

UOB. 3D D&C. L6. RESEARCH PLANNER

Name: Alex Key

Tutors: Jem & Patrick

Version: 7



Intro

Introduce the outline topic, nature and basis of your research project(s) and / or the context or problem? Can you give it a title?

1. Introduction

I started this project with the intention of exploring tension, torsion and compression in relation to how they could be utilised in furniture design. This would be explored through researching specific processes such as steam bending and glue laminating, as well as conducting primary architectural research in London. My initial thoughts for the outcome of this project was to create a series of furniture pieces which displayed these forces, through the making or visually in the outcome. The initial intended final objects of this project were, a table, chair and a cabinet, however as progressed I found myself wanting to push myself creatively further.

After Christmas, I refined the project and shifted focus towards more process experimentation with a specific material, Ash, to push it to its limits by using both digital and hand making processes. This was with the intention of further developing my skills in the digital space to bridge the gap between the handcrafted and the machine. The outcomes of this project also changed at this time, becoming two chairs and a bench instead of a variety of furniture. This change was because I felt that a chair would be a better display of my design, making and digital skills. However, this new direction didn't mean I had to start from scratch, instead I developed upon my initial process research into using steam bending as well as glue laminating to explore tension, torsion and compression which I then applied to my chair designs.

To conclude this project is now about '**Exploring hand and digital skills to push Ash to its limits within furniture design**'. The intended outcome is two chairs and a bench, this is because they will showcase how I can use my digital skills in the making and designing process, as well as combining it with my handcrafting skills such as steam bending and glue laminating. However, this change in the project is not ditching the original line of investigation which was into the forces of tension, torsion and compression, but rather using it as a jumping off point for this new direction of enquiry for this project



What?

What are you trying to find out and learn through the research ?
What are the **research questions** you are asking? What new insights or understandings are you seeking?

2. What?

The initial research statement for this project was **'To explore tension, torsion and compression in how they can be implemented into furniture'**. However, as I progressed through this project it changed to **'Exploring hand and digital skills to push Ash to its limits within furniture design'**. Tension, torsion and compression were still present in this project, but were more of the catalyst for the initial stages rather than the outcome.

Through this project I was researching two main hand-crafted processes, glue laminating and steam bending. I started researching steam bending because it was the best way to explore tension, torsion and compression, by bending, twisting as well as using compression JIGs to manipulate the wood. Exploring all these aspects not only gave me an understanding of the process but also how far I could push and manipulate the wood. This insight into steam bending was beneficial as it allowed me to experiment and develop ideas quickly. Alongside this I was also researching glue laminating, this was to gain knowledge on how to give rigidity and strength to my tests which I could then later apply to my final designs. The result of this research lead to me combining the two process, which allowed me to achieve manipulating wood further but still keeping it structurally strong for furniture design.

During this project I also researched the digital side of making, through processes such as Rhino modelling as well as CNC milling production. Exploring this side of my design process helped me understand how I can implement digital aspects into my work without compromising the hand-skills element. This was through conducting initial experimentation in Rhino as well as aiding in the later visualisation and production of my final designs. Overall exploring this side of design helped me gain knowledge and a better understanding about how it can be used within the world of wood working as well as my own projects.



Why?

What are the aims and objectives of the research?
What are you hoping it will achieve? Why is it relevant and worth finding out and who (if anyone) might benefit or what might change as a result?

3. Why?

The original aim of this project was to explore tension, torsion and compression, however as it evolved it became more about pushing Ash to its limits by using digital and hand-crafted methods of making. The methods that I explored in this project were steam bending, glue laminating, 3-axis milling as well as digital modelling. The reason why I decided to explore these processes was because I was interested in how I could use them to push Ash as a material.

This research will also benefit me as a designer as it will allow me to explore new territories and ideas while still in a fully equipped workshop. This will intern inform my making and help develop my skills allowing me to display my unique selling point as a designer/maker, which is **'Pushing materials to their limits using both digital and traditional methods to create unique pieces of furniture'**

One of the aims of this project is also to expand my timber knowledge, this will be conducted by visits to timber yards as well as process experimentation in the workshop. This knowledge will result in me being better designer and making more informed decisions about what is possible in a specific design as well as what is not, which are valuable skills for designing furniture for a client or company.



How?

What methods will you use to help answer your research questions?
How are you approaching undertaking the research? What tools and / or equipment will you need?

4. How?

I am using various research methods to help me explore my research question, such as site visits, photography, processes experimentation, online research, drawing and digital model making.

The site visits I will conduct throughout this project will be to London and English Woodlands Timber outside Chichester. This will be to gain inspiration and knowledge for the project which will help me make and design a better outcome. These trips will be documented primarily using photography but also for the second trip discussions with timber specialists.

The predominant method of research I will be doing for this project will be practical. This will be done by physically bending and reducing the thickness of the Ash, this is the way that I prefer to engage with the project and material. This interaction will result in a series of process and material tests which will aid in me gaining valuable knowledge, such as finish and technique, which I can apply to my final designs.

I will also be conducting secondary research which will be looking at other makers in the same area as me, furniture design. This will not only give me an idea of where I will be able to place myself with in the furniture design market/world in terms of quality but also financially and visually. I see other designers and makers as a source of process and visual inspiration, aiding me at the end of this project as well as beyond.

