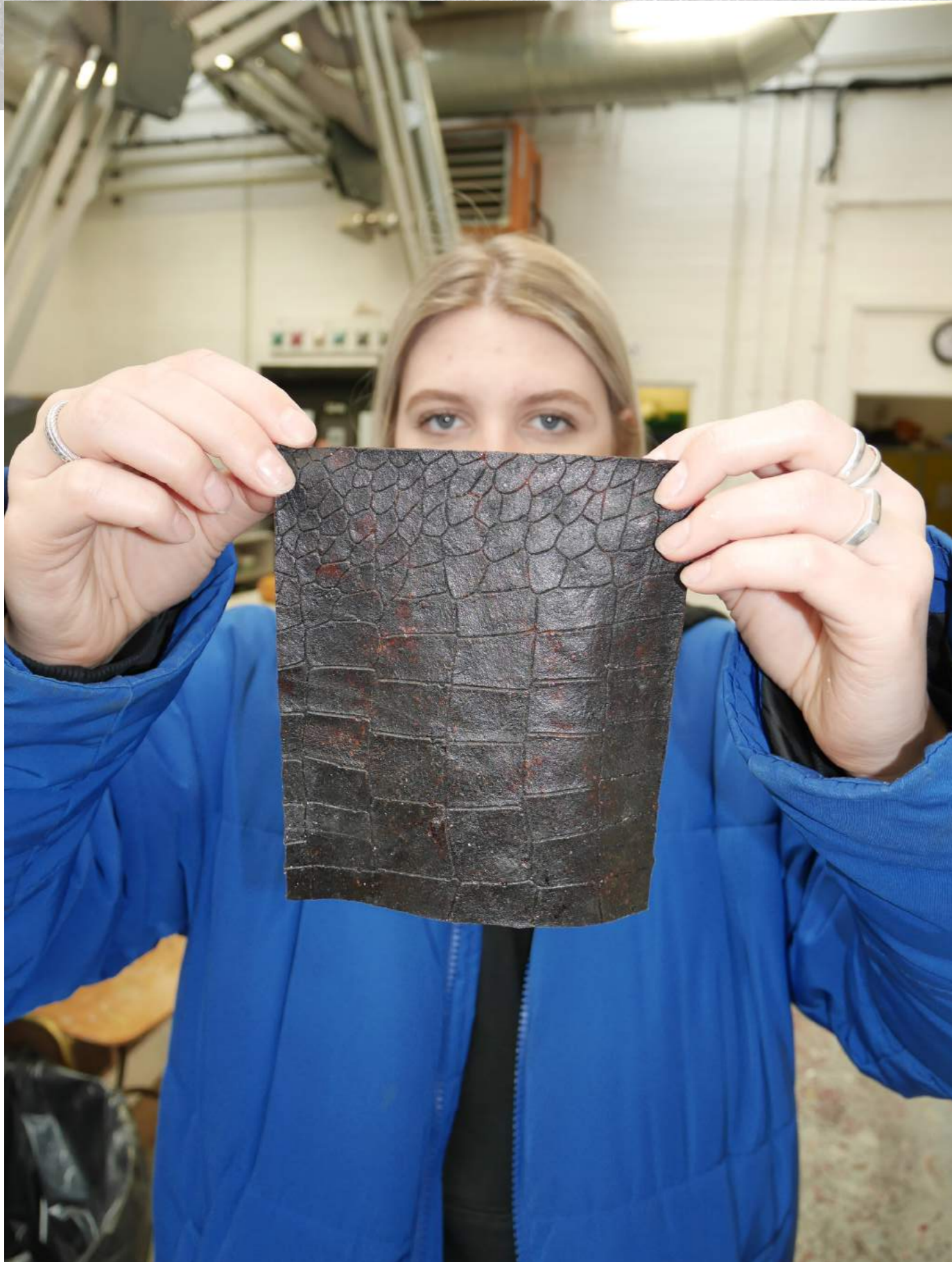




A LUST FOR LEATHER

IMOGEN GRAY



My project highlights the world's relationship with leather in relation to a specific location in South America, the Amazon. The Amazon had been stripped of vegetation, wildlife and indigenous tribes in order for ranches to situate this once lush jungle. Because of more media coverage of happenings like this, more and more people change their diet to be either vegan or vegetarian. However, some of these people continue to wear leather, whether this be in the form of shoes, a belt or a bag. This plays a part in the demand for more cattle and more ranches. I wanted to find an alternative to utilise leather without funding the ranching business and utilising the waste that would end up in landfill.

-Imogen Gray

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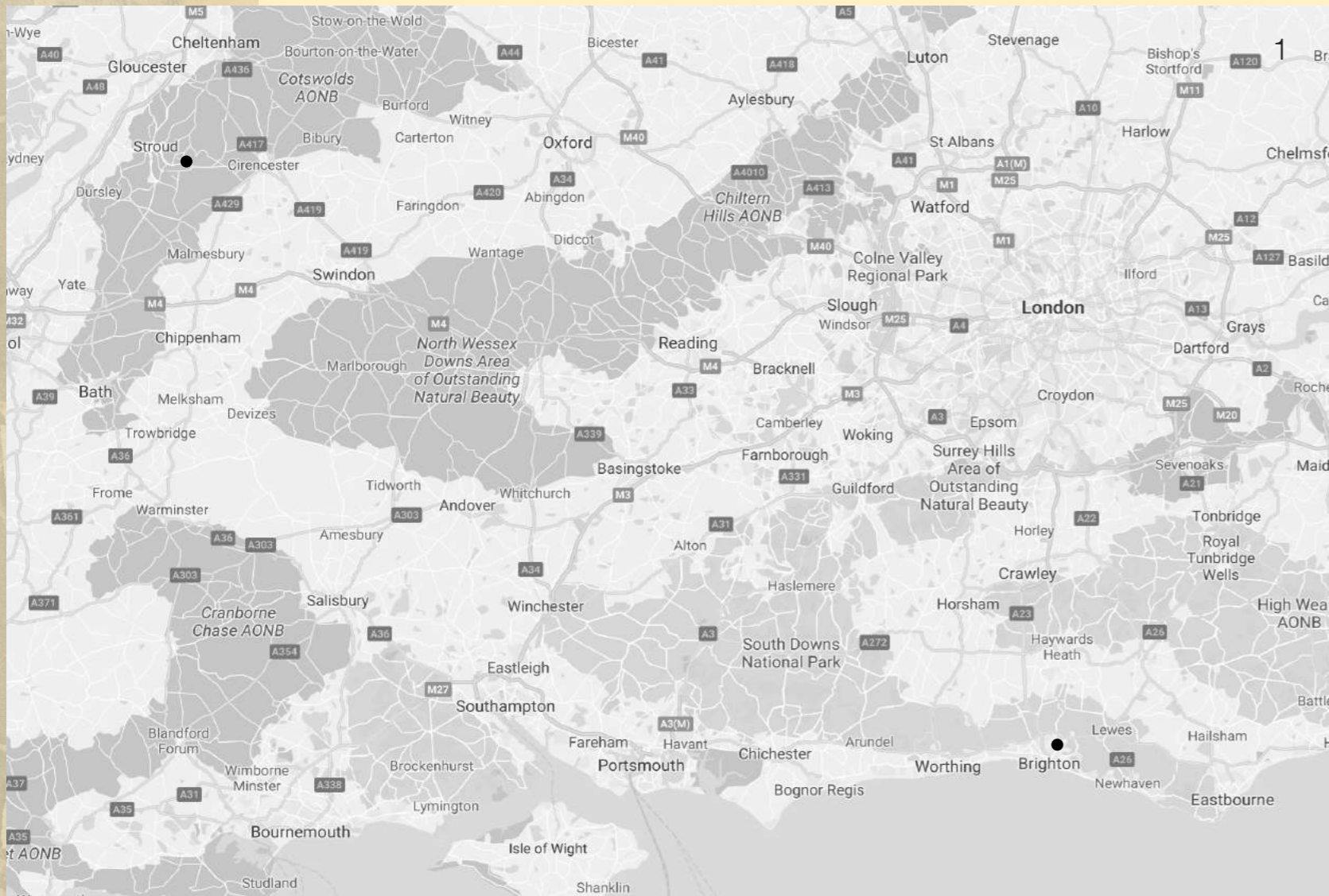
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A thank you.

After emailing a list of people local to Stroud and Brighton that work with leather I didn't get many replies. A thank you to the two craftsmen that supplied me with leather offcuts free of charge and took time to listen to me talk about the course and what I planned to do with the offcuts.



Marcus Spencer is an upholster based in Stroud. He works on large scale pieces. He gave me large off cuts that he would not be able to uses due to them being too small for his scale of work. They wear all beautiful pieces of thick leather with a long grain suade back.



Graham Whitaker is biased in Brighton and makes bags and other smaller accessories. He gave me large bag of small offcuts of bright leather, due to them being used to make bags the leather was stiff and finished.

1. Google maps. Accessed 28 april 2020.
2. Spencer, Marcus. Gallery. 2019, <http://www.marcusspencer.co.uk/sale-room/>. Accessed 29 April 2020.
3. Whitaker, Graham. Custom items. 2019, <https://www.graham-whitakerleather.com/#/custom/>. Accessed 29 April 2020.

Introduction.

At the end of my second year at university I started a project that utilised the fibres in fruit and vegetables to create a meshed material that could be sewn and turned in to leather like accessories. My main intention with this project was to offer an alternative material to leather and prove there is no need to harm animals to create products and accessories.

However, when searching on Instagram I came across a statement that made me think about the impact of vegan leathers in terms of creating waste (the statement is on the opposite page). Around this time I became a vegetarian, now I was not funding the meat industry, but I continued to put my money in to the cattle ranching industry by buying leather goods, an equal contributor in funding the destruction of rainforests, in particular the Amazon.

Quite soon after in the summer of 2019 the news was saturated with devastation caused by the fires in the Amazon; upon investigation, it was clear they were caused by farmers clearing space for cattle ranches and soy plantations to feed them. 72,000 fires spread across the Amazon in 2019 alone. This raised a great deal of awareness and many brands stopped purchasing leather reared in regions that are linked to deforestation and instead worked with suppliers with strict regulations and guidelines. However it is not uncommon for the two types of ranches to work collaboratively to maximise profit.

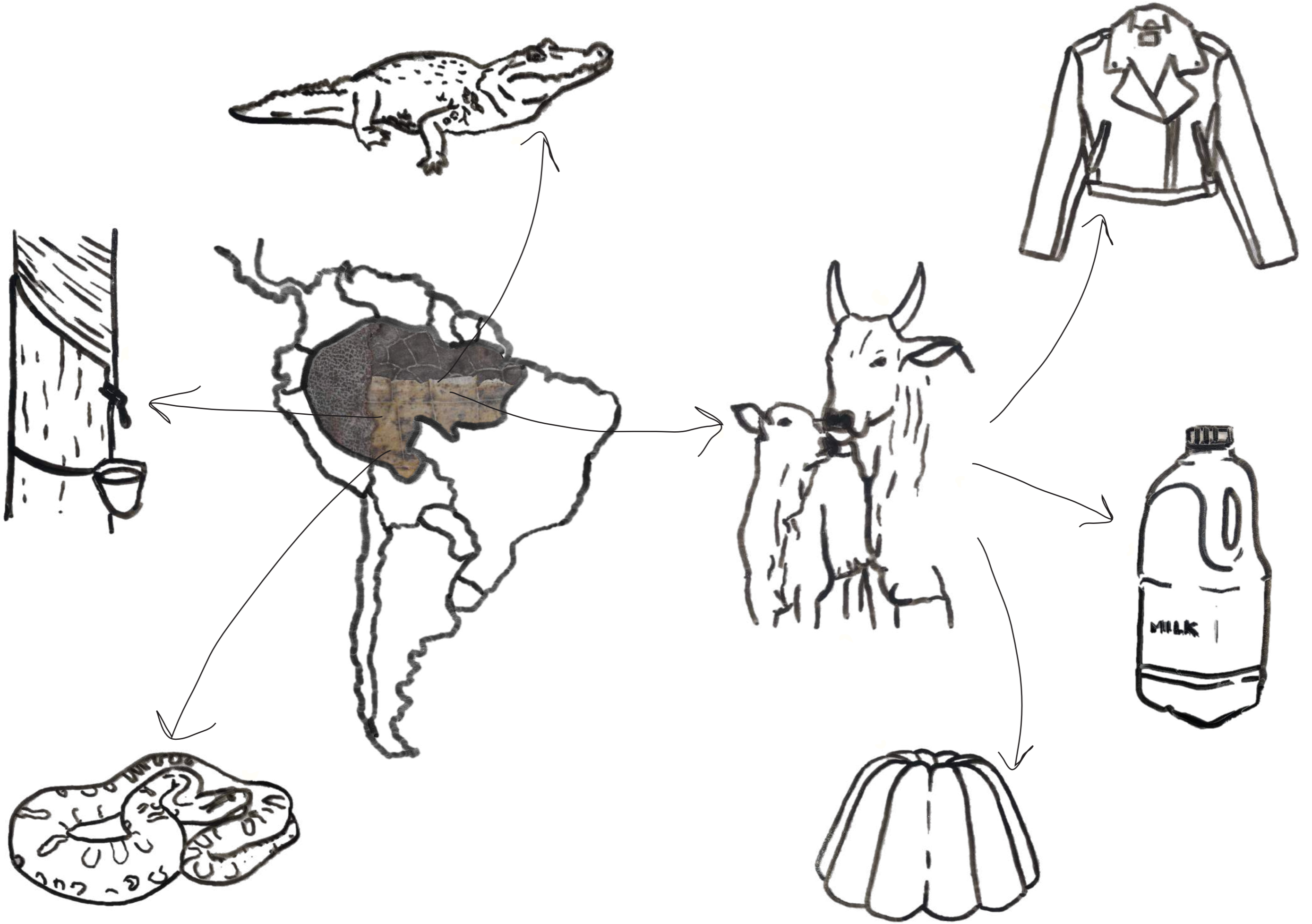
I began to think of way I can shine light on this topic by creating products that have a greater meaning to them, that could inform and educate the public. It was important the leather I used for this product was not contributing to the destruction of the Amazon or the native tribes and animals that inhabit the rainforest. Luckily, I gathered bags of scrap leather donated from local craftsmen that I could use instead.

This year I got to experiment with materials and get creative with the offcuts I received, which I enjoyed thoroughly and am happy with the items produced. Sadly, due to COVID-19 my work is not quite yet complete, however I will illustrate my ideas to reflect my future intentions with this project.



