ALL THESE HORRIBLE THINGS.

VOL.1

JESSIE HILLS

AGP621 Positioning and Establishing Practice.

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CONTENTS

WHAT DO I WANT TO ACHIEVE?

My aim for this project is to create a design language with a mix of materials which challenges preconceived ideas on materiality and encourages taking any waste material for its sustainable value. I want to stay away from the general waste aesthetic but still clearly show the materials history. Bolstering consumers relationship with materials and Showcasing the materials people generally stay away from. I think variety is very important and every person working towards the same goal will have their own take and that is widening the outreach and perception of the greater issues of our consumer culture. The idea is to shift a perspective by sparking a new social dialogue. Design is such a strong way of doing this because it is visual. You see it and it makes you think for yourself about the bigger issues in a way reading an article or hearing the news might not be able to get through.

My first line of enquiry is researching the historical context of sustainable design, by looking at historical points where socio-political factors influenced design aesthetics, we can learn a lot about why we have these unsustainable practises. I want to design solely using waste materials and be very critical of what I am taking from that material. I want to look at ways of living that are affordable AND sustainable. I.e. using waste. My project is basically about taking connotations that hold back sustainable design and flipping them. Flat-pack, veneered, MDF products make you think of the fly-tipped IKEA furniture you see everywhere, How can these materials and processes be re-imagined? My working title is ‘All these horrible things’.

“Through many small acts, in which design can play a part, we change the world and as we do so we too are changed. Slowly and imperceptibly our world-view is transformed - from one that is increasingly diminishing of human spirit and destructive of the natural environment to one based on values and ideals and belief in the common good; one that is rooted, forthright and hopeful.”

- Stuart Walker

Throwaway Living

DISPOSABLE ITEMS CUT DOWN HOUSEHOLD CHORES

The objects flying through the air in this picture would take 40 hours to clean—except that no housewife need bother. They are all meant to be thrown away after use. Many are new; others, such as paper plates and towels, have been around a long time but are now being made more attractive.

At the bottom of the picture, to the left of a New York City Department of Sanitation trash can, are some throwaway vases and flowers, popcorn that pops in its own pan. Moving clockwise around the photograph come assorted frozen food containers, a checkered paper napkin, a disposable diaper (seriously suggested as one reason for a rise in the U.S. birth rate) and, behind it, a baby's bib. At top are throwaway water wings, foil pans, paper tablecloth, guest towels and a sectional plate. At right is an all-purpose bucket and, scattered throughout the picture, paper cups for beer and highballs. In the basket are throwaway draperies, ash trays, garbage bags, hot pads, mats and a feeding dish for dogs. At the base of the basket are two items for hunters to throw away: disposable goose and duck decoys.

CONTINUED

Fig.3 The Design Museum
Attitude to throw away plastics 1955

IMPLICATIONS

What factors implicate the sustainable Design movement?

Political

Political implications of sustainable design are almost a summary of the intertwined relationship between the social, economic and technological implications. As sustainablity effects everybody, it is inherently a very political topic. Maze argues in ‘Critical perspectives and dialogues about design and sustainablity’ that for large scale reform, changes need to me made on a macro-scale by governments. Legislation to force companies into more sustainable business models will then have a knock on effect to the social perspective and way of living and ultimately have economic advantages. However this is a great undertaking and the relationship between government and industry is delicate and profit seems to be the continued priority. Trading is also an influential factor and much of it is inherently unsustainable. This is very prevalent in the food industry and is laid out well in the Food and Agriculture Organization report on the Impact of food import. I.e. Carbon footprint of shipping as well as preservatives and chemicals. Countries build relationships through trading however and so moving away from high imports of goods and materials has many political impactions which disadvantage to sustainable movement.

Social

WAY OF LIVING

The way of living describes how our everyday routines intertwine with a sustainable lifestyle. This could be in relation to a throw away lifestyle and our relationship with single use plastics, short life span products. This is also strongly linked with Economic implications as Sustainablity is a Class issue. And this is why it ultimately is not a consumer responsibility. As Madge argues in ‘Ecological Design: A New Critic’, We are a profit driven society which is the fundamental conflict with sustainable design.

THE SUSTAINABLITY AESTHETIC

With a materialistic, Capitalist Society, new is always better. We have a high turn over of trends and aesthetics every season which is a huge challenge facing sustainable design where durability is a fore-fronting concept. I.e. Durable design by Don Norman. But with the environmental message catching on, How can this implicate itself?

Brands want to take advantage of this positive swing on manufacture and manipulate consumers with green washed campaigns and false advertisement. Spearing the green message. This also becomes an issue when consumers do not have an understanding of materials. For example Wood is seen as a natural and degradable material and we have seen a rise in waney edge ‘ natural’ look furniture. Cutting down Hardwood Slow grown trees to achieve a ‘natural and sustainable’ look is counter-intuitive.

IMPLICATIONS

Social

GREEN WASHING

Fig.1 H&M Concious Collection

In November 2022 H&M had another Lawsuit filed against them for their Conscious Choice Collection as it is argued to be green washing. The law suit states, ‘misleading, illegally and deceptively seeking to capitalise on consumer ‘green’ trends.’ The ultimate issue with Green Washing is not necessarily that the item is labelled sustainable when it is not but that by misleading consumers, they believe that they and continue to consume fast fashion goods as they are recyclable and in fact encourages consumers to by more clothes and throw them away even sooner as these items lie outside of the issue.

Social

PERCEPTION OF MATERIALS

What gives value to materials? It can be argued that the value of materials is much less about its rarity or function but much more of its desirability and what it symbolises to society. I.e. How we perceive the material to be. In emotionally Durable design by Don Norman, he talks about the value we give materials. This can be through how well they function, the memories we have through them or by what having them says about us. He names these, behavioural, visceral and reflective design. Another way to examine this is to look at precious metals like Gold. Gold symbolises Wealth and Status, though it is not nearly as rare as many other substances. It is how we perceive this material to be as to why it is so desirable. So what does this tell us about Waste resources? The materials we have already thrown away. Immediately it seems that the perception from this would be that it could not be absorbed as something precious but actually with a shift in public perception, towards a sustainable outcome. The idea of reusing waste resources has critical value and would then fit into Normans reflective design category. A sustainable design using waste resources is perceived as beneficial and by having this item, your social standing is elevated to those around you. This is why Norman says taste is not Visceral.

Fig.2 Athens Ancient Greek Gold necklace

IMPLICATIONS

Economic

The Industrial revolution changed the model of everyday life globally. Everything became focused on high turn overs and vast distribution of products. Buying new became cheaper than repair or investment items. This is mainly due to the rise in throw away plastics. The economic implication of this is due to the Capitalist model making it difficult to go back. Refill Stations are a prime example of this. Reducing packaging should make products cheaper. However the business model in the food Industry is to buy bulk, which reduces costs. Now with independent refill stations popping up in an attempt to provide a more sustainable way to distribute foods, they can not obtain and store grains, for example, on the same level as large Supermarkets. Meaning the price must be offset by consumers. Making it more expensive to refill than to by a plastic wrapped bag of rice. For a more Sustainable society, this is not accessible. As Pauline Madge says in 'Ecological Design: A New Critique', Design is committed to providing solutions, therefore to combat climate change, the answer is to produce new things with less carbon emissions. In this, environmentalism can become a marketing opportunity. We see this with Sustainable materials at higher prices. As it costs more to make, is it fair to charge more? But this breads a culture where sustainablity is not accessible to the vast majority of the population.

Technology

Technology is both Sustainable designs best friend and worst enemy. Though Technology is what bought us all the unsustainable things, it equally provides solutions. As we have established, there is no going back. We live in a Capitalist society and we benefit massively from Industry. The main implication of Technology when talking about Sustainable design is the symbiotic relationship with how we use it, in relation to economic, political and social factors. All theses factors boil down to the profit driven system which curbs the uptake of a sustainable system.

Why is this Important?

It is important to recognise these implications to establish the perimeters around my work. As it is important to challenge the mould in order to invoke change, it is equally important to understand and recognise what systems are already in place to work around. I.e. I want my work to challenge how we think of waste. From my research I can implement an understanding of symbolism within materials. This is already in place when we look at precious metals, so how can this established way of appreciation of materials be subverted in order to recognise waste materials?

“Eighty percent of poor households in the US have air conditioning, not because welfare benefits have become more generous (they have not) but because the machines have become so inexpensive.”

-Lee Vinsel

HISTORICAL CONTEXT

Why do we have unsustainable practises and what can we learn from them? Through looking at how design has evolved and the relationship between how it has affected society as well as how society has affected design, I believe we can learn a lot about what principles we need in order to have more sustainable practices.

Fig.20

Thonet No.14 (1854)

First Chair to be mass produced in a flat pack style. Sent to distributors in 8 pieces. This made cafe and leisure culture across Europe accessible to the Working Class for the first time.

First Veneer Splicing apparatus was invented by Henry Faveryear. (1818) Though Veneer Manufactures were not widely accessible until the Mid 20th Century.

Frank Lloyd Wright (1936)

This Office desk was designed and Manufactured Post World War 1. Work Forces had completely changed. Efficiency was prioritised and there was a surge in Open Office Style Spaces with tasks categorised and completed by one team for each task. Work Forces become more streamlined.

Fig.21

Modernist Architecture 1945 to 60s

Post War Architecture was functional and simple. It gave way to high rise living. This time focused on embracing a new look which was practical and Utilitarian in nature. Attitudes to taste and aesthetics changed drastically in this period.

Fig. 22

Though plastics were being invented from mid 19th century, We see a rise in applications of Plastics for commercial use from the mid 20th Century.

20th July 1957

Prime Minister, Harold Macmillan, Says, “Our People have never had it so good”. Economic prosperity returns to Britain Post War.

Fig.23

20th July 1969

One Giant Leap for Mankind.
Advancements in technology pave way for a new design aesthetic. Futuristic design grows after events like man landing on the moon.

Post-modernist Design

Moving on from the functional design most war, We saw a surge of colour, abstract and fun design aesthetics. Society was excited at the prospect of the future.

Arne Jacobsen Egg Chair (1958)

Made with Polyurethane foam, The Egg chair is a prime example of design moving into the Post-modernist Era. It is bold, sleek and designed with leisure in mind.

Fig.24

Universale (1968)
By Kartell

First all plastic, injection moulded chair and one of the first plastic chairs commercially available.

Moving into the 1970s, The economic boom of the 60s wore off. Stagflation hindered Britain as Businesses struggled and Inflation rose to 12.9% in 1974. The expense of the Vietnam war hindered both UK and US manufacturing and there was a sharp increase of unemployment

With the desire for more lingering from the 50s and 60s, Plastics were the perfect material to quench consumers thirst for more. They are cheap and easy to manufacture and light to distribute.

New technologies adapted to make manufacturing faster and cheaper. I.e. Injection moulding, Laminating, CNC milling become the norm for large companies. Quality becomes less and less important.

WHAT DOES THIS MEAN?

