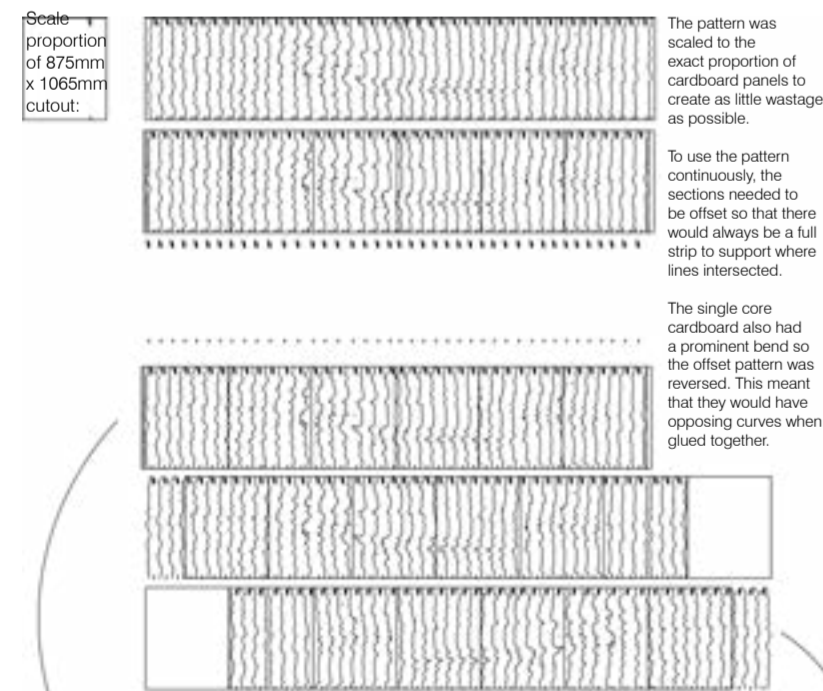**Seagate perspective from above**

Building

Watch the whole process by clicking here!

Much of the final design was influenced by the material used.

Tension in the card and wood laminate, which were used for their strength and weight, formed the shape by thinking through making.

Scale proportion of 875mm x 1065mm cutout:

The pattern was scaled to the exact proportion of cardboard panels to create as little wastage as possible.

To use the pattern continuously, the sections needed to be offset so that there would always be a full strip to support where lines intersected.

The single core cardboard also had a prominent bend so the offset pattern was reversed. This meant that they would have opposing curves when glued together.

Texture

Gluing the laser cut strips was a two-step process: one person glued while the other compressed and organised the sections.

In the heat of the studio, the card dried very quickly causing it to bend.

The strips had to be laid out on the floor as quickly as possible and then flattened with board and heavy weights.

It took around a day and a half for the card to be fully dry, during this time it was very susceptible to changes in temperature.

Hooks allowed for the strips to be hung on the rail individually unlike earlier models which were stacked with a through hole.

Rail

The rail largely dictated the final shape of the installation.

Instead of two separate walls, a continuous shape makes the structure more three-dimensional, which gives it more strength.

The curved shape is designed to face the interlocking legs perpendicular to each other to prevent them all leaning in one direction.

Three 2mm slices of beech make up the rail, which is an inch wide and around 6mm thick.

The plank that the strips are cut from were only 2500mm long, so a repeat pattern was needed so create a symmetrical shape.