“Consumers are eating more beef than they have in a decade, but due to the misinformation on the ‘sustainability’ of ‘vegan leather’, ANIMAL HIDES ARE PILING UP, sending durable material to landfill or incinerator”

@hollyrose.eco

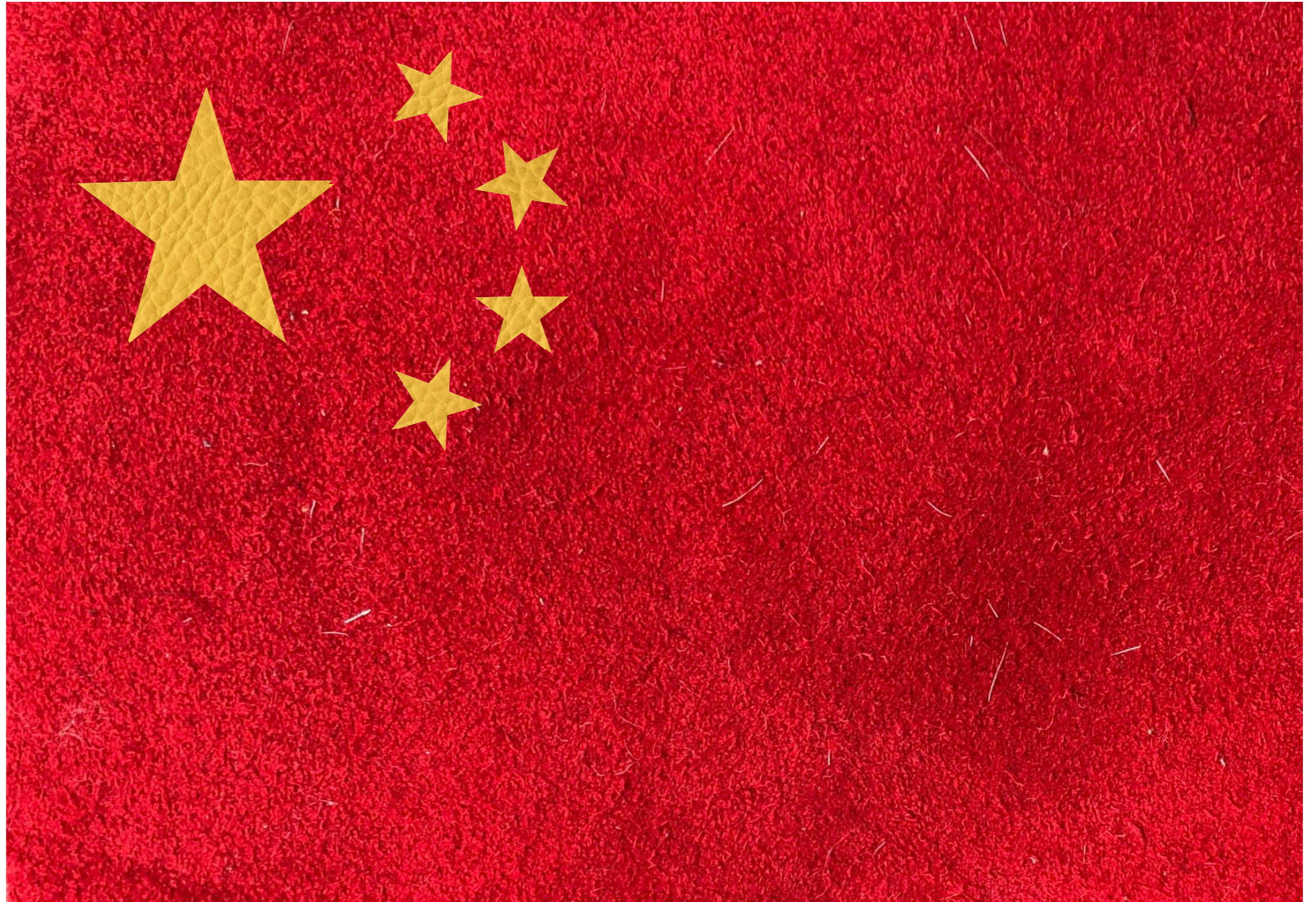




STATISTICS

Some of the statistics, facts and numbers I read whilst doing my dissertation and research for my making astounded me, and I thought that they shouldn't go unnoticed in this document. These helped shape my idea of the problem concerning the growing amounts of cattle, despite the amount of people choosing plant based diets, the meat industry is still growing. This is because of our ever growing global population and our increasing consumer demand for meat and its by-products. I have presented these statistics in the form of illustrations using leather scraps.

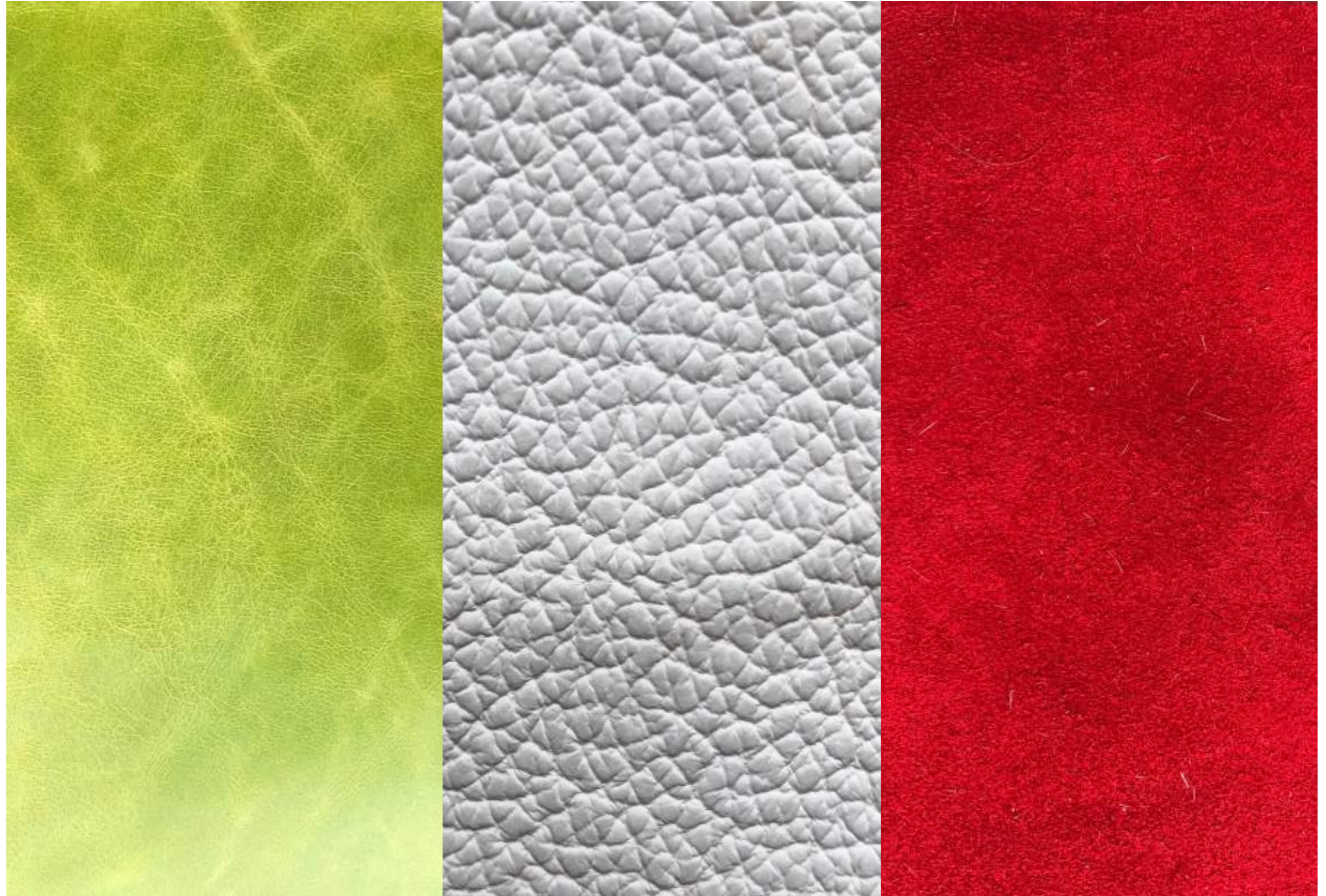
2,364.7
million
square foot
of bovine
leather is
produced in
china each
year.



1,832.7
million
square foot
of bovine
leather is
produced in
Brazil each
year.



1500
million
square foot
of bovine
leather is
produced in
Italy each
year.



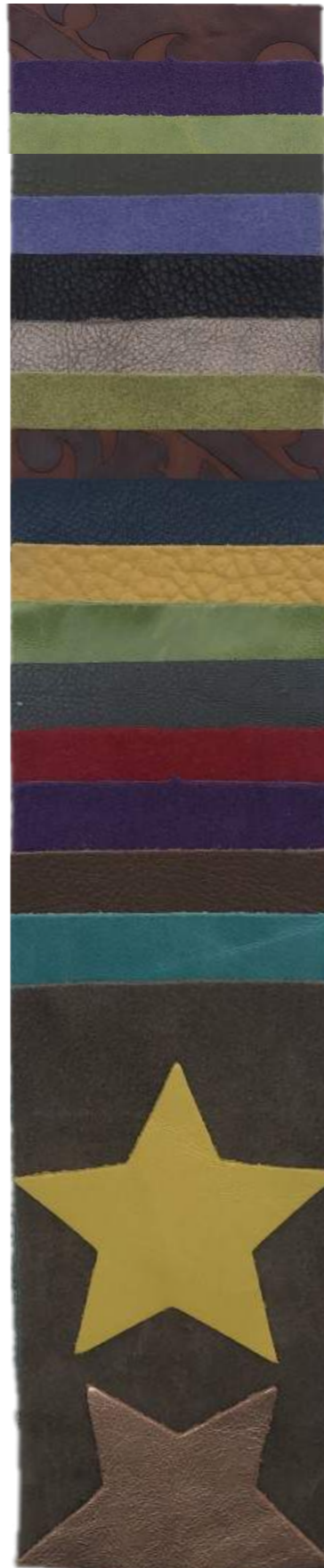
1400
million
square foot
of bovine
leather is
produced in
Russia each
year.



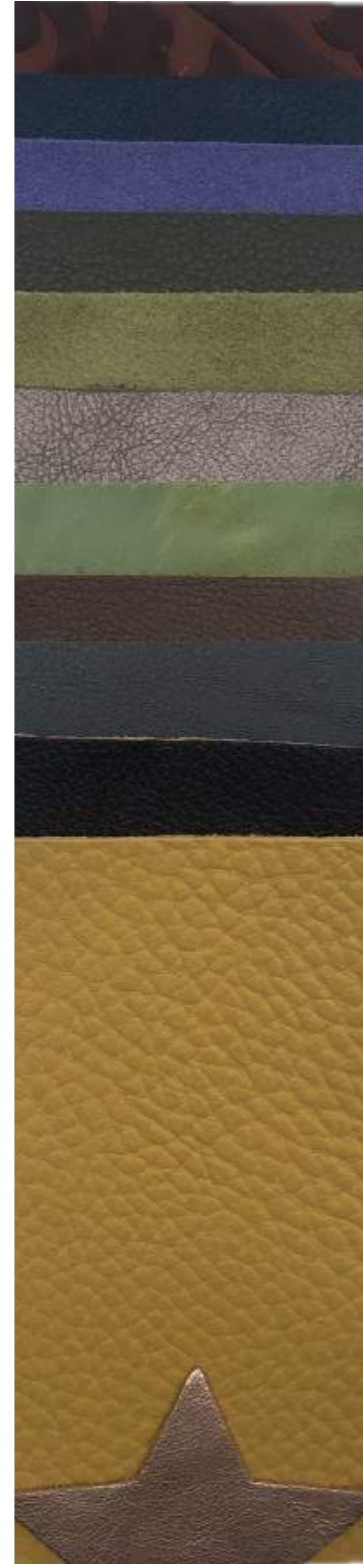
Brazil
211,764,292



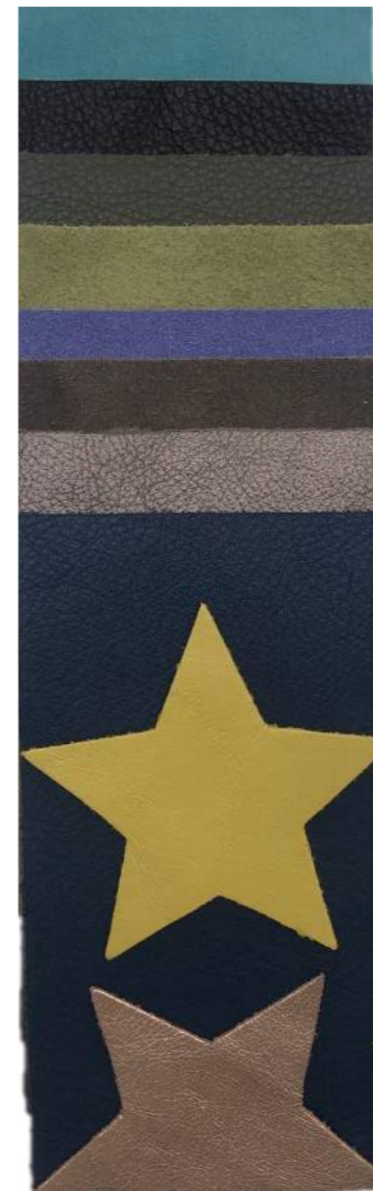
India
189,000,000



China
113,500,000



United States
89,299,600



Ethiopia
54,000,000



Countries with the highest population of cattle.