Plastics and manufacturing technologies forever changed design aesthetics. First they were new, exciting and limitless but they quickly became a problem. Producers streamlining the manufacturing process gave way to badly made products in the attempt to feed consumers thirst for the new from the post war era. To keep up with profits, marketing schemes led way for a never ending cycle of new trends, impacting consumers rationale for made to last objects. This leads up into the throw away culture we are stuck in. How can products be accessible and long lasting? How can we modify consumers behaviour to create meaningful connections with products?

PATTERN MAKING

Patchwork fashions were adopted into the mainstream in the early 60s, filtering from the hippy aesthetic. But patchwork was first used for its economic advantages of using scrap fabrics. This was championed in the second world war when clothing coupons were in practise. Fashion house designers began to see the aesthetic value of patch-working as a decorative application and there was an emergence of high fashion patch-working. Patch work has a very familial archetype attached to it as the practise is reminiscent of homemade quilted blankets and keepsakes.

(V&A- An Introduction to Quilting and Patch-working)

How does this relate?

This fostering of emotional connection as well as annotations to the political and socio-economic implications of design in society are topics I want to thread through my project and really give space to research, and communicate. Furniture design, like fashion has been shaped through the development of history and I find it interesting to revisit a theme in a new way. I think that the warm toned patchwork suede aesthetic from the 70s, revisited through veneer scraps in a furniture form could tie strongly into what I am trying to communicate. During this time frame, due to the expansion of industry and technology, veneering also first arose, particularly decorative veneers like walnut burr were frequently used. Due to this, aesthetically I can see them matching well. Using warm toned veneers will also be important in communicating the nod to this era. This is also an interesting example of sustainable practises as it shys away form the economic implications surrounding shopping in a more sustainable way.

Fig.25
Suede Afghan Coat

The pattern should have a positive and negative, so that there is less wastage.

Personalisations foster a greater sense of emotional connection between user and object.

The designs should be less complicated, more time put into making the marquetry requires a higher cost price.

FLAT PACK

Gillis Lundgren is accredited for popularising the concept of Flat Pack Furniture in 1956, when he was an early employee at IKEA, a then start up Swedish Furniture Manufacturer. The Emergence of flat pack furniture from the late 50s onward pleased consumers as well as manufactures. Easy to store and quick to manufacture, Companies could create an array of variations and products, ready for consumers to pick from and collect straight away. It was cheep and practical, a great business model which complimented a changing society, Post War we saw a surge of high rise living as well as families moving more around the UK. Hard, solid wood furniture made by carpenters and delivered months later, ready built, did not work well with this new system. We wanted things cheaply, quickly and easily, longevity was less important as society's idealisation of 'the future' was less permanent. As time went on and there was more investment in marketing, flat pack furniture only got better. Better instructions, less assembly cheaper, lighter, quicker. Research projects have been completed on flat pack to stream line the process further. How many pieces should there be? How should pieces be labelled? What is the optimum amount of pieces per meter of product for customer satisfaction? The money in this process meant a lot of investment in it and now the UK spends approximately £24 billion per annum on flat-pack furniture.

WHAT'S THE PROBLEM?

So what's the problem with this? The short natured approach to flat pack furniture means there is a lack in quality. Once assembled, the piece wears quickly, meaning once dissembled, it cant be reassembled multiple times. The cheapness of it also means consumers cant really be bothered with this even if the piece in intact and it ends up in landfill, with consumers ready to repeat the process at their new house. There is no connection to these products, making them very throw-awayable. Making it very environmentally unfriendly.

The Capitalist system benefits from this however and with moving away from investment pieces like pre 1950s, the majority of UK citizens now could not afford bespoke, sustainablity made, quality furniture. Picking up a cheep item to keep until its broken, though ultimately will cost more in the long run, is more feasible for consumers. It is also more compatible with the lifestyle and culture of UK citizens who move on average 8 times in their lifetime, more than doubling from 7 decades ago. That paired with a culture of fast paced trends and consumer culture create an ever ending cycle of the want for new and different styles and interests. I.e. less desire curate furniture in the home to last.

Fig.6

WHAT TO TAKE AWAY?

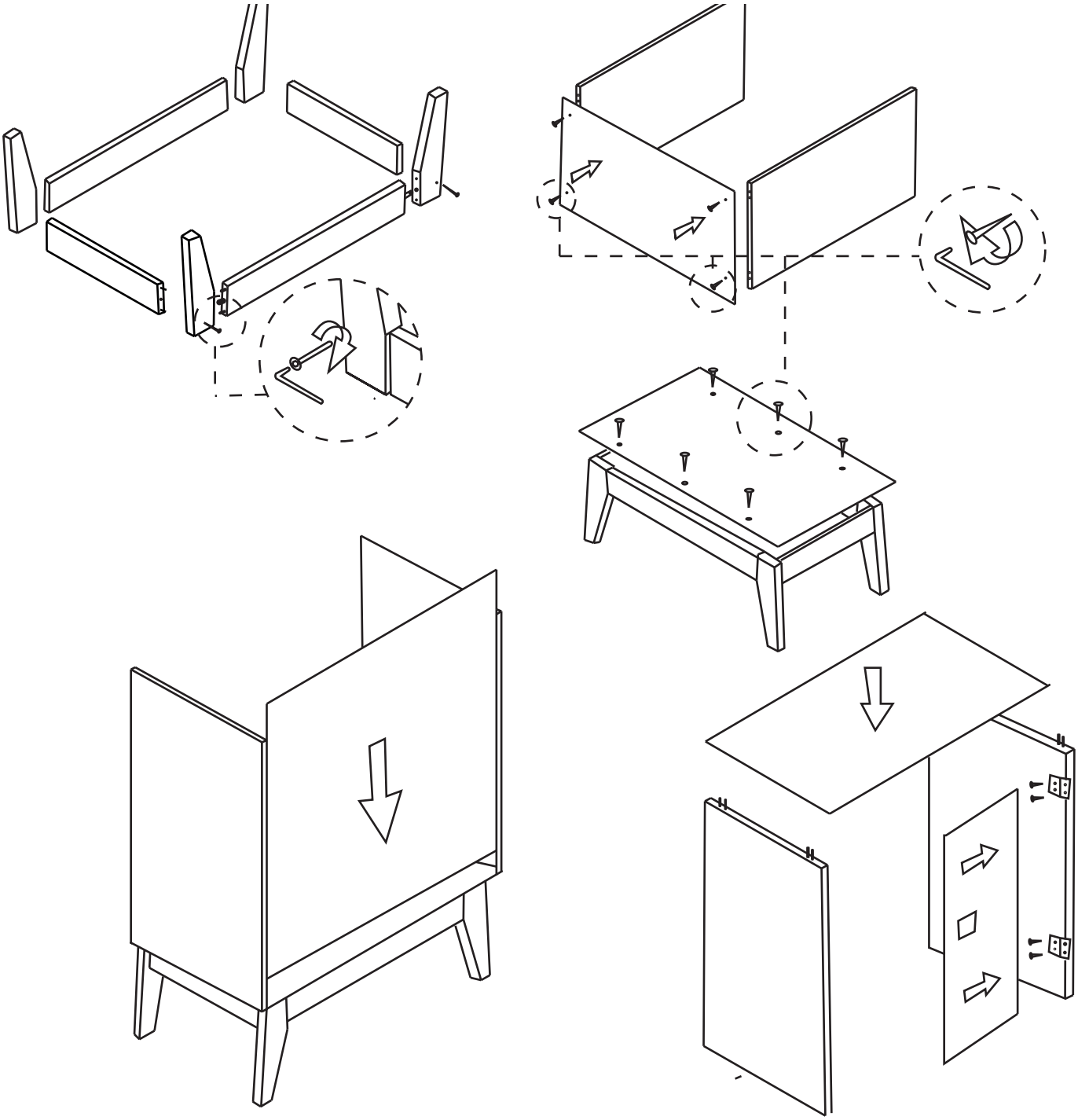
Flat pack is great. It is practice, assessable and we need it. How can we make it more sustainable rather than move away from it? How can we use the waste from this kind of design in a new way? How can we foster more connection with products without spending more money?

INSTRUCTIONS

Fig.7
The Toaster Project
Thomas Thwaites

Do we lack understanding of how products are made and how does this impact our relationship with them?

Thomas Thwaites, The Toaster Project, shows us that through mass production, how things are made have become so complex that it is impossible to replicate and confusing to fix. It is understandable why we have such a throw away culture and I think his project is also applicable to furniture design. At the same time much of our affordable furniture is shipped in flat pack form with instructions. Could this be enhanced in a way to bolster a 'fix it' culture?



Above is an illustrator design of how a cabinet is put together. Could this be subverted into the design to convey a sustainable message?

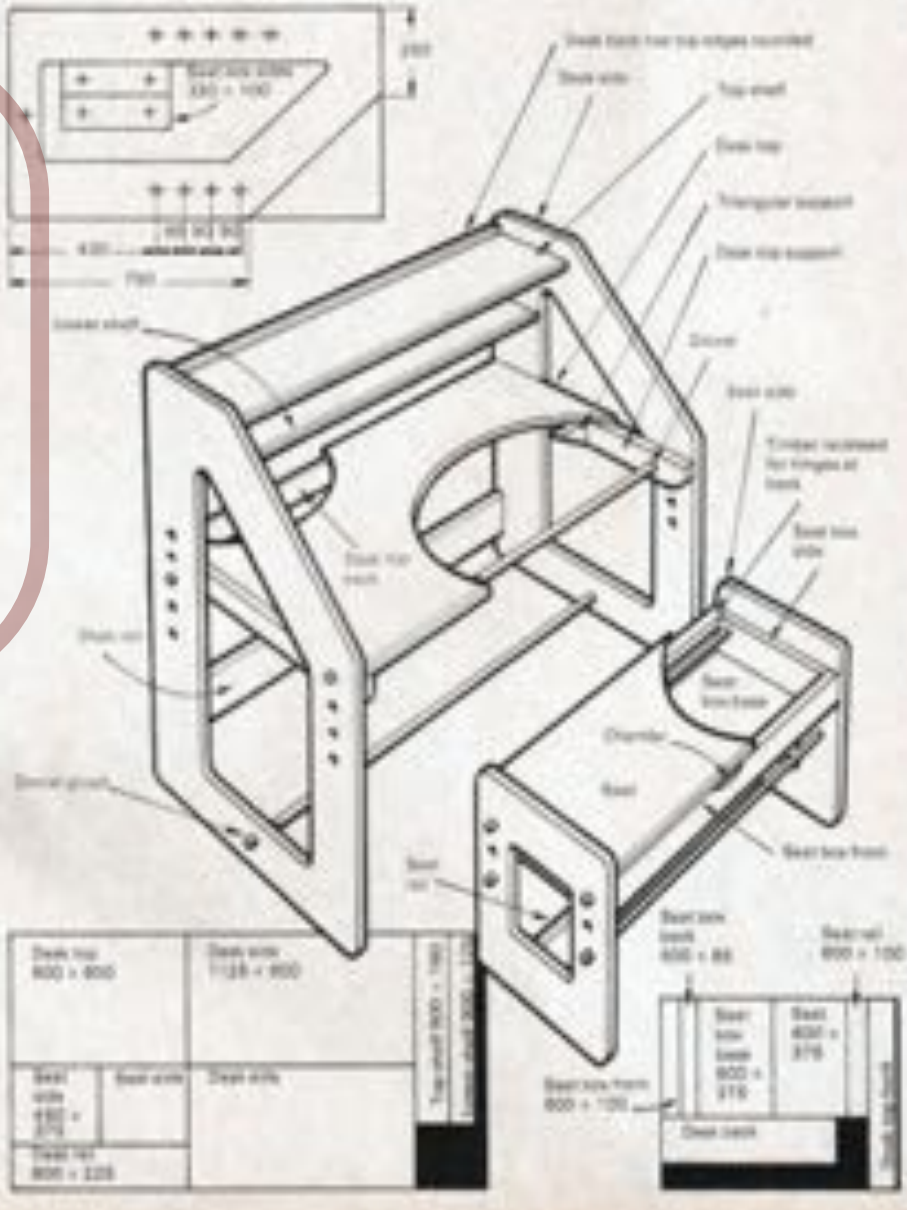
This third desk can be made from two sheets of board, one at 2400 by 1200 by 18mm and one at 1200 by 800 by 12mm.