To create the curve of each section, a jig was made to the same proportions that a single strip formed when taped into a circle and pinched together to form the peanut outline.
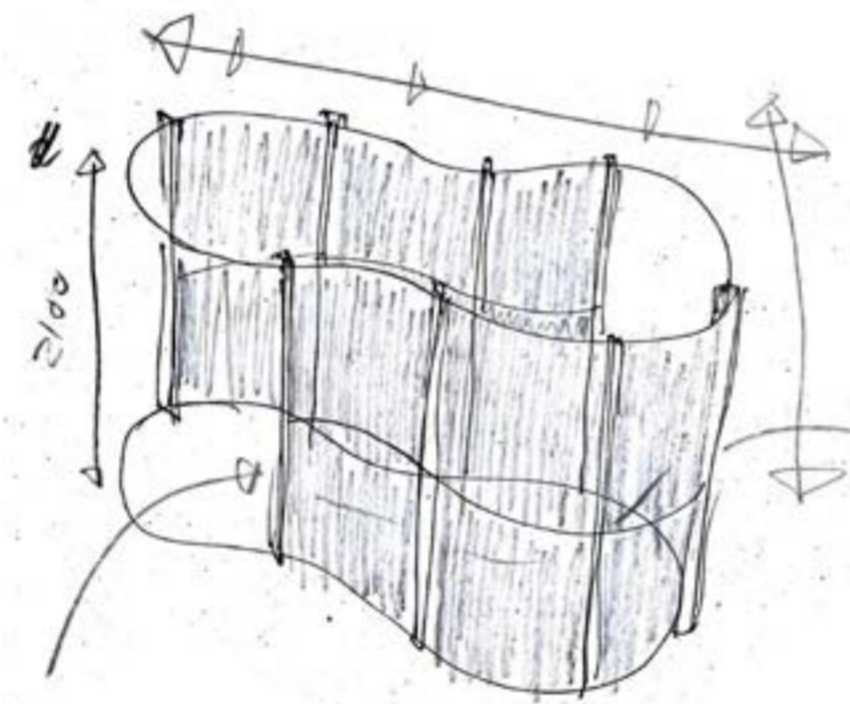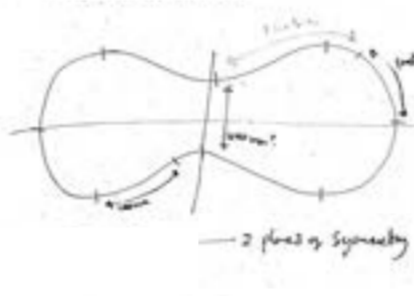
The ends were then drilled and cut to size, which was 2 meters long with a 70mm overlap either side for the fastenings, marked with a template.

The edge was then sanded to make it easier to slot the card onto.
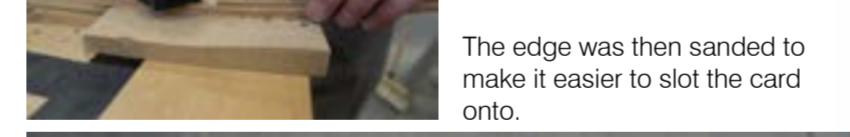

Legs

Sections of card were cut to make strips 240mm wide, they had to be cut different lengths and overlap because there was none available that was this thick and also 2100mm tall.

Different thicknesses of card are glued together to create a total width of 38mm.