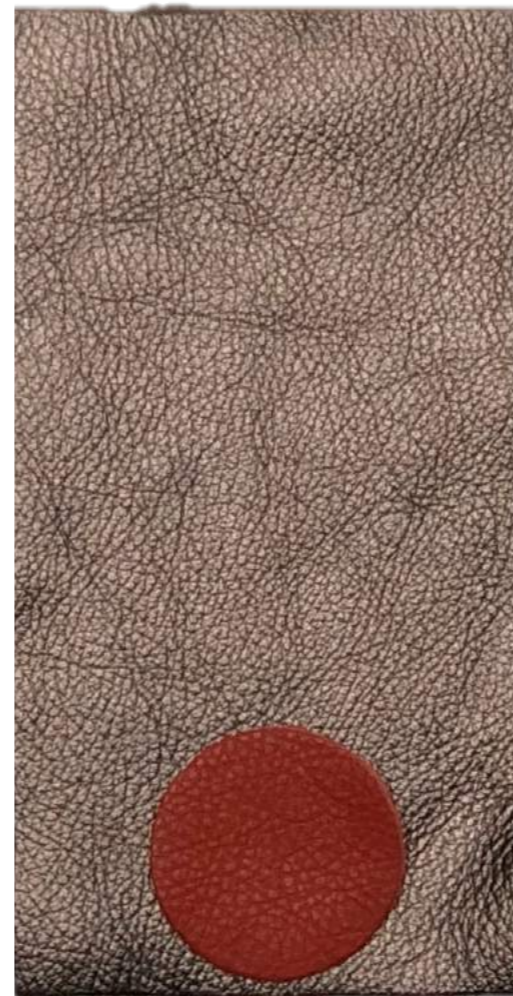
Shoe production
53.6%



Clothing
14.4%



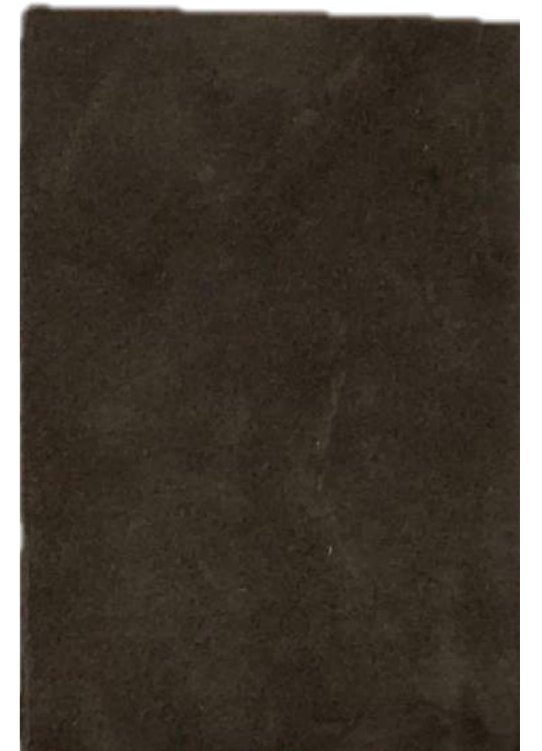
Furniture
13%



Car production
10.7%



Other
8.3%



REFLECTION

These graphics I have illustrated demonstrate the huge problem we have with cows and leather. In my opinion one of the worst affected areas in terms of cow population and cattle related issues is Brazil. This reinforces the need for my project to question how we can utilise the waste produced by the meat and leather industry, so there is less money being put into the ranching that negatively effects so many countries including Brazil.

SECONDARY RESEARCH

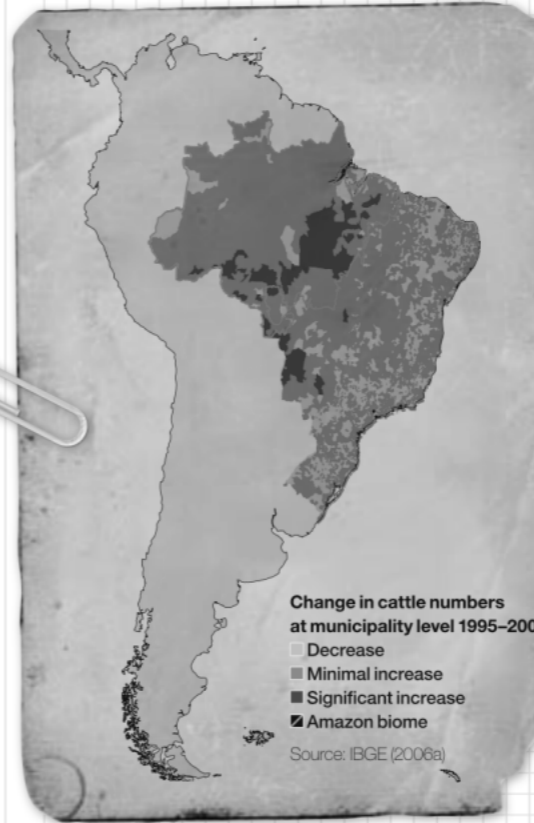
My secondary research really helped shape my ideas, due to my project exploring the leather industry in the Amazon. It was imposable to get primary insight to what is happing in the Amazon as I was unable to visit these places first hand. This has meant I have had to rely on research from journalists, brands, tribes people and ranchers. I have gathered informantion that helps explain why I chose to do this project and the approach I have taken.

I look in to the difference between linear and circular economies. This is very important in what I wanted to do with my materials, I wanted to avoid all linear design, this simply created more waste. I then explore businesses that apply these set of design rules.



In 2008, Greenpeace almost did completely change the meat and leather industry by creating an online publication spotlighting business and brands that supported deforestation linked ranches in the Amazon. Slaughtering the Amazon is filled with picture, facts and statistics that really would make any company mentioned in it sweat, brands like Nike, Adidas, BMW, VW and even M&S (& many more) belonged to the carbon disclosure list. Maybe if people had listen in 2008 we wouldn't have rain forest dominated by cows.

ii



THE BRAZILIAN GOVERNMENT IS BANKROLLING THE EXPANSION OF THE CATTLE SECTOR IN THE AMAZON

To aid Brazil's domination of the global market for agricultural commodities including beef, the Brazilian government is investing in all parts of the supply chain, from farm-level production to the international market.

BRAZIL IS OFFERING CREDIT WORTH \$41 BILLION TO FARMERS TO BOOST PRODUCTION.

In July 2008, Brazil's President Lula announced the 2008/2009 Agricultural and Livestock Plan, which made available \$41 billion in credit lines to boost agricultural and livestock production. 85% of this credit was designated for corporate agriculture.²⁵

CATTLE EXPANSION IS CONCENTRATED IN THE AMAZON REGION, WHERE LACK OF GOVERNANCE MEANS LAND AND LABOUR ARE CHEAP.

Successive reports by the World Bank, the Brazilian government and research institutes, and analysis by Greenpeace consistently conclude that cattle ranching occupies about 80% of all deforested land in the Amazon region.²⁶

The largest economic incentive for the expansion of Brazil's cattle sector into the Amazon is lack of governance:²⁷ contributing factors include corruption, disorganisation, limited capacity and lack of coordination between government departments.

Analysis by Greenpeace of 2006-2007 satellite data and forest clearance permits reveals that more than 90% of current Amazon deforestation was illegal.²⁸

GOVERNMENT LAWS ARE SET TO INCREASE THE AVAILABILITY OF LAND - LEGALISING INCREASED DEFORESTATION.

Land grabbing in the Amazon is rampant. Land titles in the Amazon region are in disarray, with the legal status of roughly half the area uncertain.²⁹

Rather than fixing the problem, a bill before the Brazilian Congress would reward land grabbers by giving them property rights for illegally occupied land.³⁰

A second bill³¹ before the Brazilian Congress proposes to more than double the percentage of forest that can be cleared legally within a property.

If passed, the effect of both these bills would be to legalise increased deforestation.

BRAZILIAN CO2 EMISSIONS BY SECTOR

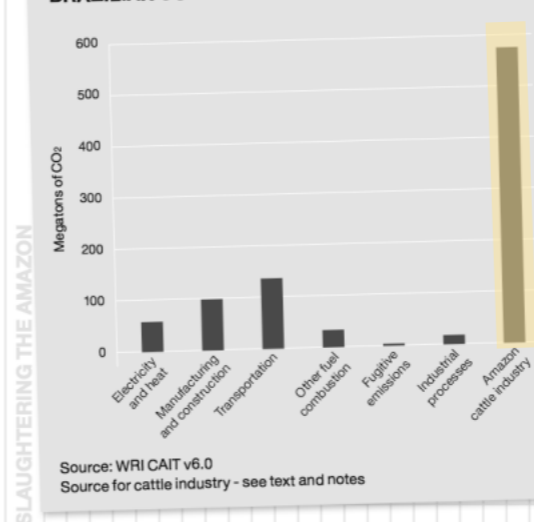


Image and Artical: Greenpeace, Slaughtering the Amazon, 2008. <https://www.greenpeace.org/usa/wp-content/uploads/legacy/Global/usa/planet3/PDFs/slaughtering-the-amazon-part-1.pdf>. Accssesed 1 may 2020

How beef demand is accelerating the Amazon's deforestation and climate peril

Brazil's cattle ranchers are clear-cutting and burning the rainforest amid a surge in beef exports.

The shrinking Amazon

Percent of 1970 extent of Brazilian Amazon forest remaining



Source: Brazil INPE via Mongabay

THE WASHINGTON POST



By Christopher Ingraham

August 27, 2019 at 12:28 p.m. GMT+1

There are approximately 1.5 billion cows in the world, a population second only to humans among large mammals. They can be raised anywhere: from the Arctic to the equator, on prairies, in deserts and on mountains.

Cattle ranchers in the Brazilian Amazon — the storied rainforest that produces oxygen for the world and modulates climate — are aggressively expanding their herds and willing to clear-cut the forest and burn what's left to make way for pastures. As a result, they've become the single biggest driver of the Amazon's deforestation, causing about 80 percent of it, according to the Yale School of Forestry & Environmental Studies.

The ecological devastation is done in the service of the surging demand for beef. About 80 percent of Brazil's beef is consumed domestically, said Nathalie Walker, the director of the tropical forest and agriculture program at the National Wildlife Federation.

1 Ingraham, Christopher, 'How beef demand is accelerating the Amazon's deforestation and climate peril', Washington Post. 27 Aug 2019. <https://www.washingtonpost.com/business/2019/08/27/how-beef-demand-is-accelerating-amazons-deforestation-climate-peril/>. Accessed 2 May 2020.

1



The Nelore Cow, more than 210 million populating the Amazon



Nellore cows are a hardy breed of cow that can withstand high temperature, and can thrive on little water and poor foraging. The most striking part of the cow is its hanging neck with rippling folds, this will maximise the leather yield per cow... and the neck almost resembles a hand bag already. These cows are not native to the rainforest and were moved from India to the Amazon in 1898.

Looking Into The Sustainability Of Vegan Leather Vs. Animal Leather

Leather has a controversial history in the apparel industry and brings up a lot of questions concerning sustainability. Should we do away with it altogether or find a compromise somewhere in the middle? When we examine just the environmental impact and ask if leather or vegan leather is better, it's complicated.

There are several factors to consider when evaluating both options: animal welfare, waste, greenhouse gas emissions, water usage, and more to provide a fair analysis of leather and its alternatives. Below, I'll tackle some of these questions to provide clarity into both industries.

ANIMAL LEATHER

While global meat consumption will likely decrease, it's hard to imagine a near future where the meat industry no longer exists entirely. If there is a meat industry, an argument can be made that it's wasteful not to have a leather industry as leather is a by-product of it. Otherwise, animal hide would likely wind up in landfills.

The meat industry in its current state is far from sustainable or ethical as a whole. It's one of the largest pollution sources of greenhouse gases and animals are often confined to terrible conditions. Globally, the meat-industry accounts for 14.5% to 18% of all human-created greenhouse gases emitted each year, which should be considered when debating leather's sustainability. While there are ranchers doing their best to farm ethically and sustainably, this will have to increase a lot to mitigate the environmental footprint of animal agriculture.

In order to create leather, it has to be tanned so the hide doesn't rot. The most common method is chrome tanning and requires the hide be placed in a chromium salt bath—which is highly toxic. When the remaining toxic water is disposed of, it can wreak havoc on aquatic ecosystems and even negatively impact human health. A better nontoxic option is vegetable tanning, an ancient practice that uses naturally-derived plant chemicals to purify the hide; however, this is less common.

Some of the benefits of leather are that it's durable, long-lasting, and biodegradable, while common vegan alternatives (detailed below) usually are not.

Leather can be considered a slow-fashion material because of its ability to withstand wear and tear and last in your closet for longer than less quality materials. Its biodegradability will allow it to break down sooner once discarded, without releasing many harmful chemicals into the soil.

“Leather can be considered a slow-fashion material because of its ability to withstand wear and tear and last in your closet for longer than less quality materials”

VEGAN LEATHER

With animal welfare and the environment up for question with traditional leather, vegan leather is on the rise. In fact, the vegan leather industry is predicted to be worth \$85 billion by 2025. Animal rights organizations, like PETA, have taken the stance that no animal byproducts should be used in manufacturing clothing and accessories. You can avoid these animal welfare concerns entirely by opting against real leather, just like people opt against fur. However, there are some major environmental concerns to consider with these alternatives.

“Synthetic fibers from clothing are the biggest source of microplastic pollution in the ocean.”

Unfortunately, the most common leather alternative is a petroleum-based plastic that come with the same environmental problems as other synthetic materials. This material is called polyvinyl chloride, (PVC), which is made with fossil fuels—and it's not biodegradable. Synthetic fibers from clothing

are the biggest source of microplastic pollution in the ocean and more than 70 million barrels of oil are used to make polyester every year.

When you consider the negative environmental impact of extracting fossil fuels, using chemicals, non-natural dyes, and excessive amounts of water to create a non-biodegradable plastic leather the environmental friendliness of the majority of faux leather is concerning.

NON PETROLEUM-BASED VEGAN LEATHER

So, how can you avoid animal byproducts and plastic-leather alternatives? Thankfully, scientists are using innovative solutions to create plastic-free vegan options from mushrooms, kombucha-cultures, and even pineapples. You can read about a few of these vegan options here.

These plastic-free vegan alternatives may still use some petroleum-based products to hold the fibers together, but it's significantly less than that used in PVC leather. One of the most popular innovations is Piñatex, a pineapple leather currently used in brands such as Hugo Boss, Po-Zu, Votch, and Nae.

“Scientists are using innovative solutions to create plastic-free vegan options from mushrooms, kombucha-cultures, and even pineapples.”

There is a strong argument about the sustainability of both leather and vegan leathers. If both are done unsustainably they are catastrophic for the environment and its biodiversity. I'm a vegetarian and I still wear leather, and my argument is because I don't want plastic shoes or a bag that have had adverse effects to the world due to the source coming from crude oil. In addition, plastic leather alternatives do not last anywhere near as long as the real thing, and this means you have to re-purchase items far more frequently than you would if they were made from leather. But saying this, leather can be equally as harmful to the environment.

Thomas, Leah. 'Is vegan leather a more sustainable option? The answer is complicated'. <https://www.thegoodtrade.com/features/vegan-leather-vs-animal-leather>. Accessed 1 May 2020.