This piece is more of a proper desk than a table as it has several facilities for storage. There are two shelves at the back of the desk and the seat is made with a lift up lid which reveals a small storage box. The box components are in fact essential to give support to the seat itself. Note on the front member a finger grip has been rasped out to make opening the lid easier, and at the rear the recessed piece of solid pine 350 by 15 by 15mm which carries the hinges.

The method for adjusting the height of the seat and the desk is with long 25mm dowels fitted through a series of holes drilled in the sides. The reason for there being five holes at the rear of the desk and only four at the front is to allow for creating a sloping surface.

All cross pieces must be glued and dowelled or pinned, and triangular supports, made from waste, are added to the under side of the desk top for greater strength. All arrises should of course be removed and holes filled before painting.

Designed and built by Warwick Massett, it is suitable for a child aged from 6 to 12 years. The seat box is usable until the child is 10, after which time a chair should be substituted. The desk and seat are painted in high gloss carrot gold.



March 1985
Practical Wood Working.

Modular design that can grow and change. I find exploded diagrams and illustrations visually interesting. I we have lost touch with how things are made. What would it look like to incorporate this type of visual within a 3D form?

3

MATERIALS

MDF

MDF is made up of Wood Fibres (often recycled) and a resin adhesive (Urea Formaldehyde), this mix makes it notoriously hard to recycle. Though there are technologies to separate the materials, and the Urea Formaldehyde can technically be broken down by hydrothermal hydrolysis, this is not readily available, economically viable or necessarily environmentally beneficial as recycled fibres have higher levels of off-gassing and large amounts of energy are required to fulfil this process. This means much of domestic MDF applications end up in landfill. Manufacturers with a closed loop recycling process will recycle some materials but overall it is not readily recyclable or biodegradable. The toxic chemicals from the material mean it also can not be chipped.

“Britain alone disposes of around 350,000 tonnes of MDF each year.”

Veneer

Veneer refers to the thin (usually under 3mm) slices of wood that are glued to substrates i.e. ply board or MDF; engineered wood warps less with glue as well as overtime and so is a better base. Veneer manufacturing is basically made by slicing, not cutting the wood, producing less waste. The glue most commonly used is a cold press modified PVA wood glue. Veneering is an economically viable way of producing ‘wood’ products at a fraction of the cost as solid wood. Patterns can be made using veneer, this is marquetry and parquetry. Veneer already has two side to it, the cheep laminated throw away furniture companies like IKEA produce which is probably first to come to mind and then the more high end veneer for interior architectural use; anything with a mechanism i.e. kitchen cabinets, need to be very stable to continue to work. Solid wood will warp with changes to the environment ans so veneer must be used.

They can be considered an environmentally conscious option because “you’re maximizing that log in thin little sheets,” Cate Caruso for Architectural digest.

Ply board

Plywood is an engineered wood made from multiple layers of thin veneer that are glued together. Each adjacent layer is rotated by up to 90 degrees to reduce the risk of splitting, warping and adds strength. All ply-board in the UK must be FSC certified meaning the wood is grown sustainably. Urea Formaldehyde is used in the binding process, same as MDF and so similar problems arise when recycling it. So most goes to landfill or incineration. A lot of furniture made from the three above materials is more likely of fly-tipping as they must be taken to specific recycling centres. This causes to also to go straight to land fill.

Polystyrene

Polystyrene is styrene (a colourless oily liquid) that has be polymerized. It then is basically injected with gas to create an array of material textures and hardnesses. Polystyrene is not readily recyclable as it is cheaper to make new than recycle. Again, it is a complicated process to recycle polystyrene and there is generally not the infrastructure for councils to organise polystyrene disposal. Generally it is advised to dispose of domestic polystyrene use in the waste bin. “Polystyrene is a type of plastic which is not commonly recycled and should be placed in the waste bin.” - Recycle Now. For commercial Polystyrene use, it can be recycled using a granulation technique. Breaking down the polystyrene into small beads and mixing them with new ones. This is hard to do with food packaging, which polystyrene is often used for due to the contamination.

Coppiced Wood

Coppicing is a traditional Woodland Management technique of felling trees at its base to create a stool, then new sprouts will grow, causing many thin shoots from one trunk. This is the repeated every 7 to 20 years. This is beneficial because it means wood can be continuously harvested from one living tree. The new shoots often grow very fast (2 meters per year) It promotes biodiversity by attracting more wildlife and plants by enriching the habitat. By growing trees this way, carbon is taken out the atmosphere and locked in the trees at an impressive rate. Making it very sustainable through multiple avenues.

Summary

MDF, ply-board and polystyrene are problematic materials. Their economic benefits will continue to outweigh their environmental impact and so a better way of reusing or recycling them must be achieved. Veneer equally is lumbered in with this problem with much of the MDF and Ply-board waste comes from cheaply made veneered furniture. But veneer has environmental benefits by the premise of taking a chunk of material and making it go further. How can these materials be reworked, using the veneer and laminating process to extend the material life? Can we inform consumers or make commentary on this topic within the design itself?

MAKING MATERIALS

Forest Stewardship Council (FSC)

The Forest Stewardship Council are an awarding body that accredits certification organisations for theethical and sustainable practises of forest farms. There are 10 main principles that must be complied with to gain the accreditation and each principle has strict regulations to be accepted.

The principles are:

1: Compliance with laws and FSC Principles.
2: Tenure and use rights and Responsibilities.
3: Indigenous peoples' rights.
4: Community relations and worker's Rights.
5: Benefits from the forest.
6: Environmental impact.
7: Management plan.
8: Monitoring and assessment.
9: Maintenance of high conservation Value forests
10: Plantations and restoration management.

FSC arose from the consumer drive for sustainable and ethical sourcing of materials. However deforestation if still a hugely pressing issue as though farms can become accredited, they do not have to and can just rely on their govermental restrictions which is why countries like Brazil are hitting record high deforestation rates after President, Jair Bolsonaro, relaxed regulations in an effort to boost the economy.

Fig.5

ISEAL

ISEAL is an organisation that supports ambitious sustainablity systems within companies as well as govermental policies. They set standards as well as build frameworks for accessing compliance with standards at every level of the accountability chain. Educating consumers is as equally important as pushing governments and companies to innovate.

E0 emissions Certification

Manufactured boards leak Formaldehyde (Off Gassing). Formaldehyde, in the environment breaks down to carbon monoxide and formic acid which have negative impacts on wildlife. I.e. decreasing life span, affecting fertility and causing sickness. An E0 emission certification means that less than 0.5mg/l of Formaldehyde detected. This certification means it can be used in the UK without extra treatment. However different countries have different ways of measuring this and so there is not a great deal of standardisation of this accreditation and it is often used as a marketing tool.

Urea Formaldehyde

Urea Formaldehyde is a thermosetting resin or polymer used often in products and manufacture processes. Urea Formaldehyde has many applications but as an adhesive, it is not biodegradable, It will leach Formaldehyde and leave micro-plastics behind,

Wood Recyclers Association (WRA)

WRA are an organisation that aim to:
Influence environmental legislation
Promote the sector to policy makers
Assist members to understand and respond to changing market conditions, legislation and regulation
Provide a platform for members to share non-competitive information
Raise industry standards

Understanding standards and awarding bodies is an important part of recognising where the problems lie and what is already being done about it.

PROCESSES

Veneering

This piece was completed at Williams and Cleal Furniture School in Taunton. The aim of the short course was to learn a new technique that could be utilised with a more sustainable mindset. Even during the course we used waste materials from larger fine furniture projects. Many of the parquetry and marquetry techniques produce a positive and negative piece which means both can be used, producing less waste. I have the idea to recycle mdf or ply-board from materials I find around Brighton and use similar techniques to create something new. The pieces would be small, functional everyday things which are easily disregarded. Spice racks, storage units, shoe racks are all items that are often fly tipped around the city. Building more meaningful relationships with these objects will create less waste. Using digital processes to speed the process also appeals to me due to reduced cost factors.

Laminating

Laminating is the process of gluing thinner sheets together. This can be thin sheets of veneer or flexi ply-board. The purpose of this is for strength, creating seamless curves as well as decorative features while maintaining a light weight design. Depending on the application, differing levels of wood glue strength can be used. Laminate wood is also used to refer to chip board or other base, covered with a synthetic wood-like material or plastic. This could be a foil with a wood pattern printed on. Creating curves this way is easier than steam bending which needs more of a set up, will produce more failures and has more spring back which means it is harder to get the exact dimensions every time as it is effected by the grain in the wood which will always be different. Laminating is more accurate however solid wood is not tended to be used and it requires the addition of glue which steam bending does not.

Summary

In my project, laminating and veneering will be useful processes to rework waste materials that would otherwise go to landfill. By laminating thinner boards, the material will be stronger and last longer and veneer can be used to give the material a new, fresh aesthetic.

WHERE WASTE GOES?

We have a massive issue with waste management. Especially light materials like polystyrene that easily end up in natural environments like Woodland and the Sea. These peices were going to landfill before I found them to reuse.

C I R C U L A R

“CE describes a world where maximising product use to its highest value in biological and technical systems is the prevailing economic and social model.” (Charter pp3) This can be broken down into multiple different systems, Product life extension (PLE), creating systems that take in and reuse waste or creating ecosystems of design where the used resource goes back into ultimately ends up benefiting its environment. Charter believes this works best as a business model. Not on a macro scale. This means the company themselves taking back waste and recycling them in-house. A prime example of this would be Foresso reusing their extraction waste, right back into the make up of their material. Although Foresso is not recyclable in our usual waste system, this adaptation to their business model means that customers can recycle the material within the company itself. This is taken one step further by William McDonough and Michael Braungart, who developed the concept of cradle to cradle designing. Which suggests that products should not be ‘less bad’ but instead actively benefit the environment around us.