The cardboard was very volatile when drying and bending seemed unavoidable so mdf bases were cut to slot into the legs for additional stability.
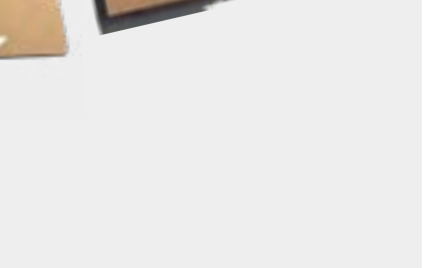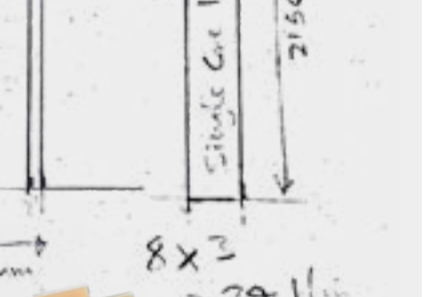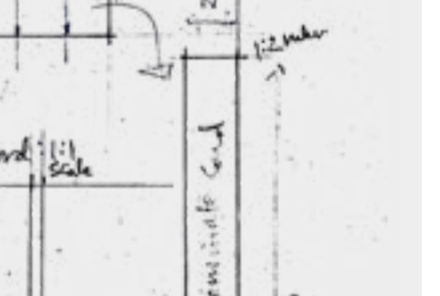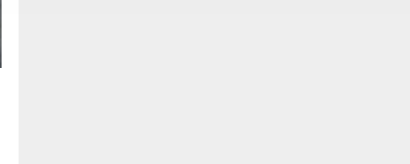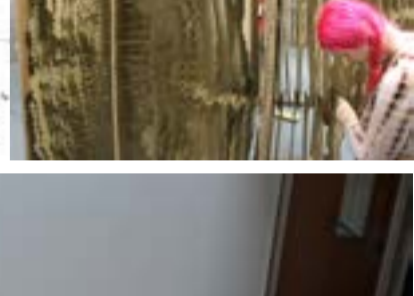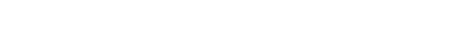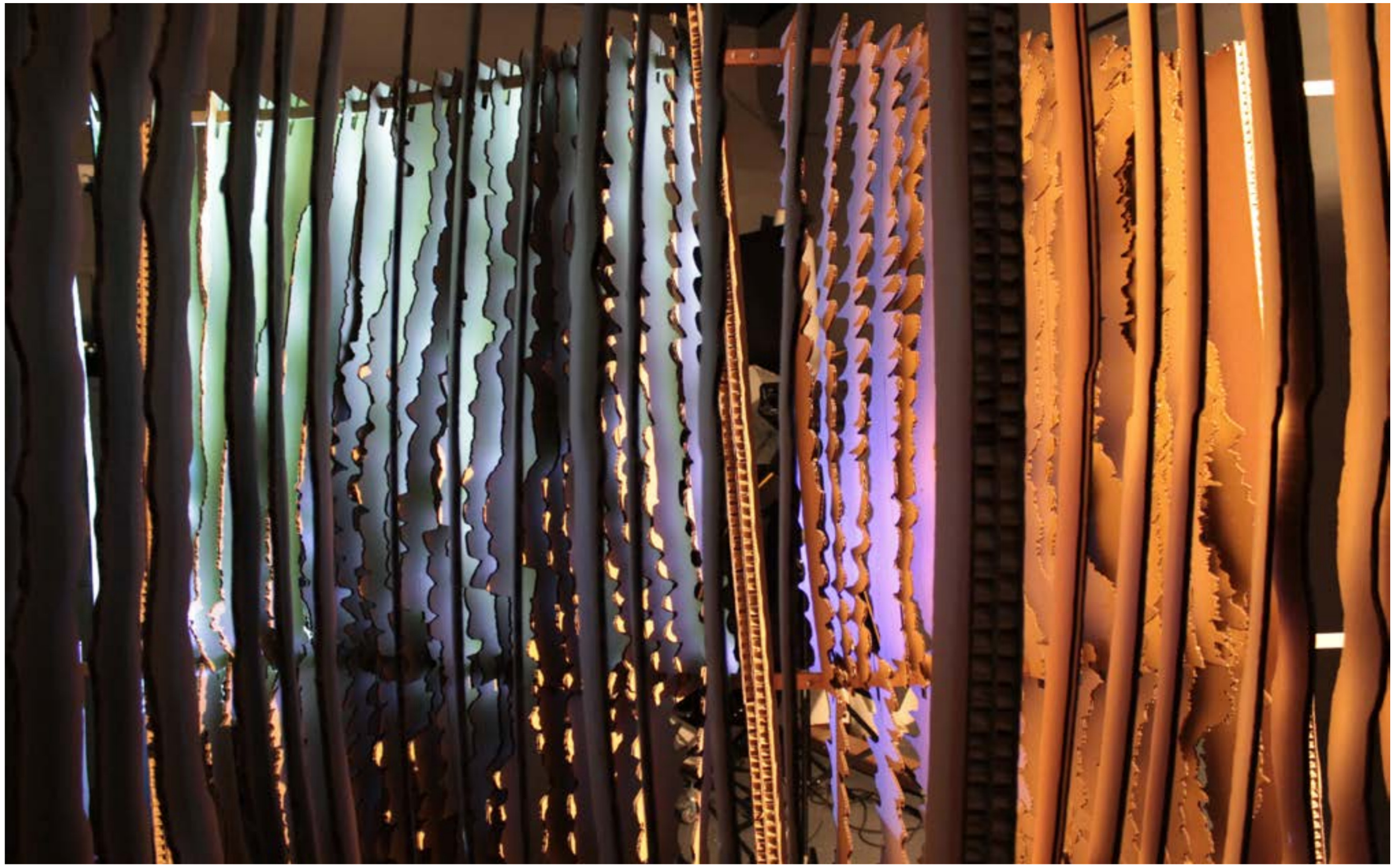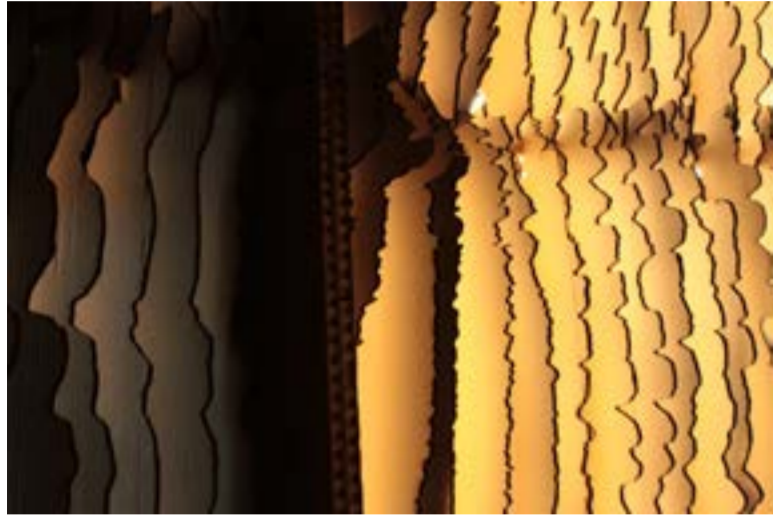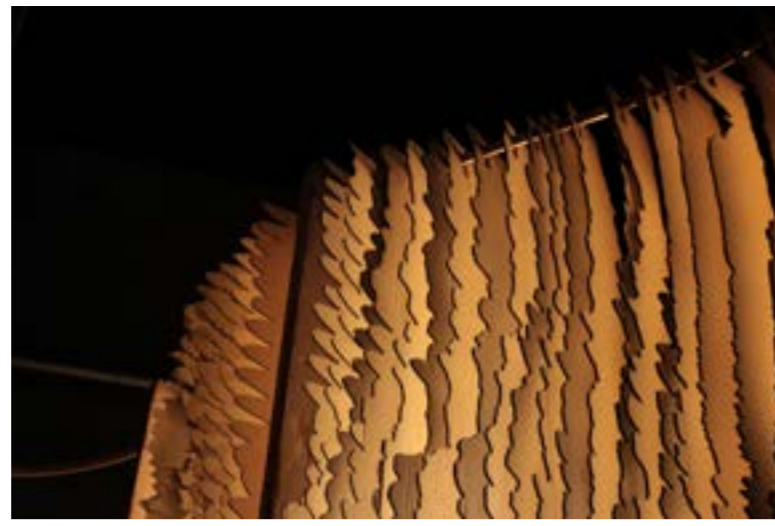

Assembly

The final installation is assembled from around 100 components.

With two people who know how to fit the joints together it took and hour and a halt to put up and 45 minutes take down.

This was done four times in the photography studio (pictured below) and for the Degree Show.

Outcome

Late night sounds from alleys across Dundee are heard in darkness. Visitors move through this corridor and their silhouette walks across textured outlines highlighted by footage projected across the room.   ...Click here to view.