Consumers are eating more beef than they have in a decade, but due to misinformation on the 'sustainability' of 'vegan leather', **ANIMAL HIDES ARE PILING UP**, sending the durable material to landfill or incinerator.

@HOLLYROSE.ECO



IN FASHION & AT HOME, IS VEGAN THE SAME AS MORE SUSTAINABLE?

An increasing amount of brands are launching vegan 'leather' and 'wool', and these affect the planet in a very different way from a vegan diet.

@BEFORCHANGE

Be for change were defiantly a catalyst into creating my third-year project, the facts and statement on their Instagram really do make you think about the importance of using leather. The brand ethos has taught me how to be sustainable when using lather as a product, for example using scraps and not putting money into the ranching industry. They get their off cuts from car manufactures that

look for the perfect piece of leather to uses for upholstery, so any leather with discoloration, scars or marks would be sent to land fill despite being a full hide sometimes. Be for Change then take this leather of them free of charge to make new product from, eliminating waste! The facts they post are astounding.

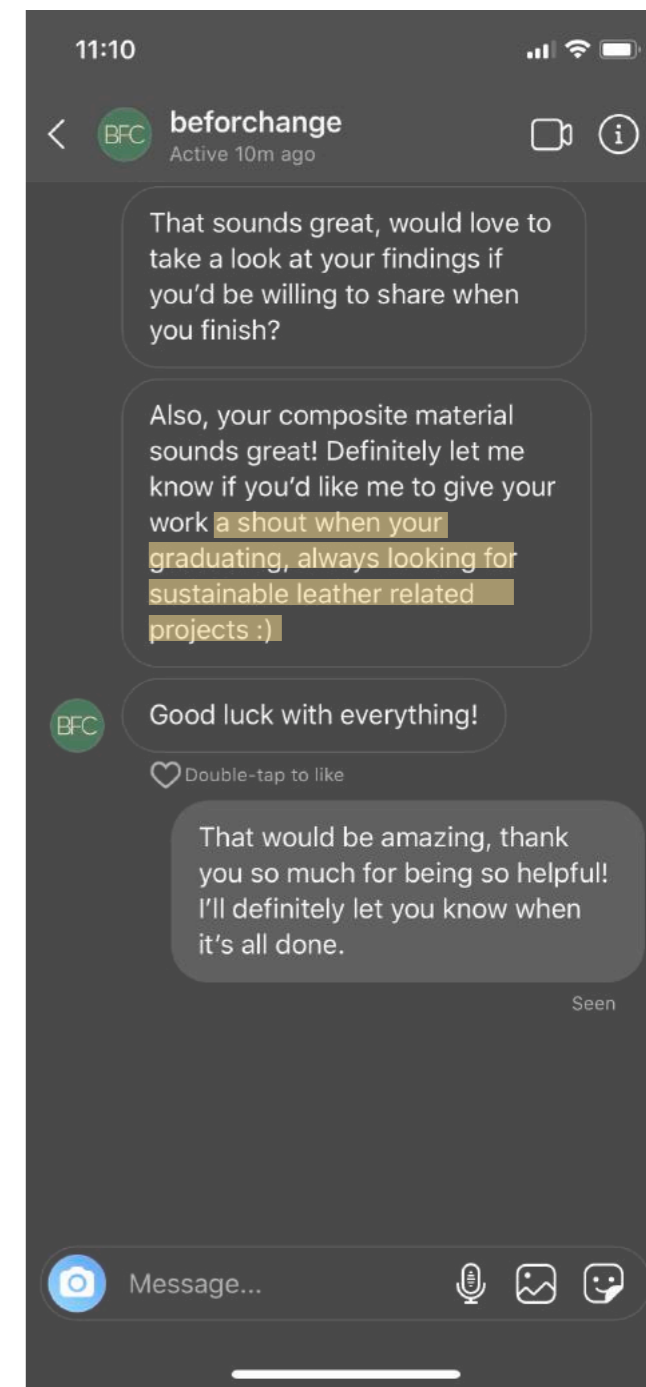
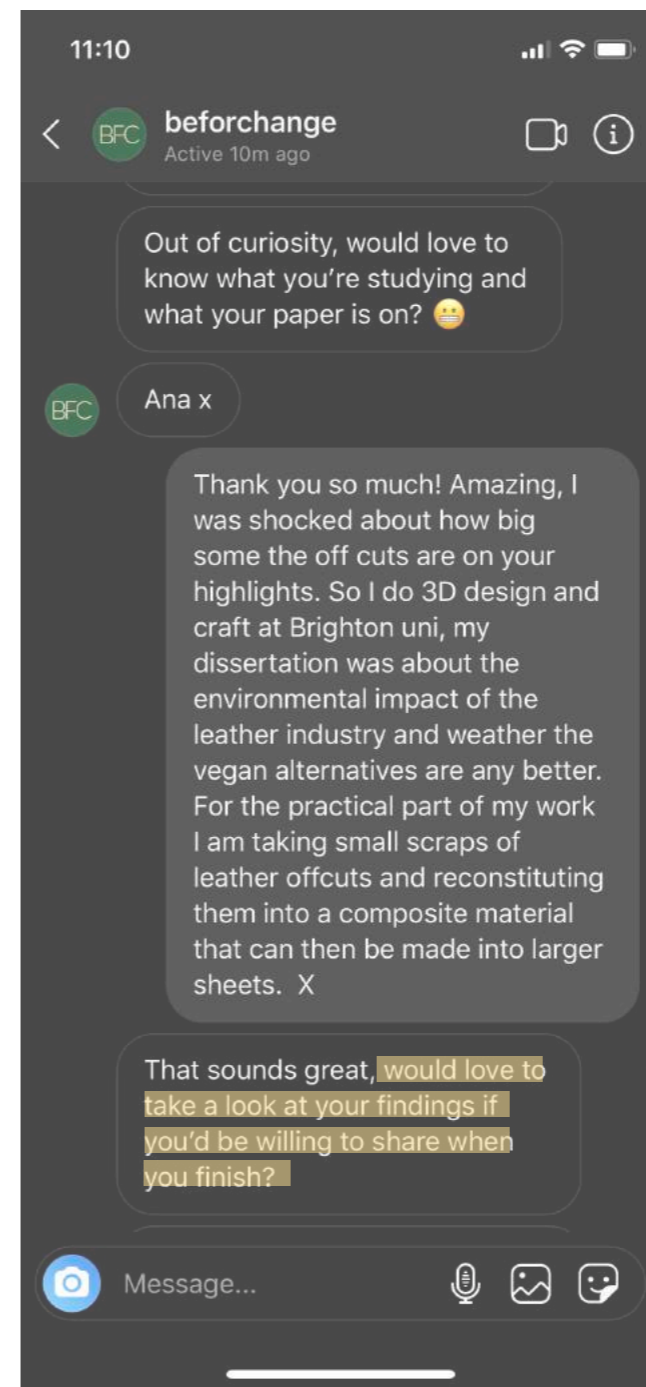
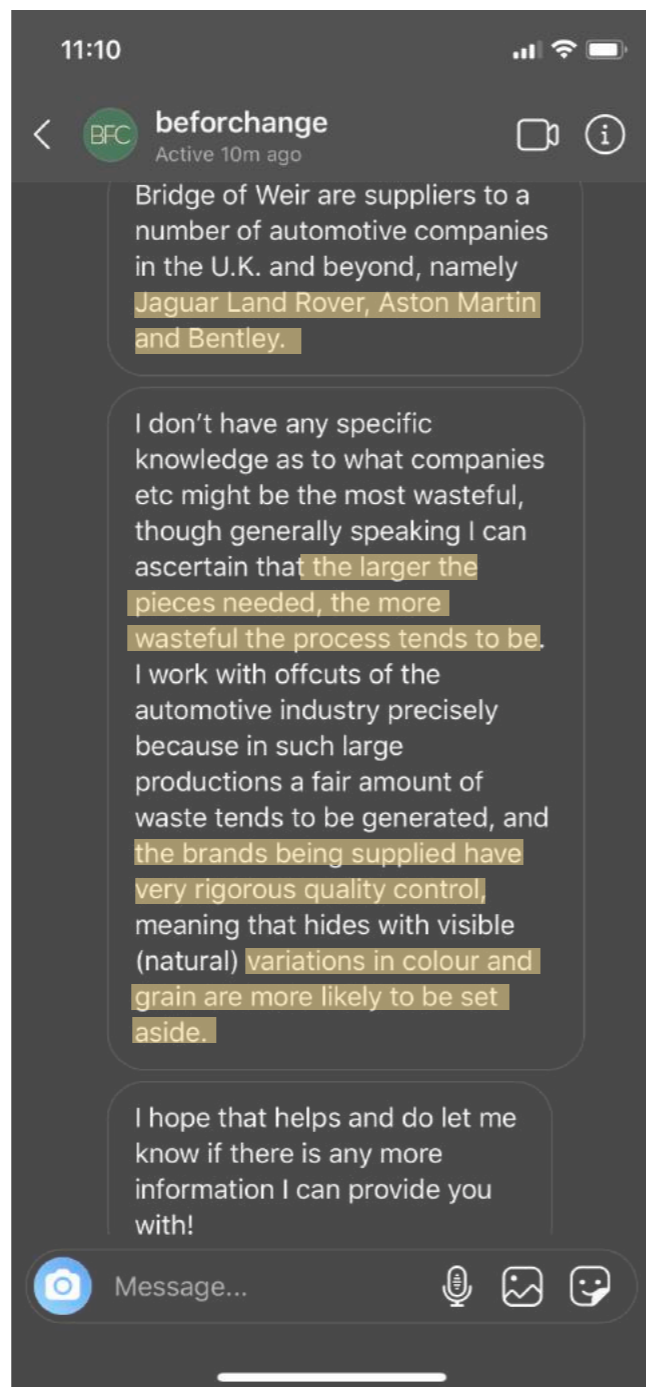
Allimages-@beforchange, Instagram, <https://www.instagram.com/beforchange/?hl=en>. Accsseed 25 April 2020.



Every year, over 800,000 tonnes of leather are thrown away **THAT'S THE WEIGHT EQUIVALENT TO 30 TITANICS!**

@BEFORCHANGE



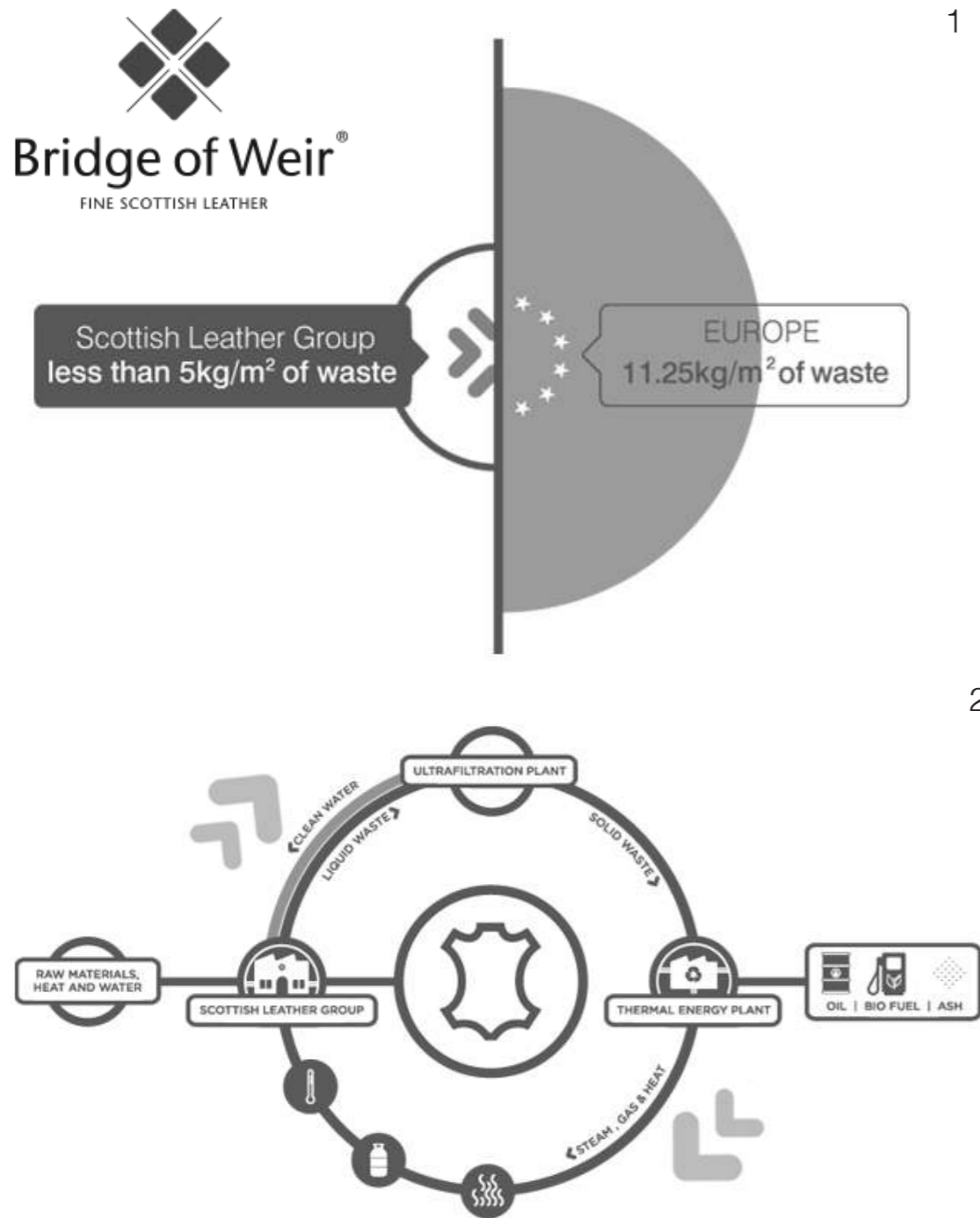


Because they are a relatively small independent company I thought my chances with communicating with them was quite high, luckily, I was right. I got in touch with them to find out where they get their leather and if any brands are particularly bad with waste. The rule of thumb is the bigger the work the more waste that is created. And due to the leather they get coming from high end car production such as Jaguar, Land Rover, Aston Martin and Bentley their quality checks are far more thorough and selective, meaning more leather will end up on its way to landfill.

Convosation with @beforchange on Instagram.

Circular economy and Sustainability.

Bridge of Weir, part of the Scottish leather group are suppliers to Jaguar, Land Rover, Aston Martin and Bentley. All the leather they use is British, this keeps their carbon foot print lower than if the leather was from China or Brazil. They are also far better with dealing with waste and reducing water consumption. Any leather that does pass quality control gets given to brands like Be for Change, to create new products.