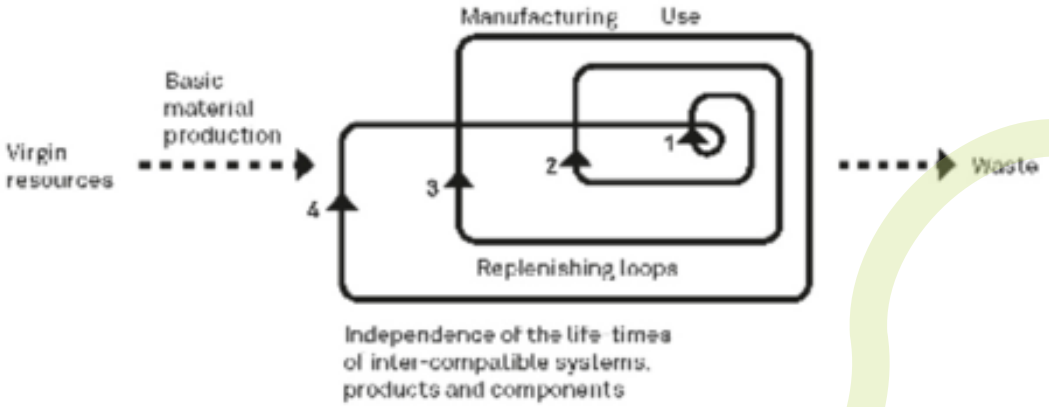


Figure 1.01: The self-replenishing system (product life extension). In 1982 Walter R. Stahel proposed ‘an economy based on a spiral-loop system that minimizes matter, energy-flow and environmental deterioration without restricting economic growth or social and technical progress’.

Fig.26
Circular Loop

RELATING TO VENEERING

As the materials I have taken interest in are not easily recyclable or biodegradable, they do have an end life. However does this mean that as they do not fit directly into the circular economy, that they should not be used? A circular system works very well for a new way of making but we can not forget about what we already have. Though a completely circular economy would be the most ideal system,using contaminated waste is beneficial as not only does it extend the product life, it is a realistic and manageable approach to combating the on going issue of our throw away culture. I think that they go hand in hand.

PRINCIPLES OF GOOD DESIGN

A lot has been written on what makes good design. Don Norman's 'Emotional Design' and Jonathan Chapman's 'Emotionally Durable design' lay out how we connect with objects and what makes objects last. All designers will have their personal parameters that they work within to make their practice successful. What can I learn to implement into my own practice?

Fig.27 Anna Castelli 'Componibili' Modular unit for Kartell. First designed in 1967

DON NORMANS THREE LEVELS OF EMOTIONAL DESIGN

1. Visceral
   What is the first impression?
   Is it inviting?
2. Behavioural
   Is the product effective?
   Furthermore is it a pleasure to Use?
3. Reflective
   Does the product tell a story?
   Does it appeal to my self-image?

JONATHAN CHAPMANS SUSTAINABLE APPROACHES

1. Age gracefully
   Design with how the product will Age in mind.
2. Growth
   How can a product adapt and grow with you?
3. Add Value
   How can time add value to a Product?
4. Narrative Design
   How can the product tell a story about its material origin?
5. Modular Design
   Design for easy upgrades or repair.

DIETER RAMS TEN PRINCIPLES

1. Good design in innovative
2. Good design makes a product useful
3. Good design is Aesthetic
4. Good design makes a product understandable
5. Good design is unobtrusive
6. Good design is honest
7. Good design is long-lasting
8. Good design is thorough down to the last detail
9. Good design is environmentally-friendly
10. Good design is as little design as possible

HOW DOES THIS INFORM WASTE DESIGN?

Many of these points reflect exactly what creating with waste can provide. By reusing materials rather than starting with virgin materials, a story is being told from the offset. However it is important to look at the product as a whole, not just the story. I.e. Ikea's composite range uses waste wood shavings in their plastic mix. A sustainable story is then associated with the furniture. Is this the full story? Once the biodegradable wood is mixed with the plastic, it can only be recycled in house. How can a company as big as IKEA control the recycling of their goods in a closed loop system? In creating a story, the effectiveness of the principle of using waste is tainted. Rams principle of innovation may also counteract waste design. Though using old materials in a new way could be seen as innovative, the basic premise is to actively not do something new. Making the most change with the minimum amount of energy is the most sustainable while arguably the least innovative,

Fig.28 IKEA composite chair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PACKAGING AND THE MASS MARKET

Carbon footprint is considered in all aspects of design. Where did This material come from and where will it go?

MAKING MATERIALS

Even making new materials sustainably will create a carbon footprint. How can we measure the impact of creating new materials?

How sustainable is sustainably source timbers and other raw materials and what goes into being FCS certified?

What implications are involved in creating materials?

Fig.10
Emeco Sustainable materials.

Foresso

Fig.11
Foresso

Foresso is known for its terrazzo style material, made in house and from minimum 65% recycled materials. It is made from off-cut timber from city developments and set in a mineral content mix made from recycled cement and plaster waste as well as their own extraction. It is set with a 0% VOC Bio-Resin. Meaning no harmful substances are released over the lifespan of the product, unlike normal plastics. This resin is also 40% lower than equivalent petroleum based systems, statistically calculated on its GWP (Climate Change Global Warming Potential). This composite is then set on 18mm FSC Poplar Plywood, giving the material the right strength and stability to be used for furniture, joinery and interior projects. As a company they are very transparent about the sustainablity and ethical practices of their business. Their aim is to become waste negative, increase renewable electricity to the workshop and work towards carbon neutral shipping. New technologies are also making it possible to strive for products to be made from 100% renewable and recyclable waste materials. At the moment Foresso can only be recycled in house. They work closely with Innovate UK to be constantly improving the company, this is all laid out on their website making it clear that their is still progress which should be made with sustainable materials as it is a complicated process with a lot that goes into it. Even when a company is doing everything they can, they cant control external factors in the supply chain until a better option is given.

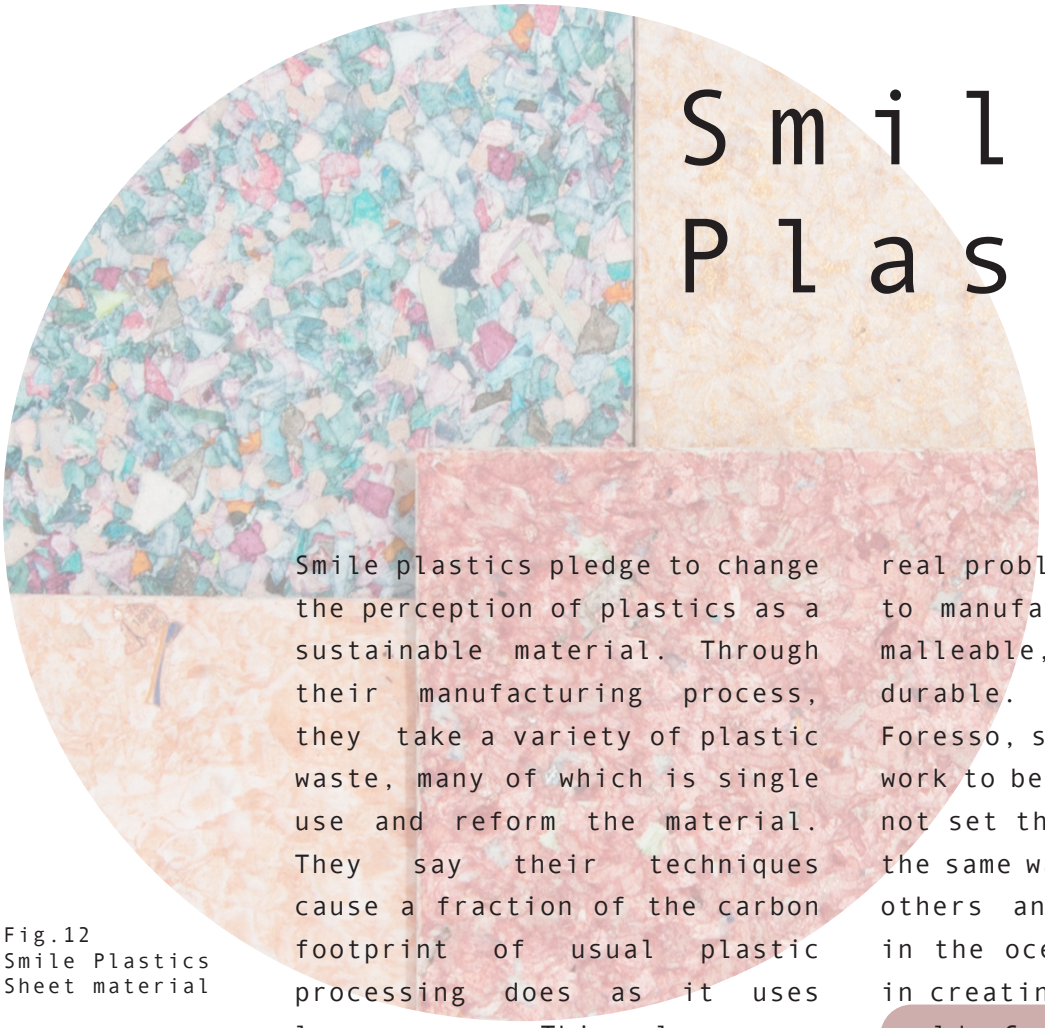

Fig.12
Smile Plastics
Sheet material

Smile Plastics

Smile plastics pledge to change the perception of plastics as a sustainable material. Through their manufacturing process, they take a variety of plastic waste, many of which is single use and reform the material. They say their techniques cause a fraction of the carbon footprint of usual plastic processing does as it uses less energy. This also means the plastic does not denature and so it can be recycled, refinished or reformed an endless amount of times. They specifically want to foster better connections between people and materials. Creating beautiful materials which tell the story of their makeup within the material itself is therefore a key factor of their process. This is why flects are visible and sometimes bar-codes and small details of the original material peak through. By creating a circular economy through materials, the outcome is inevitably more sustainable. Smile Plastics say the linear lifespan of plastics is the real problem. Plastics are easy to manufacture, light weight, malleable, waterproof and very durable. Smile Plastics, like Foresso, say there is still more work to be done although they do not set their intentions out in the same way. They say inspiring others and causing a ‘ripple in the ocean’ is their mission in creating a more eco-friendly world. Smile Plastics material is completely made with plastic waste, creating little waste. However it cant move away from the plastic feel, even if it is changing perspectives on what plastic means. Where Foresso excels is in the tactile feel of its product. It is soft and has a natural feel which people gravitate towards.