Throughout this project I will be utilising a variety of tools, such as the steamer for steam bending, JIGs and clamps for glue laminating, computer for digital modelling, as well as the CNC 3-axis mill for milling and a lathe. All these tools will be present throughout the project from initial experimentation all the way through to final outcome. Knowing what processes, I will be using early on gives me time to develop my skills as well as gain experience on these machines, to produce a chair of high quality.



Who?

What references relate to your subject / topic, who else is working in this area what is the precedent of work in the field? (State of the Art)

5. Who?

There are a lot of designers and makers in the industry of furniture design, some of my main influences being, Hans Wegner, Tom Raffield and Charles & Ray Eames. The latter two having experimented with steam bending and glue laminating within furniture design.

I started by looking at Tom Raffield to learn about steam bending and how it can be used in furniture design, this was through reading his online articles on his website as well as watching videos detailing his process. I learnt valuable aspects about the steam bending process such as creating a metal framework to bend around as well as the importance of an accurate JIG.

Charles and Ray Eames are also a big influence on this project as they, explore glue laminating in their furniture. This is a skill and technique I am experimenting with throughout this project, to structurally strengthen and push Ash further.

Hans Wegner, a prominent figure in the Danish and Scandinavian furniture design movement, is a big visual influence on this project as he combines both elegance and natural beauty of wood in his designs. A prime example of this is the Wishbone chair which has been a big influence on me throughout my time at university as it combines minimalism aesthetically and functionally.

These are some of my key influences for this project, however there is a specific aspect that I would like to improve upon from all these designers/makers. This is pushing the limits of wood, specifically Ash, further resulting in a more impactful and challenging piece. Using this design research in conjunction with my own process experimentation as a foundation, I will develop my own style and approach to design which will help me with refining my own identity as well as unique selling point within the design industry.



When?

When will you do the work, what are the planned stages and milestones?

6. When?

For me this project can be broken down into three stages, research, design development and making. The first will take place before Christmas and the latter two will take place after.

The first stage research will consist of primary and secondary visual research as well as technical. The first piece of primary research will be photographing architectural landmarks in London which will make up the initial inspiration for this piece. I will be specifically looking at pieces of architecture which have flowing curves and dynamic shapes, these will start as the initial inspiration for this project.

I will then progress onto exploring other designers who are within the furniture design industry. This will help me to refine my ideas as well as gain valuable information about the processes which I will be exploring throughout this project. I will be looking at specific designers such as, Hans Wegner, Thomas Raffield as well as Marc Fish to name a few.

Along side this I will be exploring the process of steam bending and glue laminating within the workshop. This will be to gain knowledge about the processes as well as how I utilise use them to push Ash further. This was where I initially started to incorporate tension, torsion and compression, visually as well as in the making. However, as my project progressed, I expanded the research outline.

To conclude the research chapter of my project I will be conducting one list primary research trip, this will be to a timber yard. This is with the intention of gaining knowledge about timber and the industry as well as networking. This research will also give me some valuable substance to the materials I am using for this project such as

knowledge about sustainability as well as carbon footprint of my materials and processes.

The previous steps would have all been executed throughout the first term back at University. After Christmas I will then be turning my attention to refining my ideas as well as exploring how I can apply what I have learnt to chair design. This is a crucial stage in the project as it will decide the direction I continue to explore.

In this chapter of the project, I will be exploring how I can apply what I have learnt to chair design. I will start by experimenting with how I can apply glue laminating and steam bending to the making of my chair through creating a rough model as well as some initial drawings and rough CAD.

This will then lead onto some refinement of my design through utilising the CNC 3-axis mill for the seats, as well as developing some JIGs which will allow me to make accurate sized and dimensioned test pieces. This in conjunction with drawings and some digital model making in Rhino will allow me to sculpt the models into a series of final proposed digital designs.

Once I have finished finalising my design it will be the end of January, which will then see me constructing the final pieces. This will be utilising both technical drawings and a parts lists, which will help me with the construction of the piece keeping it structured, efficient as well as accurate with the right measurements. I would like the construction stage of this project to take up until Easter so then afterwards all I would have to do is sand down and apply finishes, although I do have back up plans for if this is not possible.



If?

If you undertake this research what are the ethical implications - are you studying or involving people in your research?

7. If?

N/A



Risk?

What are the health and safety risks and considerations related to your work and how will you mitigate against them?

8. Risk? (Examples)

The only potential risks I could see my work having is through interaction. For a chair it has to withstand some one's weight when they sit on it as well as when they lean back. This will mean the legs and the seat will have to be structurally strong to hold someone's weight potentially for a long amount of time. This will require some research and testing once I have got full-size pieces, as it is hard to tell with a small-scale model and a Rhino version. This is an aspect I will have to be careful with, as I want to delicately balance the idea of pushing Ash to its limit but also make a functional object.

The only other risk I can think of is to me in the making, this could be via airborne dusts from wood or glues but also usual risks with machines in the workshop. However, I will take suitable action to keep myself protected by wearing steel toe capped boots, dusts mask when suitable as well as gloves when touching anything hot – E.g. the steamer. Although there are obvious risks when practically making a piece myself, I will follow all safety guidelines which the University has outlined.

Dissertation title/topic:

Is the Solidwool chair a sustainable innovation in furniture design? – An analysis of the Hembury chair and the Solidwool company.

Describing and evaluating the Solidwool company and the Hembury chair; the idea behind it, history and life cycle evaluation.

This will done by criterium from two theorists, such as Stuart Walker as well as the 'Cradle to Cradle' authors.