I plan to make a material that is a solution to waste, already this means my products are not linear. Because my materials are made to utilise waste, last a long time and can be repaired or recycled, means my process is Circular, and far more sustainable than other leather waste alternatives like PVC bonded leather that will not be able to be used again.

Linear

Take
↓
Make
↓
Use
↓
Waste

Circular

Take
↓
Make
↓
Use
↓
Repair
↓
Reuse
↓
Recycle



1 & 2 Bridge of Weir, Sustainability. <http://www.bowleather.com/Sustainability/Zero-Waste.aspx>. Accessed 10 May 2020

PRODUCTION FLOW OF RECYCLED LEATHER



10 years ago, recycled leather was only used as a reinforcing material in shoe soles, furniture trim and the middle layer of belts. It was a product that had limited applications due to being brittle. Aron Yu, reinvented this material to be strong and soft in comparison to what recycled leather was like. Recyc Leather uses leather waste from produced by other companies, this gets collected, handpicked, shredded, then combined with a natural bonding, lastly surface finished in huge rolls. They describe themselves as eco-friendly, targeting a more socially and environmentally aware clientele.

About, Recyc Leather. <http://www.recycleleather.com/about/>. Accessed 12 May 2020.

Billie Van Katwijk
Cow stomachs

In 2107 Graduate Billie Van Katwijk created a way of turning bovine guts into leather like handbags. On her visit to a slaughter house she discovered that this part of the cow is normal thrown away or turned into dog food, Katwijk could see the potential, "But I think it's really amazing, and I want to bring it out and show it's a useful material that has all the properties of leather". She wanted to celebrate the textures, and due to cows having four stomachs, mean four different textures.



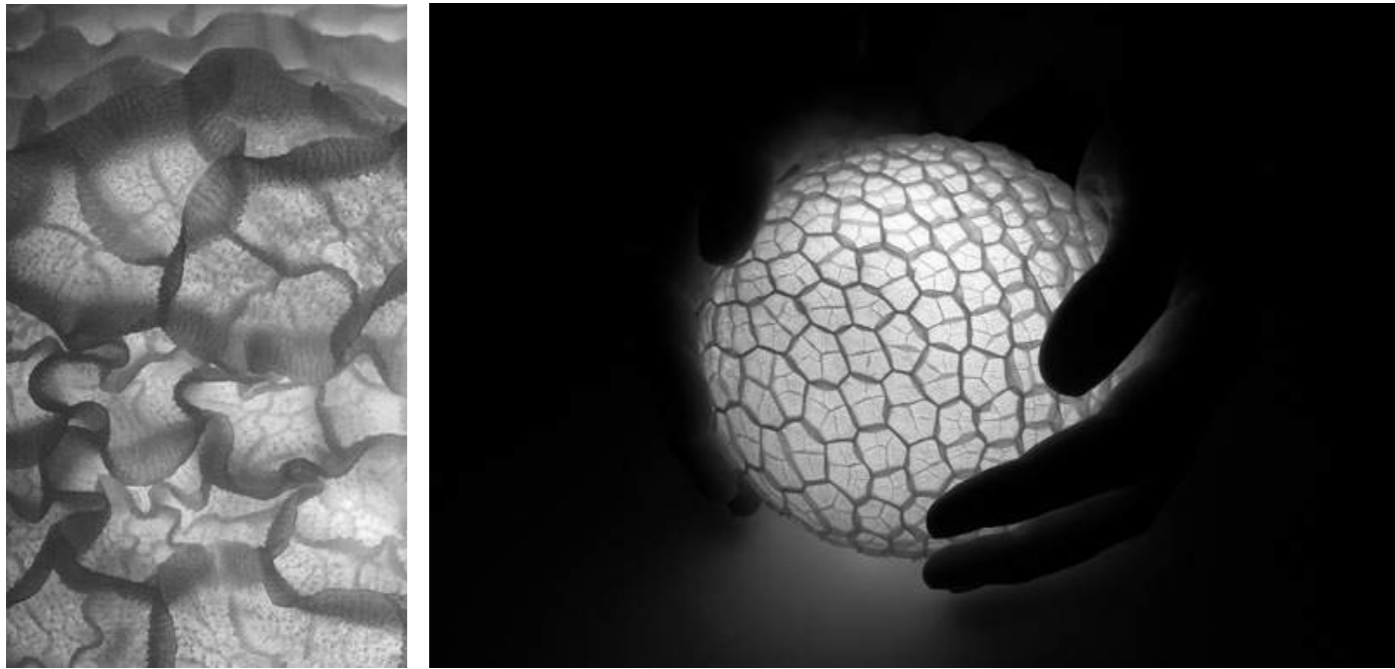
Morbey, Alice. Cow stomachs into leathery material, Dezeen. 23 Oct 2017. <https://www.dezeen.com/2017/10/23/billie-van-katwijk-cow-stomachs-leather-like-material-bags-design-academy-eindhoven-dutch-design-week/>. Accessed 12 May 2020.

Julia Lohmann
Cow Stomachs & leather

Lohmann is a designer and researcher that investigates system values of ethics and materials. Below are two examples of different projects that consider how consumers interact and view materials.

Ruminant Bloom (Top) are lights made from preserved cow stomachs that look like billowing warm lace, however when you find out about the material your opinion might change from beautiful to disgust.

Cow Benches (bottom) looks into the thresholds of animals and material. The bench reminds us that leather is in fact from a once living cow and not just a material.



Lohmann, Julia. Ruminant Bloom, 2004 <https://www.julialohmann.co.uk/work/gallery/ruminant-bloom/>. Accessed 14 May 2020

Lohmann, Julia. Cow benches 2005. <https://www.julialohmann.co.uk/work/gallery/cow-benches/>. Accessed 14 May 2020



Jorge Penades
Leather off cuts



Morby, Alice. Jorge Penades creates furniture from leather waste. 16 Jun 2015. <https://www.dezeen.com/2015/06/16/jorge-penades-creates-furniture-from-waste-leather/>. Accessed 14 May 2020

Jorge Penades set out to create a material that utilised leather scraps after becoming aware of the amount of waste that is created by the car, fashion and shoe industry. He makes furniture from his leather composite, so it needs to be strong. When he was researching, he was shocked that resin was the only thing being used to make a material like this, causing more bad than good. In response to this he created an animal bone glue, also a by-product of the meat industry.

Nick Gant and Tanya Dean
Material meaning

Community 21, Elevating the social and cultural value of waste. https://community21.org/casestudies/16086_re_making_material_meanings. Accessed 14 May 2020.



Minor's Miner's Clogs' was a part of Gant and Deans 'Sole-Searching' project, where they explore and research waste material and change the way people think about a pair of shoes. The pair of infant sized clogs are far more than a pair of shoes, they have history and value to a place. 'These shoes symbolise the shifting landscape of use and valuation of (waste) material resources and their social, cultural and environmental impact.' The clog is made from apple wood, apple leather and coal, this is in response to outcome of the miners throwing apple cores in to piles of coal, years later an orchard grew from the deserted mines.

Zoe Rae
Material meaning

Zoe Rae was a graduate from 3D design at Brighton university in 2017, her final project was entitled 'Hunter Gatherer in the Anthropocene'. Rae's body of work consisted of five projects that focuses on the human relationships with an environment, they were a kayak, clothing, tools, cultural objects and an anthropological narrative; these were all made from waste such as milk bottles and flour bags. The work has an extremely strong narrative about Rae being a hunter gatherer in her local environment collecting mundane waste and applying them to products that feel rare and traditional.

Brighton Blogs, Graduates 2017: Zoe Jo Rae. <https://blogs.brighton.ac.uk/aadm/2017/06/07/graduates-2017-zoe-jo-rae/>. Accessed 14 May 2020



REFLECTION

There are brands and designers that I draw inspiration from, showing me how my materials should work and how they should be used. Similarly to them I have avoided linear design structures, this is to eliminate waste and avoid putting money into the burning of the Amazon. Greenpeace's documentary 'Burning the Amazon', although over 10 years old now still shines light on the detrimental affects the Ranching industry on the Amazon, they out brands that used lather from illegal ranches, these brands are huge and are almost all luxury brands; I have looked into this more, and brands like Louis Vuitton have only just started to support sustainably run ranches. There is still a question of how sustainable these actually are?

It was important I showcase my work with a narrative about leather roots in a specific location and value of waste that is created from the meat industry. The designers and researchers have all come up with a waste solution and I planned to do the same.



THE COW

Since I could not immerse myself in an experience of ranches in the Amazon, I chose a more local, cheaper and feasible approach to studying cows. I went on a walk with my dog Asha with the mission to find a herd of cows in their natural surroundings, I managed to find these quickly. I wanted to capture pictures of any branding mark, spray painted numbers, or ear tags that identified the cow to the farm. The cows that were there were curious of me, so I gathered a crowd of a bull and protective mother with their calves.

I am aware a small dairy farm in Stroud would be the polar opposite to a cattle ranch in the Amazon, however I got to see how the cattle are identified and how this differs to the cow in the Amazon.



IDENTITY





In the UK, most cattle live stock are identified with an ear tag, the identification indicates who the animal belongs, the cows mother and when it was born, they are installed soon after the calf is born. This process consists of a puncture being put through both cow ears, a painful process. There is a huge list of ways to brand live stock, fire (these are less visible so it doesn't ruin the quality of leather), freezing, chemical burning and even tattooing.

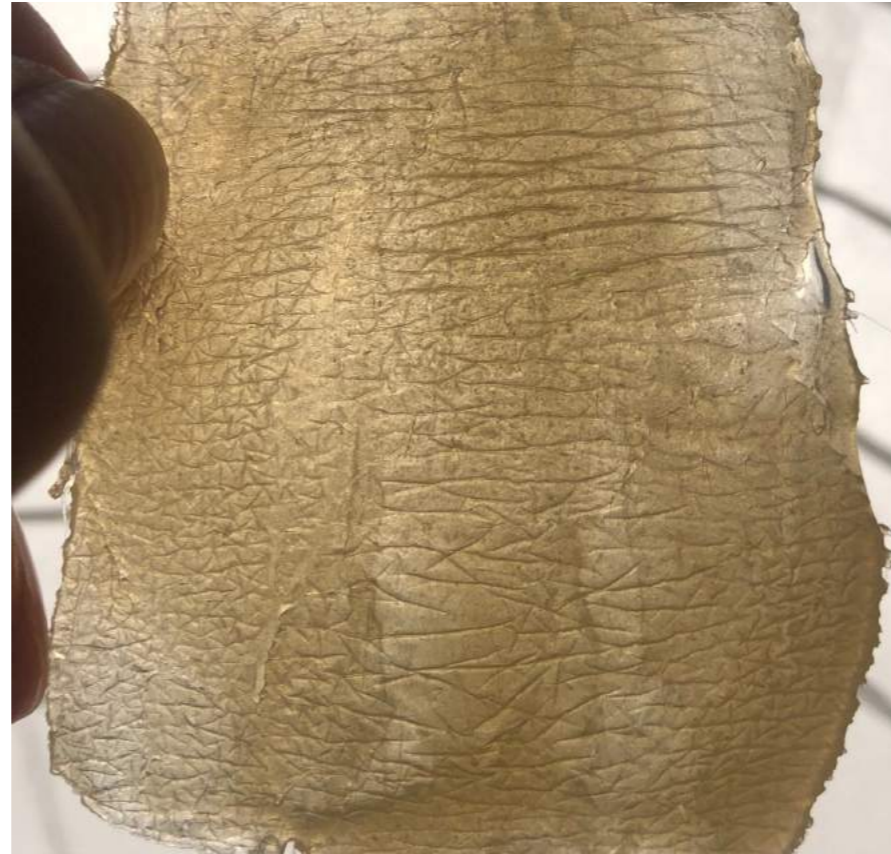
'By branding the animals, ranch owners are expressing the animals' legal condition as mere things, or as slaves'

Animal Ethics, Branding, <https://www.animal-ethics.org/animal-branding/>. Accessed 12 May 2020



ON THE FLESH

For my research trip, I decided to set up a waxing salon. The link between this trip and my project was about using a fibre and something to combine them with to make a material. Due to having leg hair that are blonde I needed a 'client' with hairier legs than mine, it was surprisingly easy to convince of my friends. Texture was something I wanted to explore, and I have very scared knees so I wanted to put this to the test and see if it could pick up the finest details in skin texture.



HEAT, MIX SMOOTH, RIP.

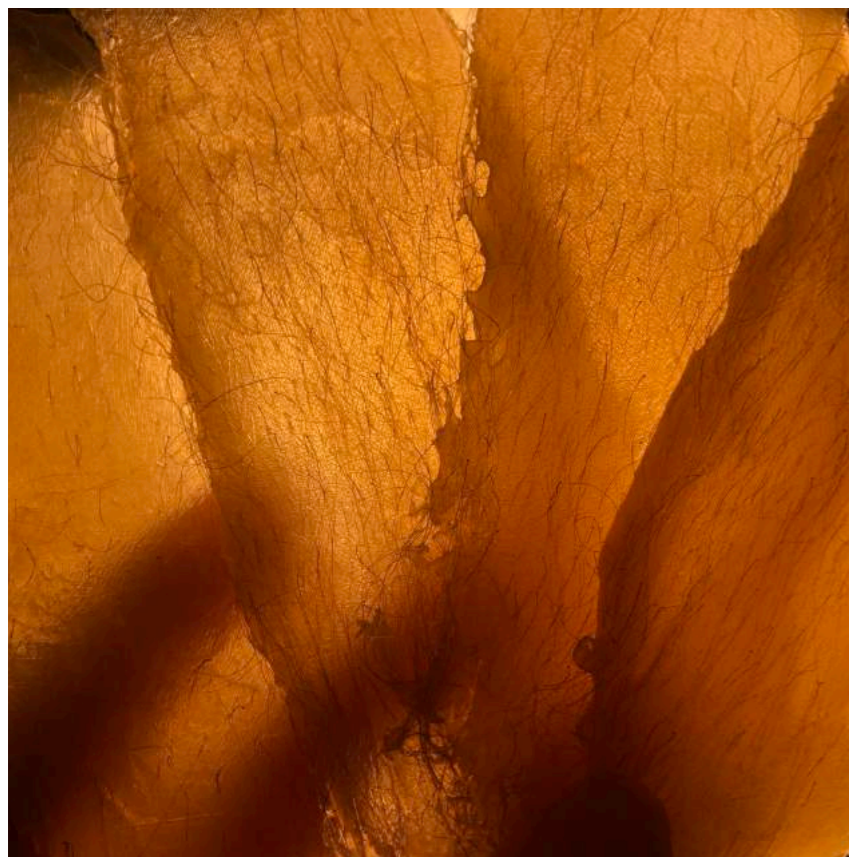
My research trip may seem far removed from the cattle industry in the Amazon. However, this was done when I had just started to develop my materials. When explaining my process of removing the hair like fibre that back a piece of leather and mixing it with a wet combiner to create a new sheet material, it was suggested it was similar to a waxing process. The waxing strips that where from my 'client' were very hairy and looked almost animal-like under the light, the frayed rough edges made it look organic and like skin had been ripped from something, a similar look to a lot of my rubber and leather materials edges. The wax could fall in to every crack and mark in to the skin, this is why the detail of my scar is crisp, this encouraged me more to look in to other skin textures of animals, and make moulds from them to use with my material.