Emeco

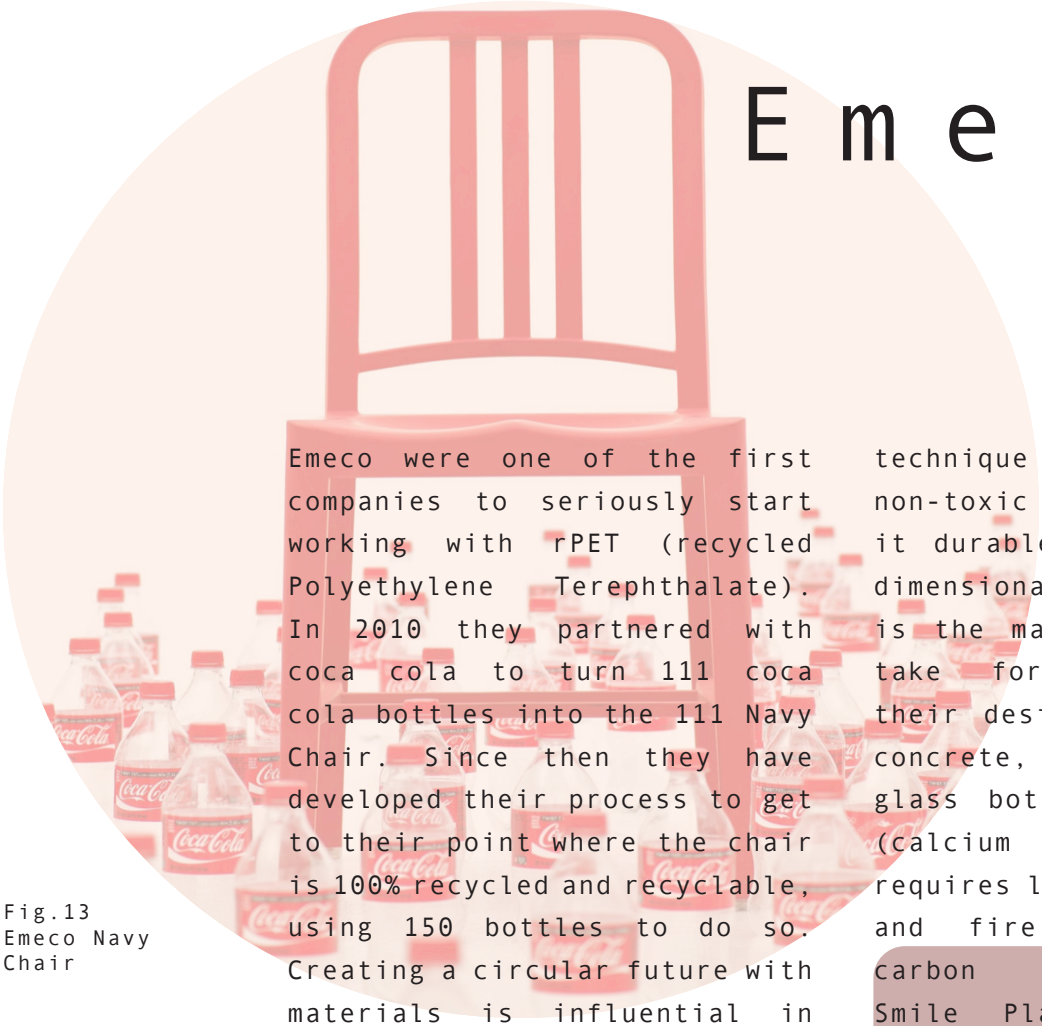

Fig.13
Emeco Navy Chair

Emeco were one of the first companies to seriously start working with rPET (recycled Polyethylene Terephthalate). In 2010 they partnered with coca cola to turn 111 coca cola bottles into the 111 Navy Chair. Since then they have developed their process to get to their point where the chair is 100% recycled and recyclable, using 150 bottles to do so. Creating a circular future with materials is influential in Emecos work ethos, having first started working with recycled aluminium. In 2012 they started working with another new material, Recycled Wood-filled Polypropylene (WPP), a mix of waste Polypropylene, a durable, hard plastic often used in medical equipment and mix it with recycled sawdust. The idea of this is to change the texture of the plastic, giving the plastic a more natural look and feel. The issue with this is that the final product is not recyclable itself as the plastic has been contaminated. Emeco do also work with sustainably sourced woods, they have developed a technique to treat wood with a non-toxic acetylation, making it durable, rot-resistant and dimensionally stable. Durability is the main stand point they take for sustainablity in their designing. They use eco concrete, made form recycled glass bottles and CSA cement (calcium sulfoaluminate). CSA requires less energy to process and fire, lowering overall carbon footprint. Unlike Smile Plastics and Foresso that are concentrating on a circular future, Emeco tackle sustainablity with physical durability. How can the balance between the manufacture impact and longevity of an item be measured?

ARTIST REFERENCES

John Makepeace

Fig.14
Black Thrine Variations

Makepeace dedicates his work to ‘exploring more eloquent concepts for furniture, with the objective to achieve freer, lighter, stronger and more sculptural forms better suited to their function and expressive of each commission. ‘Black thrine variations’ is an extension of this. The scorched English oak is bold and sculptural but thoughtfully and well made so that its simplicity does not hinder the usability of the chair. Scorching has become very trendy in crafted furniture but I think it could be a great way to renew old, scratched and damaged wood.

Fig.15
Chairs of Heaton

Joe Franc

‘Chairs of Heaton’, is an exploitative series undertaken over six weeks where Franc limited himself to only using timbers found within an hours walk from his home in Newcastle and put together in a maximum of three days. The pieces are made from fly tipped drawers and wardrobes, put together in an Adhoc fashion. I find the series playful and honest, though they aren’t the most functional chairs, the principle of this experiment has evoked ideas about function and aesthetic which may inform my own practice.

ARTIST REFERENCES

Fernando Laposse

Fig.15.2
Corn Husk Veneer

Laposse has created his own veneer material using Mexican corn husks which are usually just burned. In this table he has used his marquetry pattern to showcase the beautiful array of colours and texture that the natural material has. The veneer can also be applied to an MDF backing and used in interiors. Laposses use of native Mexican corn husks, Totomoxtle, is also a statement on biodiversity as an increase in genetically modified maize puts pressure on local farmers to stop producing the traditional varieties, which produce an array of colours and textures. When waste is redesigned in this way, new economies are available to the local populations as it offers a new, year round, means of income while reducing toxic fumes and gases.

Fig.16
Waste table in Scrapwood

Piet Hein Eek

Piet Ein Eeks' Waste Table is made from inexpensive or found waste materials. His Design focus is ecological with his scarp wood table as a bold reaction to mass production and Waste culture. His use of inexpensive timbers which fine furniture strays away from, mixed with time consuming and intricate designs play a roll in subverting material language. Changing the perception of how the public look at waste which is very necessary for waste design to be embraced fully. Changing the perception of 'negative' waste materials is a theme running through my project which is why this work is relevant.

ARTIST REFERENCES

Fig.17
Particle-Stack

Bethan Laura

Bethan Laura designed this range of stackable and interchangeable units while on residency at London Design Museum. It is inspired by storage crates as the premise the museum was on was once a banana warehouse. Bathan Laura has used off cut veneer and laminated them into a new material which is inspired by OSB board. Interchangeability can be important factor in sustainable design. An object that can grow and transform with a user has a longer product life.

Fig.18
Melting Pot

Dirk Van Der Kooij

Kooij ‘melting pot’ collection is made from his own disregarded prototypes. These prototypes were already made from recycled plastics. Kooij appreciates that all making is inherently negative for the environment and after moving to recycled plastics from carpentry, soon found his own waste problematic as his experimental design process lead to many failures and prototypes. Leaving no waste, creating with no first had products is important to my project. One of Kooij’s design perimeters is to not use harmful epoxy glues. I intend to also do this by reusing polystyrene as a binder.


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lastic bottles
Glass
Textiles
Cartons

“Though we try to imagine otherwise, waste is every object, plus time”

-Brian Thrill

THE WOOD STORE

Fig.30
Scaffold Table

"Established in 1998, Brighton & Hove Wood Recycling Project was the first scheme of its kind in the country; an organisation committed to finding a way to reuse waste timber - seeing it for what it really is - not a waste but a precious resource!" -woodrecycling.org.uk

The Wood Store is a Brighton based, Wood Recycling Charity. They collect wood from commercial and domestic sites. Then sort and redistribute the materials. Along side this they run a workshop for volunteers to come and learn wood working skills, building projects to sell in their shop. This mostly involves using reclaimed scaffolding and joist to make shelving, tables and benches. In 2021, the charity saved 248 tonnes of carbon dioxide from entering the atmosphere. This is by saving the construction timber from being incinerated, which would have otherwise been the usual disposal of the material.

Interview with Pete West, Managing Director.

Can you tell me a bit about the early days of the company and how the social enterprise grew to be a certified charity?

Richard Mehmed, the founder of the project was building his daughter a Wendy House in 1999, he was looking for wood to use and came across a dump on construction timber. That is when he had the idea to set up the enterprise as he saw the material was still completely usable and thought it was a waste to throw it away. Recently we good accredited as a charity. This helps with funding and also shows the public the we are non- profit. Legitimising the work we do. Through this we also now get our premise for free, meaning more money can go back into the cause.

> “I want to see people succeed.”

Why is community so important to the work being done here?

Obviously by using volunteers, our labour cost is reduced, but as a charity our social mission is equally important to us. We want people to succeed. By volunteering in our workshop people are given a stepping stone. They get experience in a working environment, working in a team and confidence in their abilities. For some volunteers it also gives them routine and company, improving mental health and well-being. Since starting the project we have seen an increase in Women getting involved. Carpentry is a more male dominated sector and volunteering here is a safe space for women to learn to use power tools and DIY skills. In doing this the gap is closing with more women feeling empowered to begin Wood working. Learning DIY skills also goes hand in hand with out sustainablity goals. With more people skilling up and doing more at home, less waste will inevitably be produced. Our volunteers will then have the skills to fix and up-cycle, leading to a more sustainable life style.

Have you seen a change in the public interaction with the charity since starting the project?

Not particularity, being a charity has given more clarity surrounding our work however we have had a high profile for a long time. I think its what we do that matters most and we have loyal customers that value the ethos of the charity.

Have you seen a change in the waste streams you work with since starting the project?

With cost of materials increasing, we have

>>

THE WOOD STORE

seen a change in how building company operate. They are less wasteful now, maybe inspired by our work as well. Before they would throw away anything coming from demolition sites. Since Brexit there has been a massive increase in timber prices. This is because a lot of timber came from Norway and that trading relationship has now collapsed. This means building companies are throwing away less timber of value. So we see more rubbish, low grade timber. Obviously people being less wasteful is a good thing and its what we want to see so its up to us to work with what we've got. Our newer Ply-board and garden furniture range is one of the ways we are reusing the waste we are seeing more of now.

What is the most difficult material to sort and redistribute?

Sheet materials are perhaps the least desirable. They usually come to us heavily worn and we don't often get full sheets, rather offcuts which are only good for DIY projects really, They cant be used like the scaffold and joist because they are less attractive but we can paint them and create a worn effect which sell well. Due to the glue in these materials they will just go to incineration or tipped which has vast negative effects for the environment and cannot be used as biomass.

Fig.31
Ply Table

Fig.32
Pallet Bearer
Outdoor Furniture

Summary

The Wood Stores premise of reusing waste materials for functional objects aligns greatly with my project. From the materials they themselves were going to have to get rid of, I got a lot of scrap MDF and ply-board to experiment with. The most important take away from this interview was about the materials they struggle to use easily. I.e. the unattractive ply board. A lot of the ply-board was warped and had lost strength, making it difficult to reuse for functional jobs. How could this material be reused in a way that is not unattractive? I also found what Pete said about the sustainable benefits of teaching wood working interesting. People becoming more self sufficient will result in less waste. An understanding of how things are made leads an environmentally friendly outcome. How can this be translated into objects where the user has little to no design or making experience?

Fig.33
Timber Yard

HOVE RECYCLING CENTRE

Heaps of waste materials being crushed for incineration. Including Veneered furniture and polystyrene.

ILLUSTRATOR CONCEPTS

MATERIAL RESEARCH

Pattern making inspired by suede patch-working. Burr Veneer popularised in the 60s furthers the nod to the unintended sustainable application of patch-working with waste.

Though aesthetic. I did not find this message to be clear enough.

Continuing on, I used the laser cutter to streamline the marquetry process. This was effective and created less waste as the three veneer types could be spliced in with each other.

Using digital processes is efficient and in line with the project.

MATERIAL RESEARCH

Breaking the mould of traditional marquetry techniques. By tearing and not joining the pieces together, less material is needed to renew the recycled ply-board base. It also produces less waste and gives a more ‘natural’ aesthetic.

Adding colour. Vibrant colour juxtaposes the wood veneer, highlighting the synthetic to natural disconnect.

It looks messy and it would not age well, not aligning with good sustainable design principles.

MATERIAL RESEARCH

Creating a sheet material with recycled polystyrene and wood shavings. The balance between the materials are off in this test. These wood shavings are mixed with ply-board and MDF extraction. These materials will degrades the biodegradable value of the shavings. By creating a material with this type of extraction, the urea Formaldehyde resin is kept from causing environmental damage.

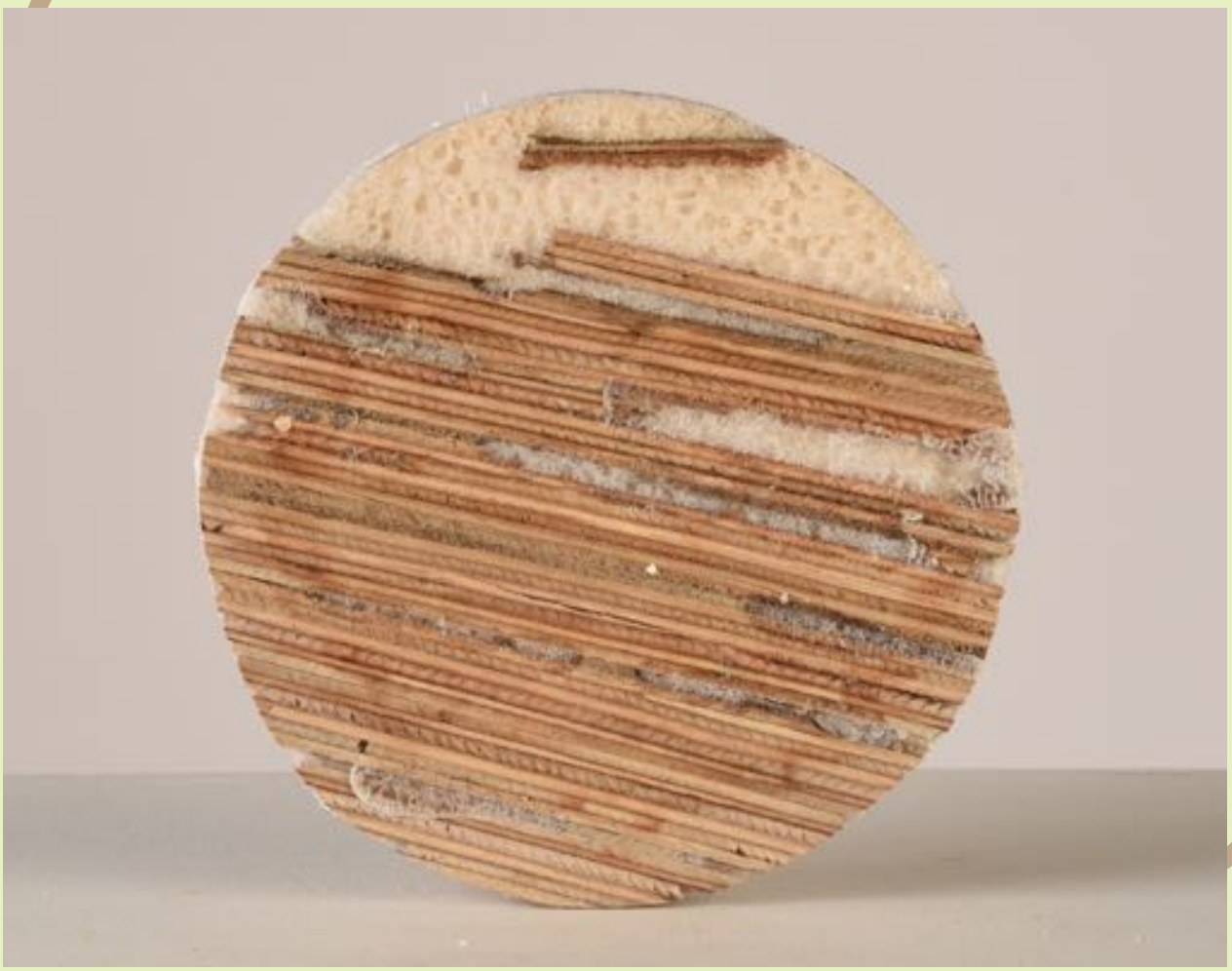
Using a recycled ply-board backing creates strength for the otherwise brittle material. Pressing waste veneer into this mix creates bold patterns with a ‘natural’ aesthetic. We gravitate to this as implying nature within the material is associated with a more sustainable process.

MATERIAL RESEARCH

Polystyrene splattered on top. The bubbles and texture give a grainy feel, like stone. Through the colour is quite artificial.

The polystyrene locks in the small offcuts of veneer which are too small to reuse. The texture and depth of material is aesthetically appealing.

MATERIAL RESEARCH

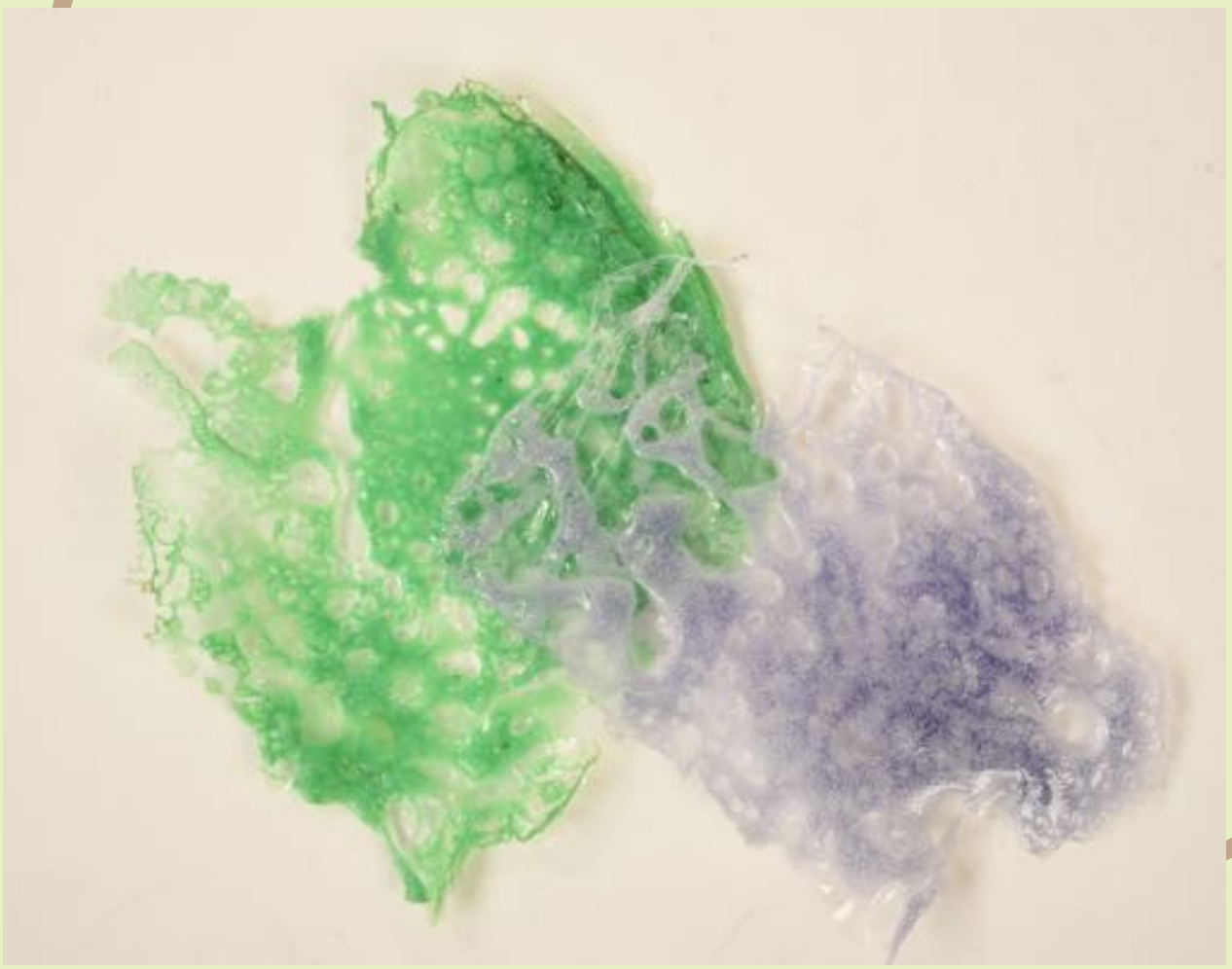


What other material can be used as a veneer? The offcuts of waste ply-board had an interesting pattern and discolourations within the board. I left the gaps to visualise the idea of making an imperfect form. With scratches and gaps designed into the material, wear of the material will be less impacted and extend the product life.

Would adding pressure to the polystyrene reduce the bubbles? By pressing the sheet in a mould, the Teflon sheets meant the mix could not dry. The polystyrene hardens by the evaporation of acetone.

MATERIAL RESEARCH

Not all polystyrene dissolves in the same way. This found polystyrene was a large food storage container for restaurants. Though all polystyrene is labelled as the same material (PS), the process in which it is expanded effects how it can be recycled.



By Adding colours to the polystyrene and pressed to a thin material, it could be made into its own type of veneer. It would have a very plastic feel is gravitated towards less.