Top left- Applying hot wax to my clients legs.

Bottom Left- Light though my clients removed strips.

Top right- Scar texture from my knee.

Bottom Right- My clients waxing strip.





MATERIAL RESEARCH

I have explored four different materials this year, two of which I created from scratch. I wanted each material to have a direct link to the Amazon whether this be native trees to the Nellore cow that have taken over the land. They also had to address some sort of waste issue, for example utilising scrap leather or eliminating some plastic waste.

The Materials;

Fruit & vegetables	58
Rubber	80
Gelatine	96
Milk bottles	114

FRUIT & VEGTABLES



At the end of 2nd year and the very beginning of 3rd year I thought I was going to continue to create a plant based leather alternative and commercialising it, developing it and creating new products. My motivation was addressing food waste issues, fruit and vegetables being the most thrown away food in household around the world, as well as being greatly discarded at the point of harvest for not meeting shop regulations. When I decided that this wasn't celebrating leather and creating waste of a strong usable material, I moved away from making leather alternatives from fruit and vegetable and instead using leather scraps.

I took away an understanding of the fibres found in fruit and vegetables and recognised how similar they are to the fibres you find in leather. They work in very similar ways, they both have a network of tangles and hair like structures that keep them together, I needed to mimic this to create a strong hard wearing material.

PAPYRUS PAPER



1

Chose fruit of vegetable and slice as thin as possible.

2

Transfer sliced fruit or vegetable to a saucepan and boil for 5 minuets. Drain.

3

In a flower press Lay out the slices, each one slightly overlapping the next so they can attach themselves to each other. Put on the top and bolt shut and place under heavy objects, this will remove water quicker.

4

Nuts
Flower press
News paper
Cotton
Fruit of veg
Cotton
News paper

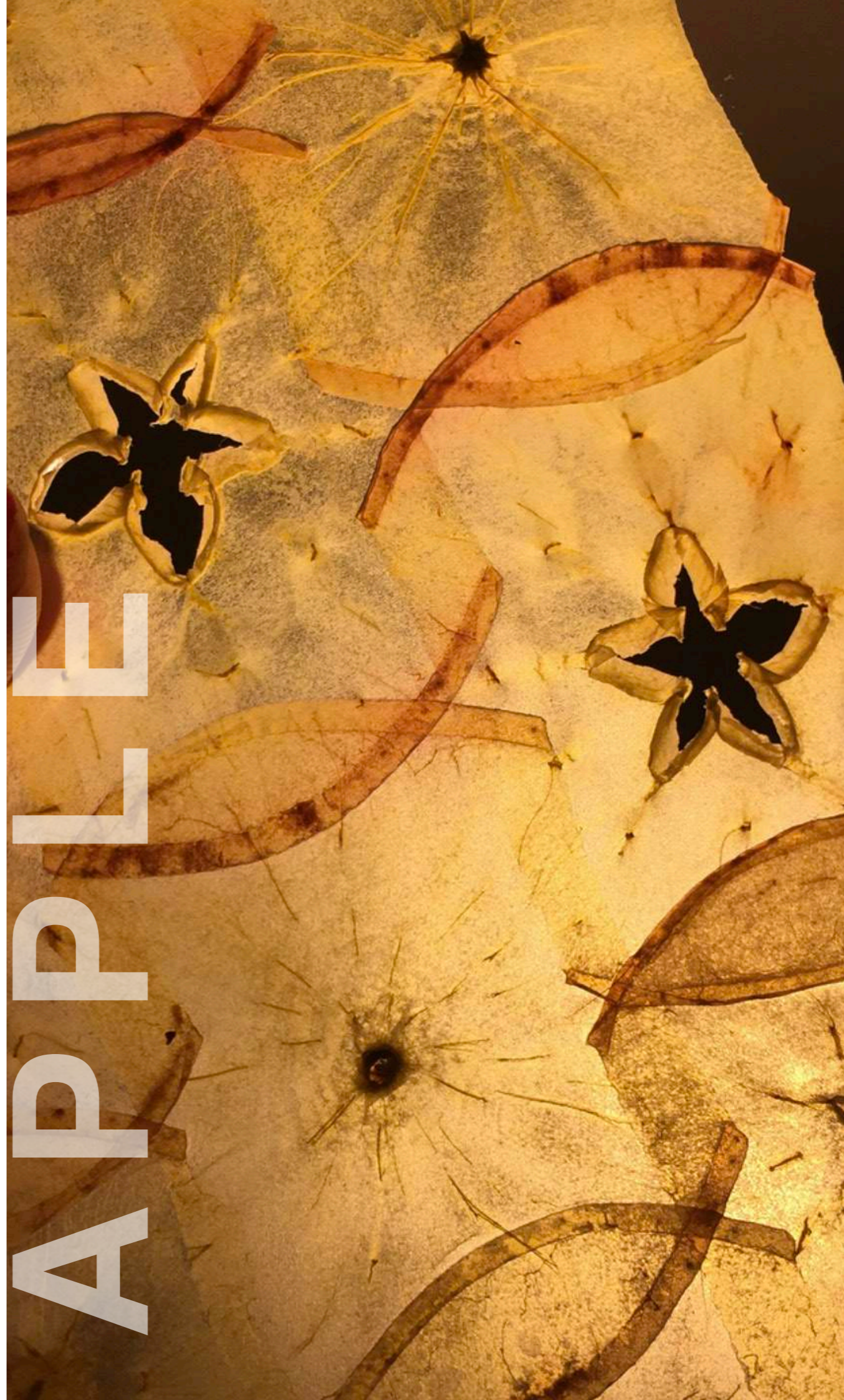
COURGETTE

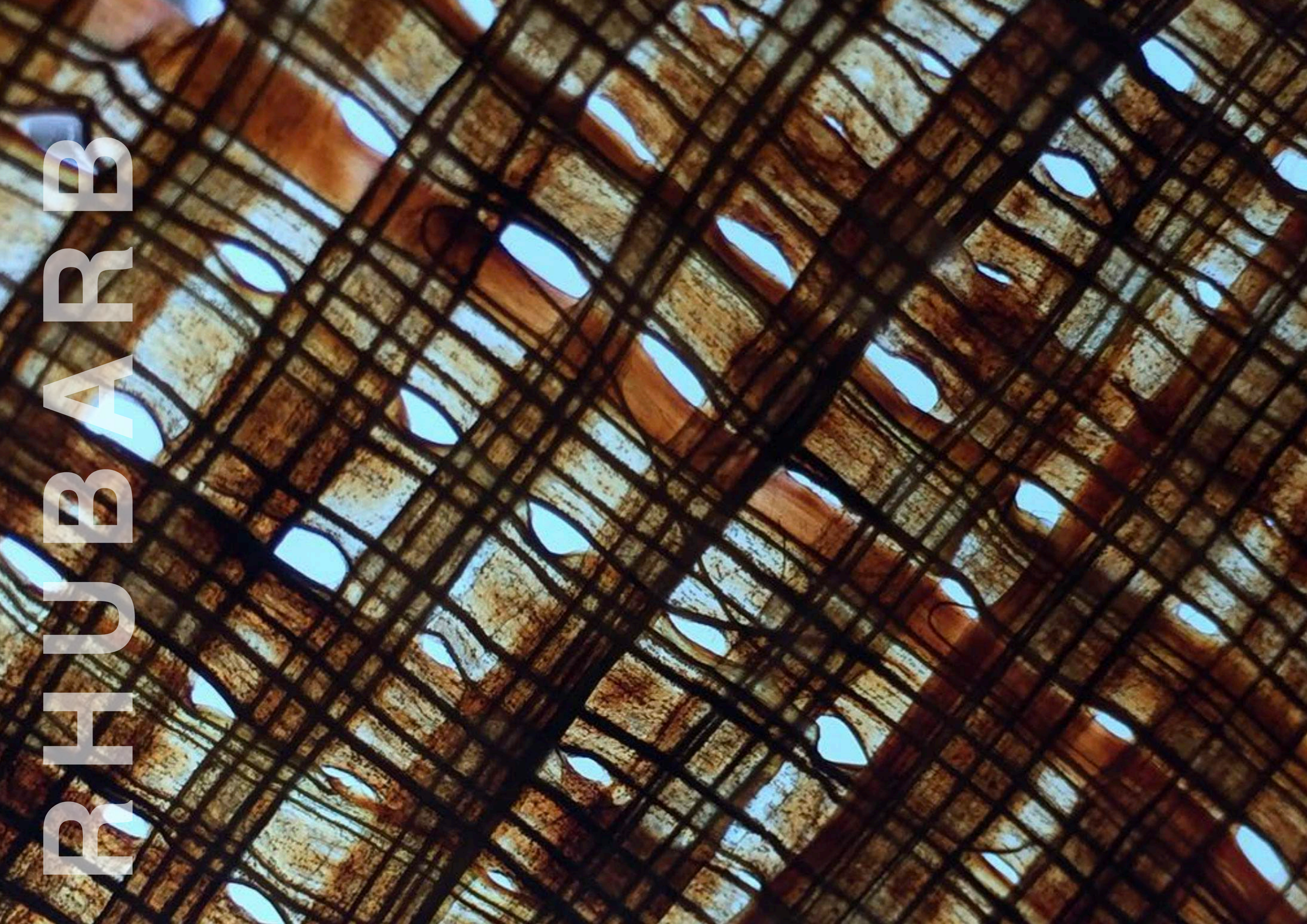


KIWI



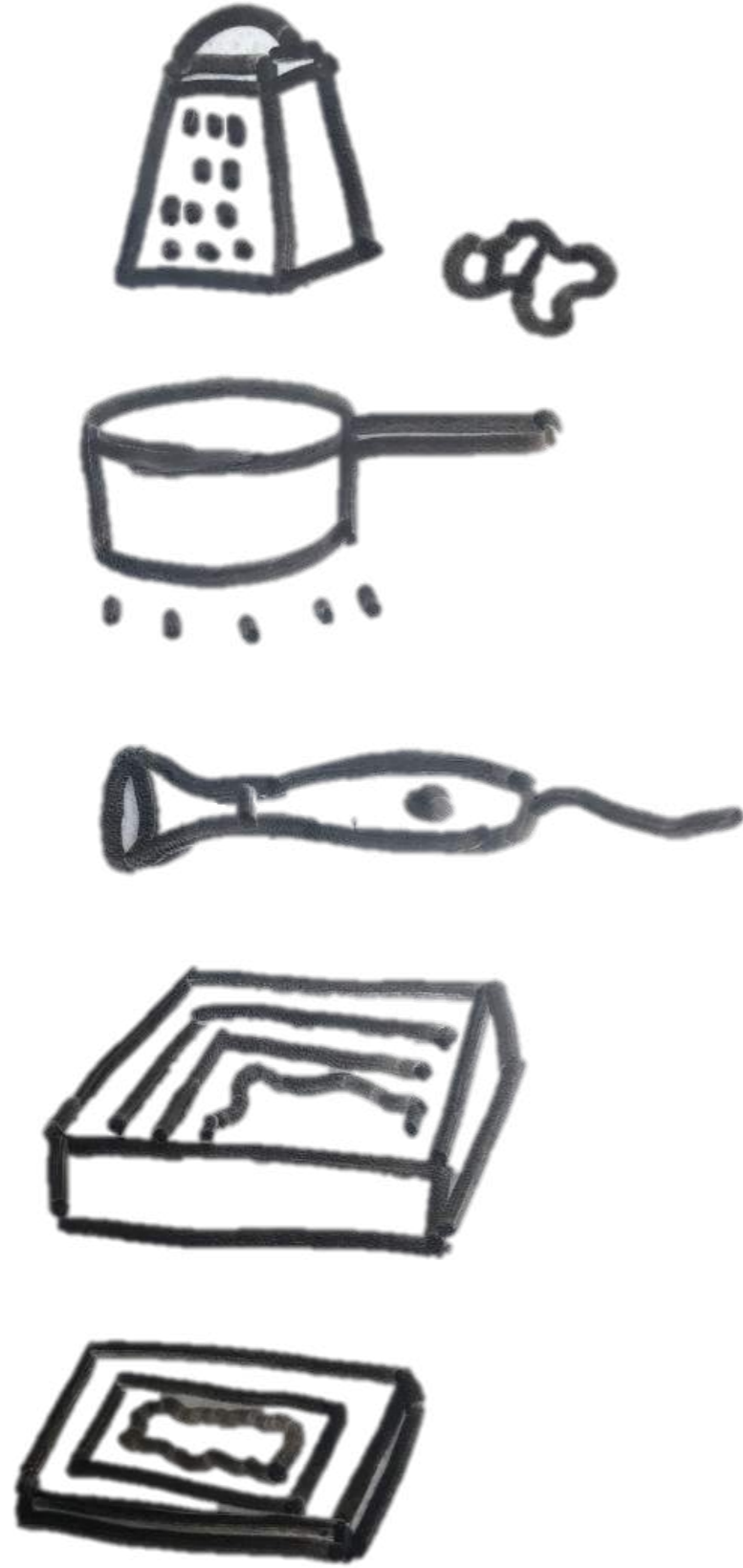
APPLE





ETHIOPIAN

FIBRE PAPER



1

Chose fruit or vegetable to make a sheet marital of, the more fibrous the better. Grate it all.

2

Place in a saucepan and add 50ml of water to help it stew down to mush.

3

Blitz with a hand blender to remove any big lumps.

4

Pour the fruit or veg mix into a metal mesh frame in a tub of water, like you would do if you were making paper. Lift the frame out and squeeze excess water out.

5

Transfer the sheet of fruit or veg on to a piece of cotton on top of a plaster bat. Then leave to dry for 3 days in a warm dry environment.



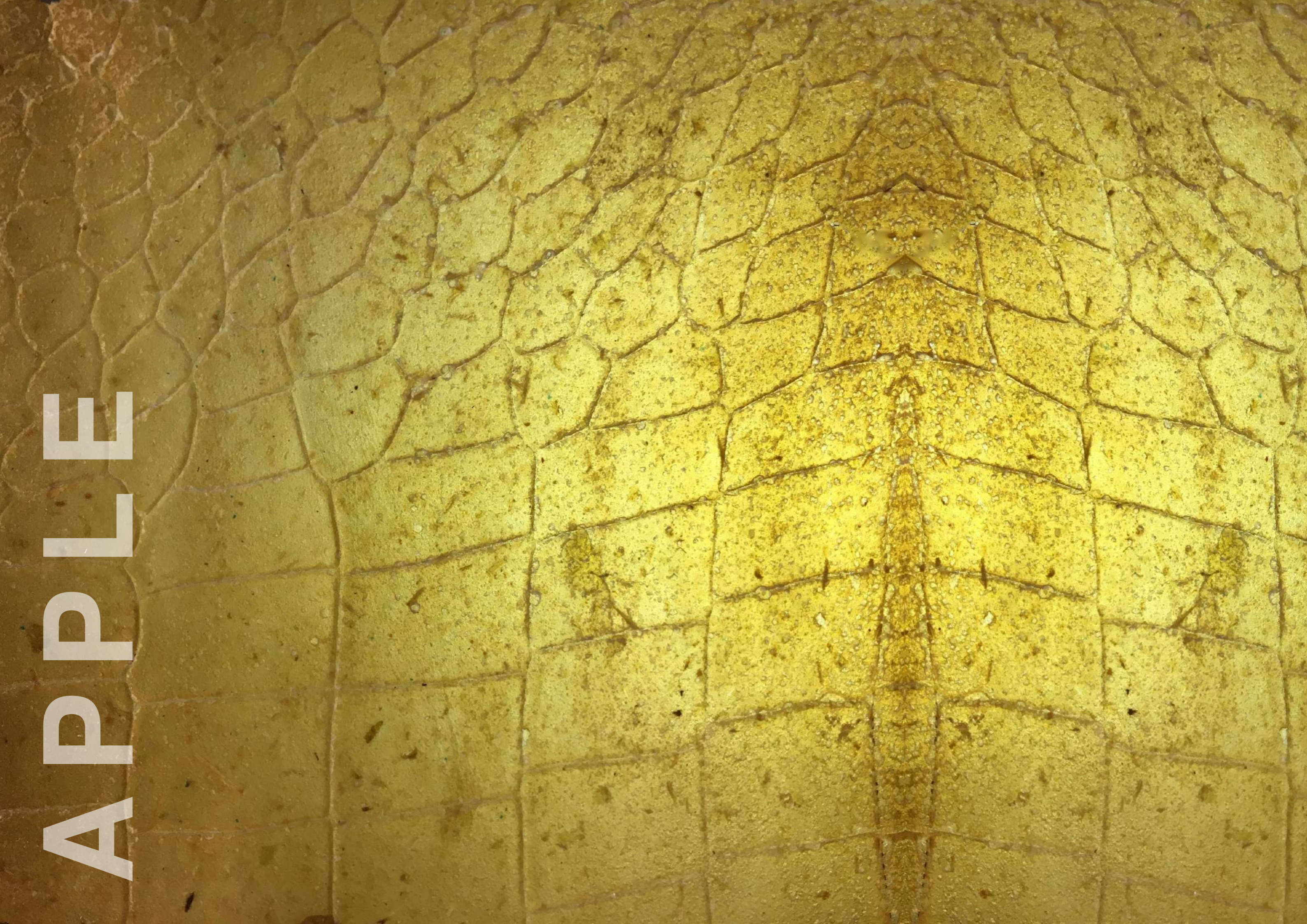
FRUIT LEATHER



- 1** . Chose a fruit, ones with a high sugar content van work better. Cut it in to chunks removing any pips or stones.
- 2** Put the fruit in a pan with a 50ml of water and stew the fruit down to mulch.
- 3** Take of the heat and blend till smooth, this is important if you want an even consistency of material.
- 4** Put the puree though a sieve to make sure there are no lumps. Catch what comes though into a bowl.
- 5** Evenly spread the puree on to a baking sheet or a textured silicone sheet and put in the oven on a low temperature till it has dried out.



APPLE



REFLECTION

Although I did not make anything from fruit or vegetables for my resolutions I did learn a lot; for example how to strengthen a material, and the importance of texture and how that makes a person feel. The fibre is vital in making these materials bond and fuse together, quantity and length make for a strong material that can even be sewn by hand and on the machine. Textures of leather transformed my fruit puree into a shedded translucent snake like material, it changed the material from being being a piece of fruit (apple_ to one that made people question if it was real or not.

RUBBER



*'The rubber tree originate in the Amazon. Latex has been used by tribes there since at least the 10th century for waterproofing clothes and footwear. Some South American Indians used the "woodskin" on their canoes. Up until a century a half ago only rainforest Indians knew how to tap latex from the tree.'*¹

In 1879, there was a rubber boom that caused turmoil to the rainforest and the tribes that lived there. Entrepreneurs and cash seekers flooded to the Amazon to exploit it's resource of rubber. Rubber farms tore through the dense rain forest, planting an obscene amount of rubber trees. These farms needed work so again the exploited those native to the land, one farm enslaved 50,000 Indians but, when the farm was discovered only 8,000 were alive. By 1913 the rubber boom there were only 40% of Amazonian Indians left. Now it is encouraged that the rubber is harvested sustainably and of course ethically, supporting locals and rainforest conservation.

I wanted to create a material that used a plant derived plastic, that will provide a great deal of strength and waterproofing. The alternatives on the market are called 'bonded leather' a cheap leather shavings that are backed with a plastic to keep them together, most commonly PU and PVC. Crude oil derived plastic simply adds environmental problems to the natural world.

¹ <http://factsanddetails.com/world/cat52/sub329/item2217.html>. Accessed 9 May 2020.





This was one of the first things I made this year from one of my materials. I wanted to test its capabilities and what product it would best suit. In hindsight, this wasn't the best application for my rubber and leather composite due to its strength and thickness. This leather was incredibly hard to sew, but it was do-able! Now considering what the material is capable of, this does not highlight the fact it does not need one stitch to hold an object together, the material can be formed into any 3D shape and hold its self together!

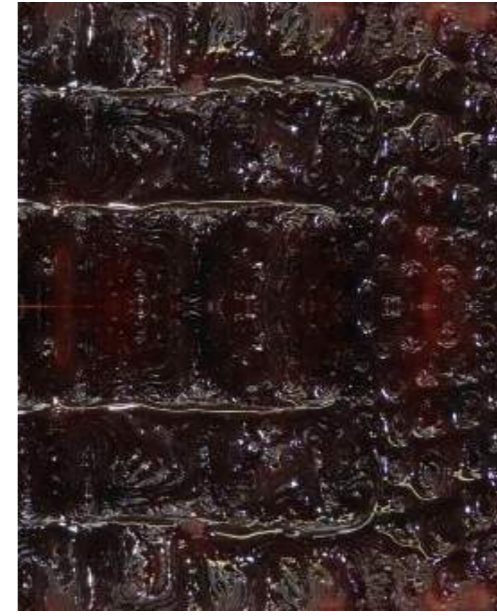




COLOUR TESTS

The rubber makes a richer and darker colour than the leather that was used to create each composite. For the boots, I felt that I should have used the red or rich brown, they have a bloody quality to them. This has a huge link to terror and pain the ranching industry causes to the animals and tribes in the Amazon.

Due to my moulds being made from plaster the surface of my composite has a dusty appearance, these can be made glossy by using coconut, vegetable oil or glycerine (as seen below).





Amazonian tribe members used to dip their feet in rubber in order to protect them from hazard on the jungle floor, the layer of rubber would act as a second skin.

The most fitting object I could place with this foot dipped in rubber was obviously a pair of shoes, and for them to be made from rubber. I considered the imagery of what I felt plagued the Amazon, this happened to be the cowboys that run the ranches. They are held accountable for starting fires to free up land across the rain forest, these fires take with them a huge amount of bio-diversity of plants and animals as well as Indigenous tribes that have lived in harmony with the land for hundreds of years.

The cowboy boot symbolised huge importance, they can evoke a range of connotations; an old western movie shot off, the 'It girl' at a music festival, a country singer, a person sat upon a horse with a whip... the list goes on.







"We rubber tappers are being hunted because we are trying to protect what you see around you," he tells me. Sixteen rubber tappers in this area alone have been murdered in the past decade. One corpse was found stuffed into the burrow of a wild animal.

Navarro, Lulu. 'Deep in the Amazon', NPR, 4 Nov 2015. <https://www.npr.org/2015/11/04/452555878/deep-in-the-amazon-an-unseen-battle-over-the-most-valuable-trees>. Accessed 11 May 2020

'If the Brazilian government doesn't start listening now, we could see an entire way of life disappear.'

Baines, Philippa. 'Brazil's Indigenous Tribes', Amazon watch. 24 Oct 2013. <https://amazonwatch.org/news/2013/1024-brazils-indigenous-tribes-are-being-hunted-by-murderous-cattle-ranchers>. Accessed 11 May 2020

'At its root it is a rejection of everything the cowboy had come to represent in culture: white, male, cisgender and colonial.'

Elan, Priya. 'Urban cowboy', The Guardian, 9 Jan 2020. <https://www.theguardian.com/fashion/2020/jan/09/yee-haw-agenda-why-urban-cowboy-style-wont-die>. Accessed 11 May 2020.

'The 1988 Brazilian constitution was meant to end ranch exploitation by stipulating the exclusive rights of tribal groups to their lands. Handily for farmers and corrupt politicians, their borders weren't mapped out in law and over the past few decades lawyers and anthropologists have had to push relentlessly to get ancestral land recognised. Progress has been incredibly slow – last year, for example, of the 600 tribal demarcation plans pending, only seven territories were mapped.'

Baines, Philippa. 'Brazil's Indigenous Tribes', Amazon watch. 24 Oct 2013. <https://amazonwatch.org/news/2013/1024-brazils-indigenous-tribes-are-being-hunted-by-murderous-cattle-ranchers>. Accessed 11 May 2020

Fires have been reported in protected indigenous reserves of the Brazilian Amazon, raising fears that loggers and land grabbers have targeted these remote areas during the dramatic surge in blazes across the world's biggest rainforest.

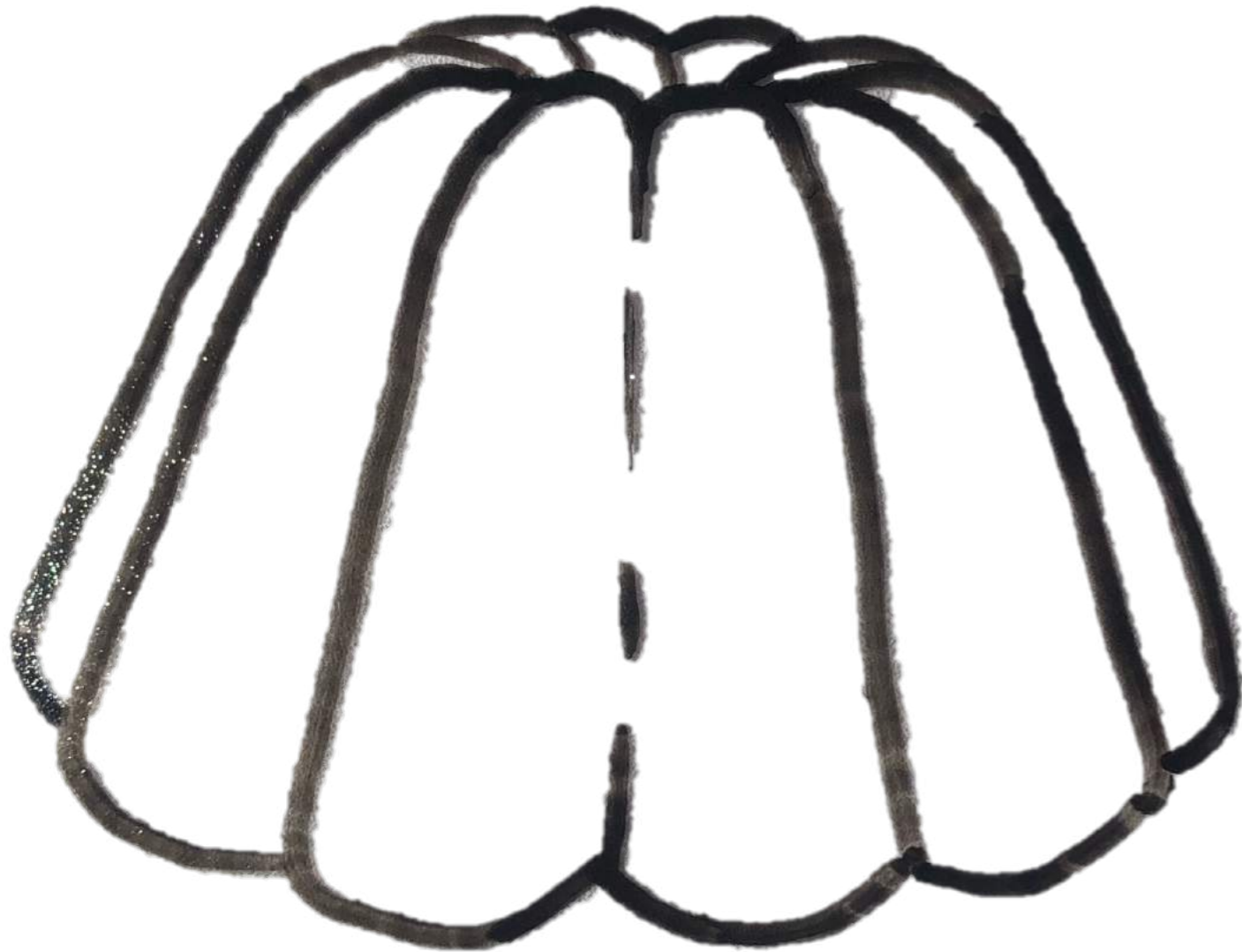
Philips, Dom. 'Brazil: fears for isolated Amazon tribes' The Guardian, <https://www.theguardian.com/environment/2019/aug/29/brazil-amazon-wildfires-indigenous-reserves-remote-areas>. Accessed 11 May 2020

REFLECTION

This composite took a long time to get right, different leathers react differently with the rubbers I combined it with, but over time and with a lot of trial and error, I managed to master this. I am glad I experimented with sewing this material and learnt it isn't the best way to make it work. Due to the nature of rubber, it sticks to itself if you need to join it, in a commercial sense this would save you a vast amount of time. Due to the materials strength and thickness it needed to be used for a bigger object than a small accessory. Its attributes are it's strength, it is waterproof, no sewing needed, it is extremely flexible and it has an ability to make any shape when using a mould!