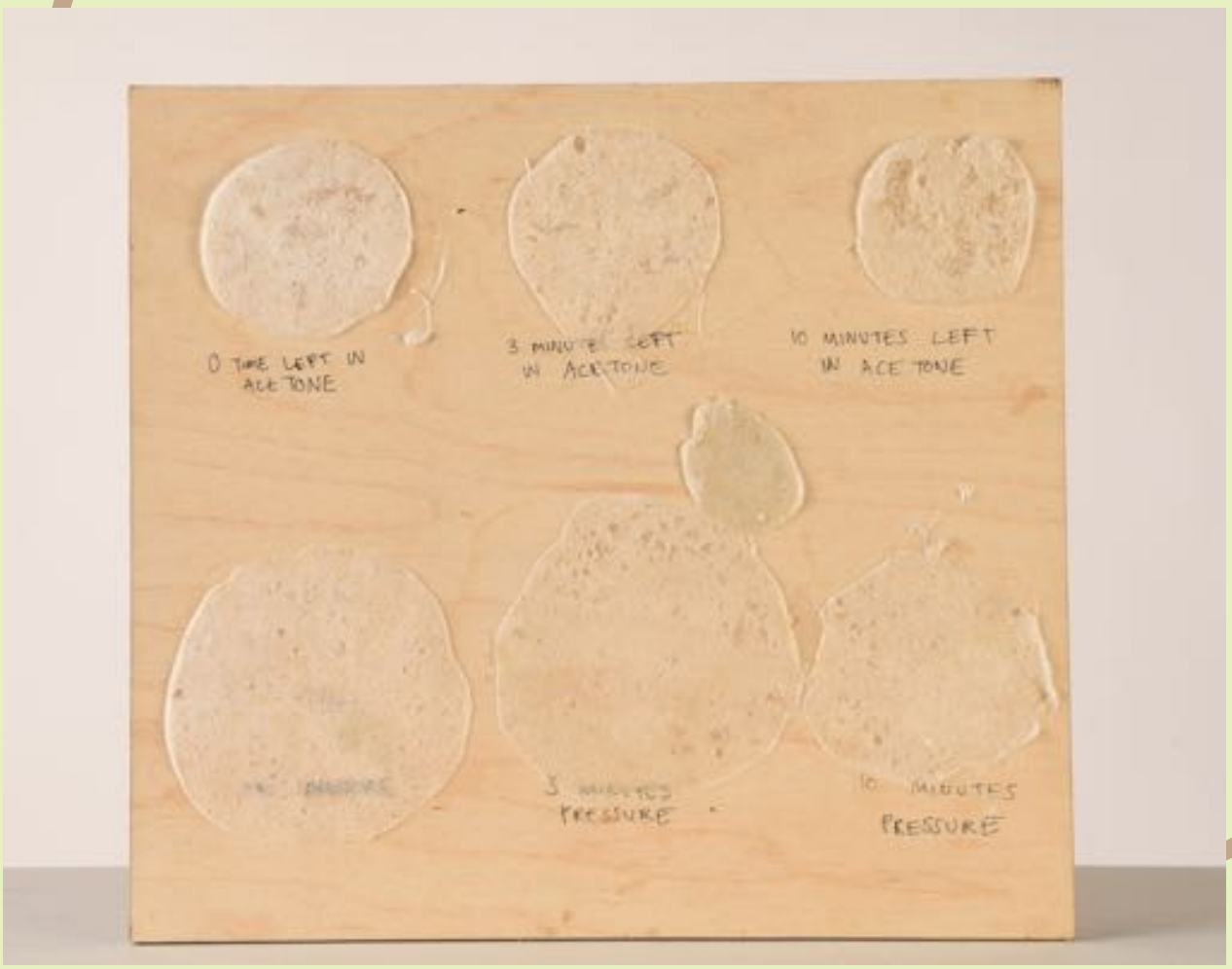
MATERIAL RESEARCH

Polystyrene uses as binding glue in the same way as veneer glue. The polystyrene caused the larger piece of veneer to crack slightly, though the overall binding power of the polystyrene was similar. It would chip at the edge if picked at, however this is the same with normal veneer, which is why a router is used to cut the edges, causing a precise finish.

Layering the veneers and polystyrene creates a very graphic aesthetic. Smaller pieces of veneer are better for this approach, unlike the larger piece where the drying can pull wood fibres apart.

MATERIAL RESEARCH

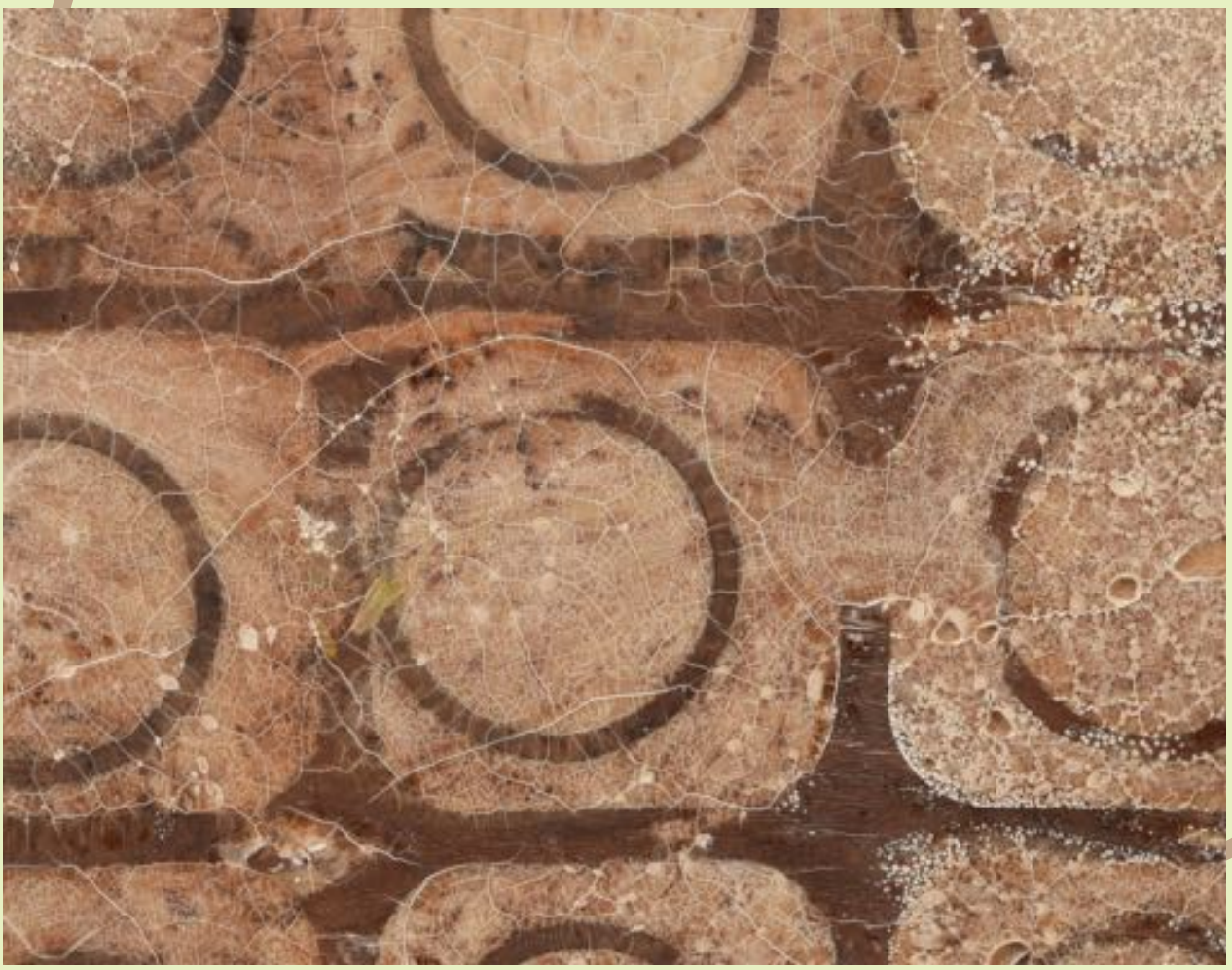
Testing adhesive properties. Mixing in wood glue reacted with the polystyrene, the hydrophobic reaction caused the different substances to separate and was not effective. However the polystyrene dry, sticks effectively to new dissolved polystyrene. This could be useful in building up materials.



What processes effect the polystyrene drying? Adding pressure by needing the goop as well as leaving the polystyrene to sit in acetone over time were tested here. Not that much changes between tests, though pressure seemed to slightly reduce bubble sizes.

MATERIAL RESEARCH

Creating positive and negative patterns mean no waste is produced. I wanted to test the polystyrene against its Non-sustainable competition. This test is glued with polystyrene but finished with a hard wearing layer of resin. The finish is glossy and artificial.



The negative of the pattern is two layers of polystyrene. The second layer dissolved into the first but still kept the veneer sandwiched inside. The polystyrene was needed in a make shift bag press with the vacuum pulling out air. This effectively reduced the bubbles. As it dried in a warm dry room, cracks appeared, though they add texture to the piece. The finish is smooth and satin. It is soft but full of texture to touch.

MATERIAL RESEARCH

The test bench that is joined with wood glue and screws. It is strong and reliable. But is there a better way, using only waste?

The test bench that is joined with polystyrene and pegs made from recycled polystyrene. The square nature of the begs adds strength and the final outcome is equally as strong and needs no first hand materials. How could it be developed to come apart and put back together simply?

MATERIAL RESEARCH

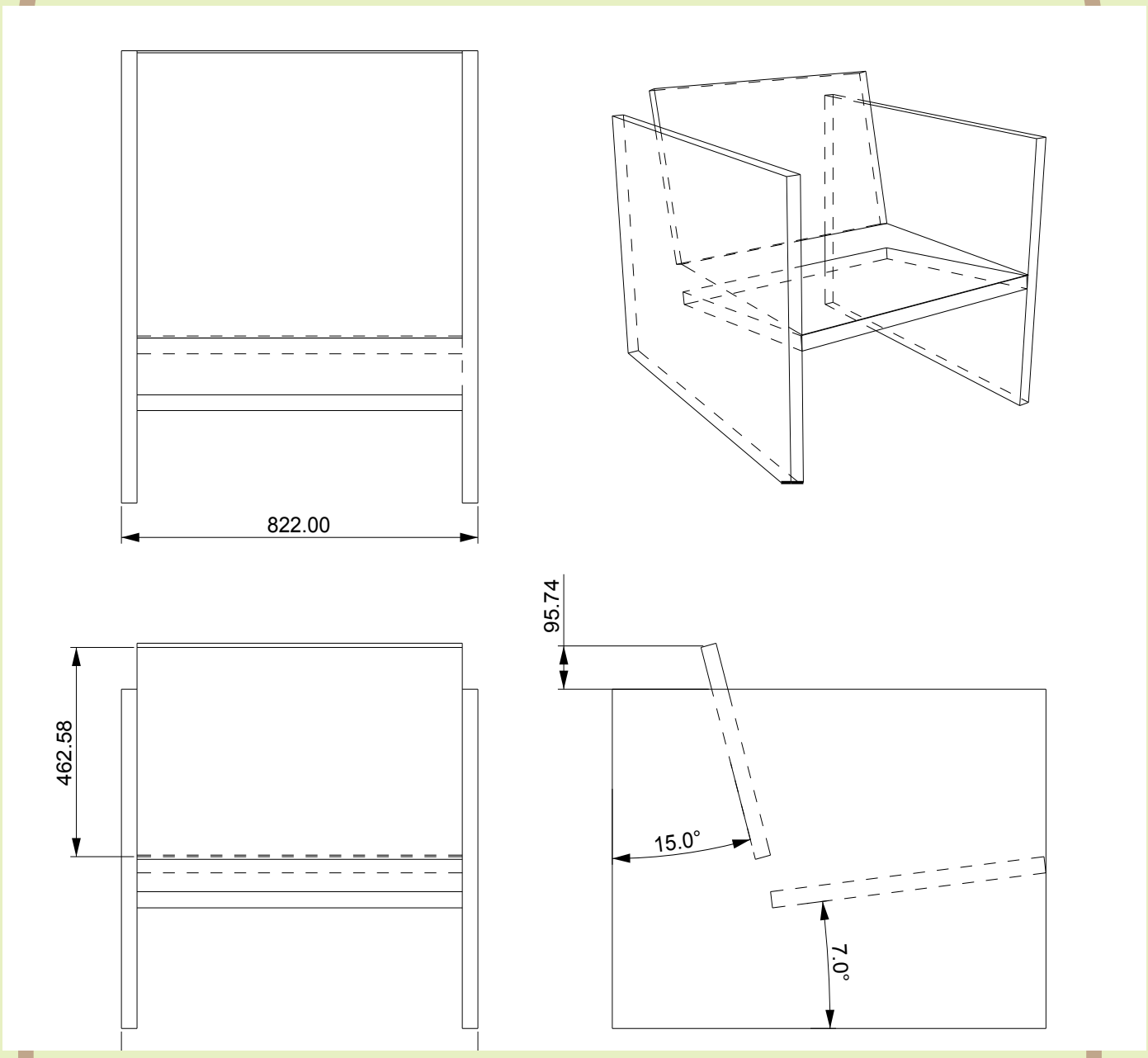
This ply-board was thrown away because it was warped, coming apart and therefore not usable. But the colours and pattern within the warped ply-board are interesting. Can this waste material be reworked in a way which appreciates everything that is ‘wrong’ with it?

The waste I am beginning to create. Like Kooij, my experimental approach is creating waste. By chipping down this was, I can mix it back in with the extraction to create a thicker sheet material. Could this be the final design for my last concept?


THESE
THINGS

Using the nature of materials to create an interesting graphic visual to celebrate the mateiral. This is very much inspired by Fernando Lappose.

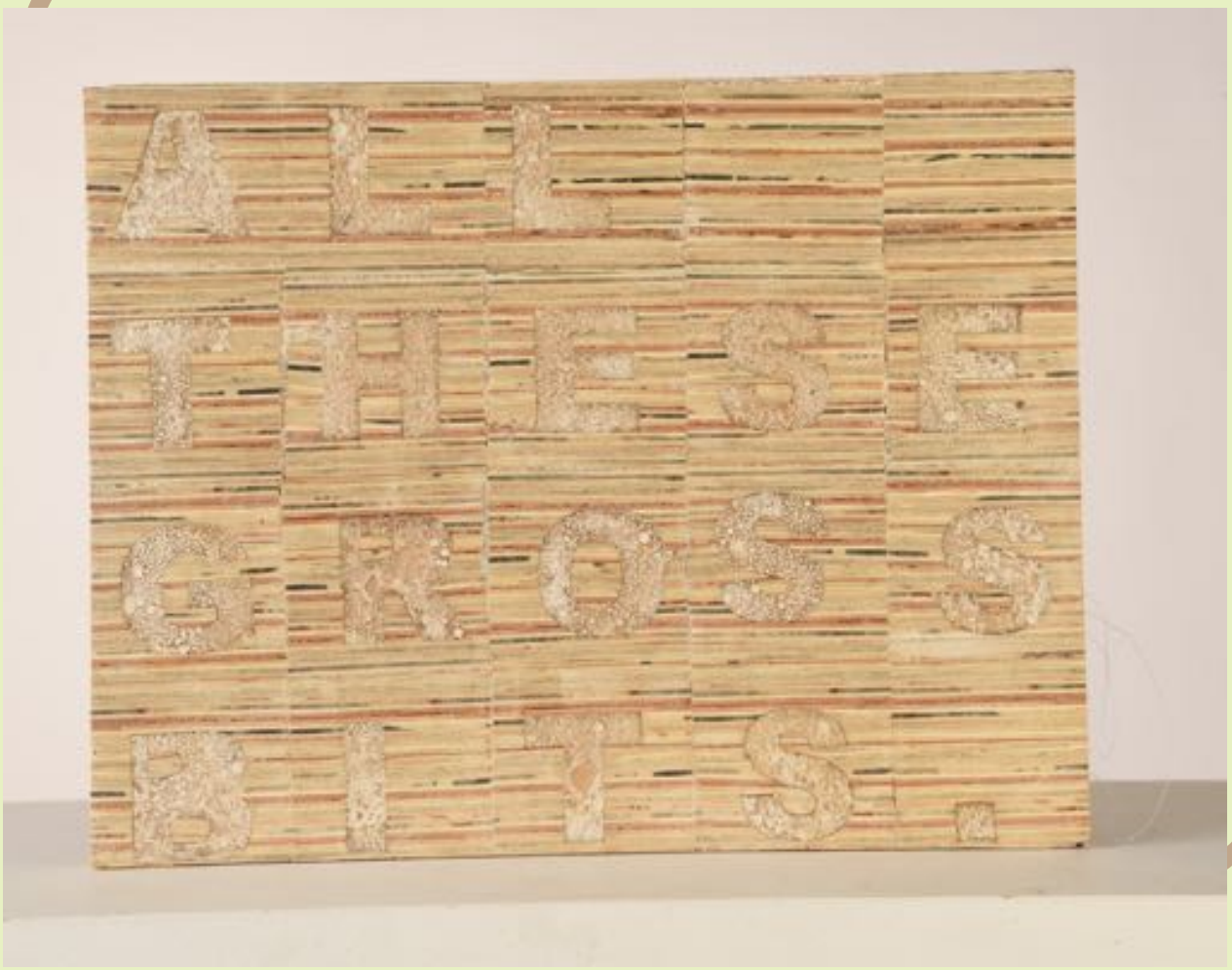
MATERIAL RESEARCH



Using CAD to visualise a concept for designs using sheet materials, which will showcase the visual language of the re-veneering process the best. With a simple design, details like the ergonomic angles and edging is important for a successful result.

‘All these horrible things’, referring to the perception of waster materials, is hidden within the render of this design. Its is disguised within the design to draw in attention. By making it hard to find, it cannot be ignored.

MATERIAL RESEARCH



‘All these gross bits’ is laser cut out with the polystyrene bubbly texture coming though. It is reminiscent of a trypophobic texture which is fitting for the project. By creating a veneer from the ply-board, the aging of the material is highlighted. Unlike antique furniture, when ply-board made things wear they are quickly disposed of. By flipping the grain, the warped and distorted insides of the board are celebrated. With a recycled MDF backing, all these ‘bad’ materials are combined to make something new which is also visually aesthetic and graphically telling a story.

Visualising a 3D form, this Marquette simply shows a basic representation of a chair design. From this I can see that the square boards will need to be broken up more for the piece to look coherent. Four simple boards look too blocky. However the twist circle design is an effective and efficient pattern making design.

MATERIAL RESEARCH

This concept was made to experiment with a bold but simple to put together design. Using Coppiced wood, which is sustainable to grow and harvest, is better wood source of first hand veneers. By cutting them through the end grain, The age of the wood is showcased and the layering and spread out design is inspired by the visual image of a cut down forest.

The design is easy to put together and pull back apart. The issue with using coppiced wood with the polystyrene is that once, mixed, it is difficult to separate. Though it could be recycled in a closed loop system, for my project there are better materials to use. I.e. other waste resources. Though veneer is a biodegradable material, waste can only be used with the addition of adhesives, which is why I will use it in elements of the project.

MATERIAL RESEARCH

A Fly Tipped bedside cabinet. The cabinet had already tried to be up-cycled once. The navy paint was chipping away from the glossy white finish. Although it was functionally intact, The grubby feel and cheap nature of the furniture meant it was easy to discard. As I was taking it apart I found that it was not easy to dismantle, another reason to throw it away.

By using a pegging technique, the fly-tipped, flat pack cabinet that was not practical to dismantle has been made into a user friendly, moveable, multi- purpose stool. Instructions simplified and direct. The story of the old piece is illustrated though etching to the under side of the veneer, Amplifying the understanding of how we interact with products. On a larger, more fine tuned scale it would be effective in starting a discussion about our relationship with the disposable nature of everyday objects.

Polystyrene balls littering the street. Though plastic bottles generally degrade in approximately 450 years, Polystyrene is so chemically stable it is estimated to never degrade.

- ACE, Action for the Climate Emergency

KEY THEMES

Fig.34
Veneer Manufacture site.

What are the key themes I want to visualise within 3D form? Throughout my research, both primary and material, some topics stood out. Why do we have unsustainable practices? What are the design parameters I want to work within? And How can waste materials be used in a graphic way to appeal to a wider audience?

APPRECIATING WHY WE HAVE THESE MATERIALS.

The Post War Era resulted in a quick spur of progress in manufacture and material developments to answer to a rebuilding and changing society. The boom of the 60s paved the way for the expansion of consumer culture and the tension of the 70s lead to worse made products however still fulfilling the societal demands. In a lot of ways we benefited from this as it reduced the class divide in terms of what people had access to. Sustainable items can not be a luxury. It is easy to think the answer is to turn our backs on the materials we find problematic, but while they are still being produced, how can we extend the life of the materials?

UNDERSTANDING WHAT WE NEED FROM DESIGN.

People move around more than ever, we are busier and need accessible, functional and easy objects. How can the material developments I have been working on cater to these design perimeters? How can flat pack be reworked to in a way where it does not become an easily throw away-able item? By reducing the amount of pieces in the design, simplifying it and using sturdy materials, this outcome can be achieved. While doing this I will can make commentary within the object. The graphic nature of veneering techniques mean I can add text or etch onto the surface to tell a story on the life of the material and how to use and appreciate it.

APPLYING TECHNIQUES.

Like Foresso and Smile Plastics, the aesthetic of the material is equally important. It is in both Normans and Rams principles for good design. This doesn't mean it has to be a 'pretty' design. Aesthetic fits both into Normans Visceral and reflective elements to good design. But by creating something critically attractive, it will be a material with higher value and therefore the life of the product will be extended. Reusing waste can be attractive and the materials with wood waste have a soft tactility to them that can be enhanced. This may also include pattern making as an application.

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All other images is my own photography.

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3D Design and Craft

AGP621 Positioning and Establishing Practice

‘All These Horrible Things’

By Jessie Hills

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