The meaning behind the material and the object only really make sense when you start to read about them. They are far more than a fashion statement they are a clash of two very different people who fight for the land in the Amazon, the indigenous and ranchers. This composite took a long time to get right, different leathers react differently with the rubbers I combined it with, but over time I got the hang of, with a lot of trial and error. I am glad I experimented with sewing this material and learnt it isn't the best way to make it work, due to the nature of rubber, it sticks to itself if you need to join it, in a commercial sense this would save you a vast amount of time. Due to the materials strength and thickness it needed to be used for a bigger object than a small accessory. Its attributes are it's strength, it is waterproof, no sewing needed, flexibility and its ability to make any shape if used with a mould!

GELATINE



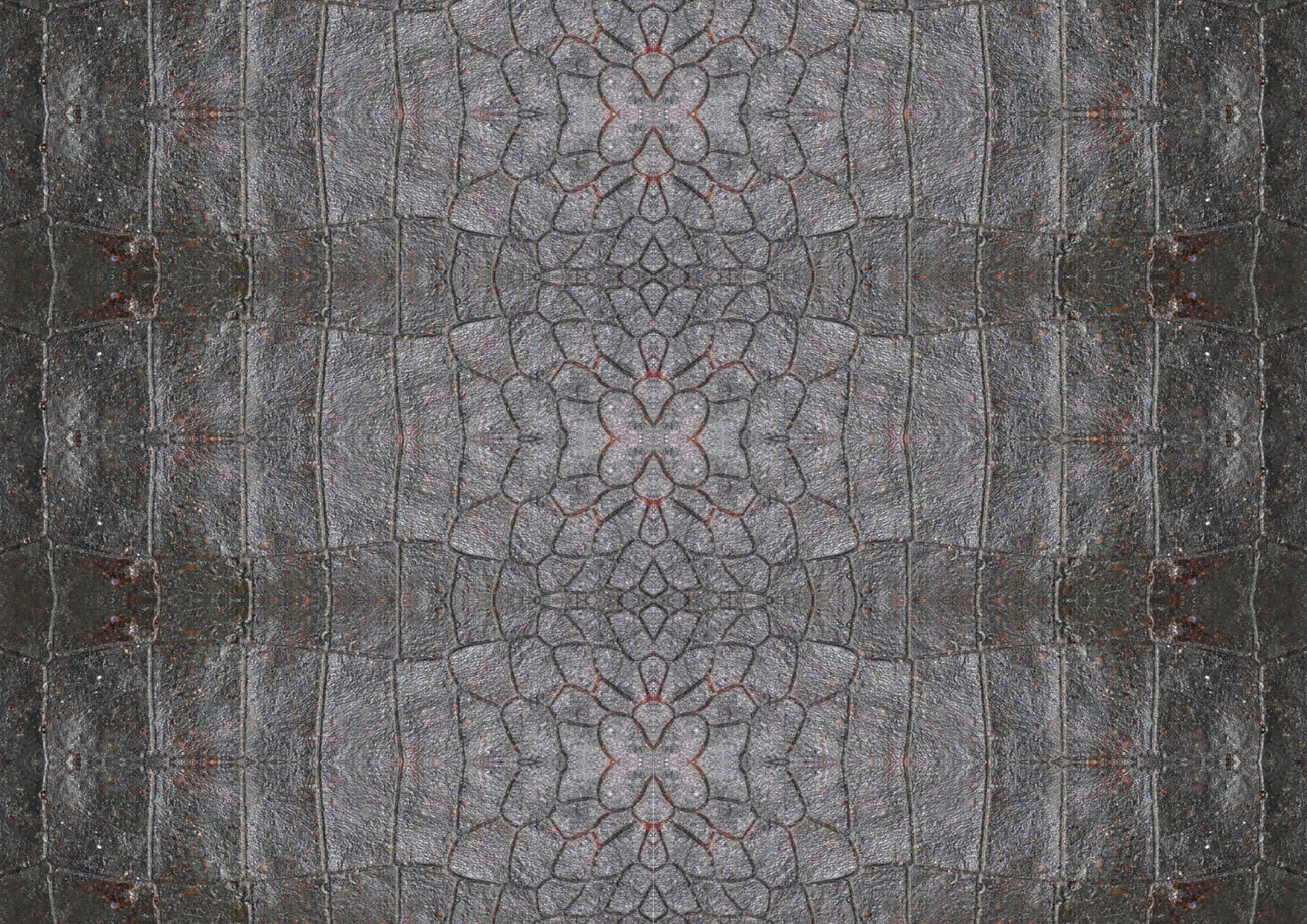
'Gelatin is defined as the product obtained from the acid, alkaline, or enzymatic hydrolysis of collagen, the chief protein component of the of the skin, bones, and connective tissue of animals' ¹

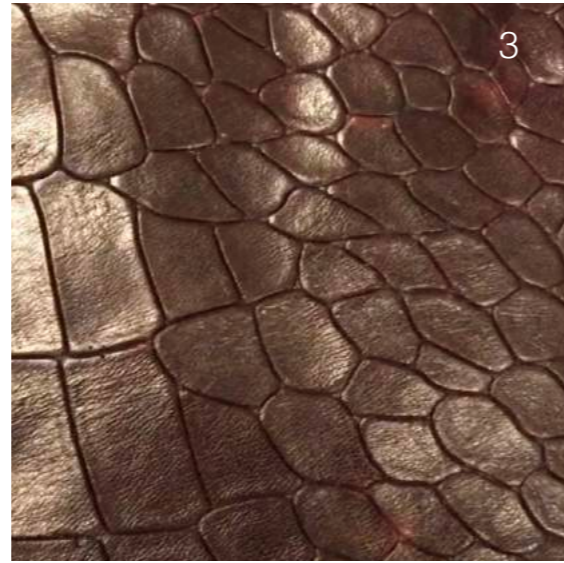
Cattle hides are available from the trimming operations in leather production. The hide pieces are normally chemically de haired with a lime/sulfide solution followed by a mechanical loosening in order to extract the collagen found in the skin.

Gelatine can be found in the most unusable application, including adhesives, plastics, photo film, medication, shampoo and conditioner, emery boards and even matchstick heads. This waste product of the meat industry is almost unavoidable. I celebrated the fact that gelatine is in fact collagen, the substance that holds skin structure together. I set out to mimic bovine skin using the fibres I removed from scrap leather and the collagen it once held. It needed to be extremely flexible, have a slight stretch, and for it to be strong.

¹ U.S. Pharmacopoeia 34/National Formulary 29 Nov 2011 and Food Chemicals Codex 7. United States Pharmacopoeial Convention, Inc., Rockville, MD.







1

The harvesting process; this is a slow procedure but it is the only way to get a smooth finish in my composite materials. The leather shavings go along way when suspended in the gelatine mix.

2

Brown leather composite in snake skin

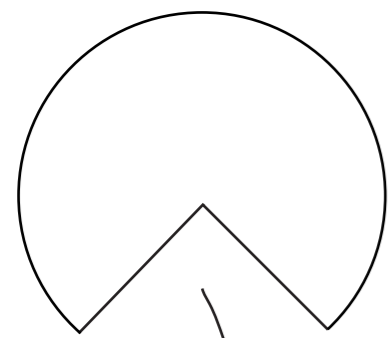
3

Purple leather composite in snake skin

4

Off cuts do not go to waste, any bits left will simple be mixed with water and heated then left to set in a mould. This process can be repeated over and over again, making it very sustainable.

A vanity case was one of my original ideas when beginning this project. Despite not going forward with this I did learn how my material works and the best ways to display this (this wasn't the way). The leather composite is soft, thin and strong, having it upholstered to an object takes these important qualities away from it. I chose a vanity case as it is an object that screams luxury, it makes me think of travel and designer trade. Designer brands like Louis Vuitton, has been linked to funding the destruction of the rain forest for placing their trade in deforestation linked leather



Hand made copper corners.





1 Tikuna is a tribe that lives in Brazil, with a large population living in the Amazon. The tribe has over 50,000 individuals. Tikuna tribes people are highly skilled in traditional craft of wood, and the women are known for their weaving skills. Beautiful bags are made from reeds and cane, and they tend to have a geometric repetitive pattern on them. I took inspiration to make a bag using the shape of the Tikuna weaved sacks (FIG 1 & 2).



2 The bucket bags will be built up with different textures and colours of leather, it will resemble an animal skin patch work, hopefully suggesting a map like quality, held together with lines of contrasting stitches. My textures will be a variety of animal's skins that are affected by deforestation in the Amazon, to name just a few Anacondas, Caiman, Tapir and reptiles.







'Deforestation is a particular concern in tropical rain forests because these forests are home to much of the world's biodiversity. For example, in the Amazon around 17% of the forest has been lost in the last 50 years, mostly due to forest conversion for cattle ranching.'

Over view, world wildlife. <https://www.worldwildlife.org/threats/deforestation-and-forest-degradation>. Accessed 11 May 2020

'In parts of the eastern and southern Amazon, 30 years of concerted deforestation have shrunk viable living and breeding territories enough to condemn 38 species to regional extinction in coming years, including 10 mammal, 20 bird and eight amphibian species, scientists found.'

sample, ian. 'Amazon's doomed species' The Guardian. 12 jul 2012. <https://www.theguardian.com/environment/2012/jul/12/amazon-deforestation-species-extinction-debt>. Accessed 11 May 2020.

'People and nature can live in harmony. If we want to ensure the survival of the planet's remaining forests, we must follow the evidence and protect the lands of the tribal and indigenous peoples that live there. Deforestation and climate change will affect us all, but nonmore so than those who call the forest home.'

Deforestation, Survival international, <https://www.survivalinternational.org/about/deforestation>. Accessed 11 May 2020.

'Deforestation of tropical forests affects not only the plants and animals of these regions but also their human inhabitants. The Indian populations of Amazonia are successful managers of the forest. Long ago, they discovered the secrets of sustainable use of its resources.'

Taylor, Kenith. Chaper 15 Deforestaion and Indians in Brazilian Amazoni, Biodiversity. <https://www.ncbi.nlm.nih.gov/books/NBK219288/>. Accessed 11 May 2020.

REFLECTION

This material is the most like a piece of leather. Due to the material being a liquid when applied to a mould you can make the sheet material extremely thin, maximising surface area coverage with creating each batch. The leather is soft and thin, meaning it can be sewn using a sewing machine. To celebrate the material quality's, it was important I avoided using it to upholster anything hard like the vanity case, it was better suited to softer flowing object that look more organic.

The material itself might cause some confusion and controversy to the leather being combined with another part of the animal, for example I was told it was no longer a waste solution. I think it's important to stress to them gelatine is in fact collagen and this is naturally found in the skin, however this is removed in the boiling process of hides and bones to remove also a by-product of the meat industry.

MILK BOTTLES



'While the recycling of plastic milk bottles (made from HDPE) is one of the hidden success stories of the recycling industry with over 30% of every milk bottle made from recycled content, this relies on the consumer to responsibly recycle their bottles, and all local authorities to collect them'.¹

The milk bottle is one of the most successful thing to be recycled. It is described as 'closed looped', meaning the HDPE is used again and again to create a new product, however short lived this lifecycle is. However, with consumers growing concerns of sustainability their purchasing habits have changed, or in this case reverting to using a milk man again. Because of people being isolated this has caused company Milk and More to have recieved 25,000 new costumers during this uncertain time. But what does that mean for the plastic milk bottle? If there is less demand for milk in plastic bottles there will be less of a need to create new bottles at such a high rate, creating a backlog of unrecycled bottles.

I wanted to add value to a material/object that was designed for a life span of around a week and transform it to be a longer- term product. HDPE is incredibly versatile is can be dyed, heated, pressed, melted and squashed; and the best part is that you can do it all over again.

¹ Dove, Andrew. The problem with the plastic problem, University of Birmingham, 18 Jul, 2019. <https://www.birmingham.ac.uk/news/thebirminghambrief/items/2019/07/The-problem-with-the-plastics-problem.aspx>. Accssed 8 May 2020.





1 Empty and cleaned milk bottles.

2 Removed all labels and any sticky residue, then cut the bottles in to relatively flat sheets.



3 Dyed in a liquid dye heated on a pan, the longer it is left the more colour the plastic will take.

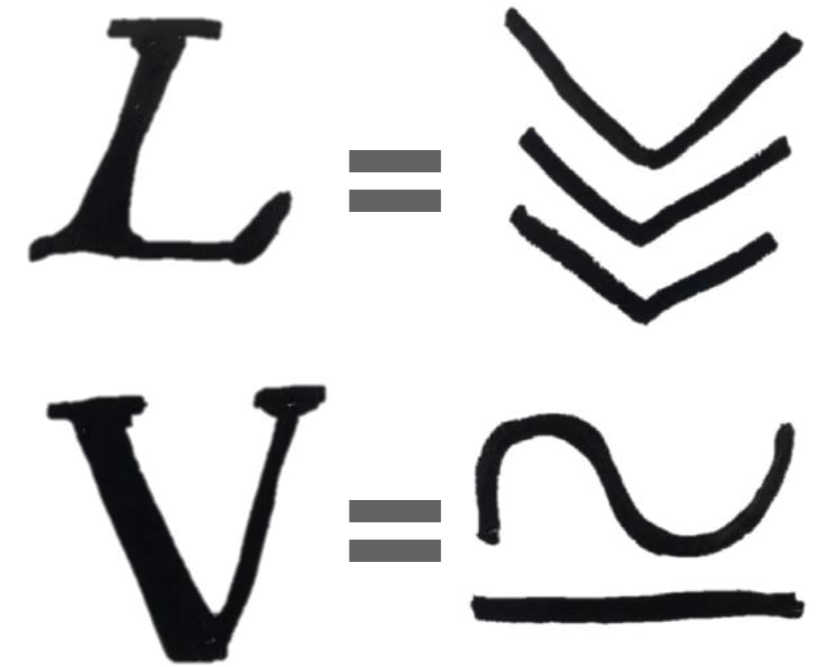
4 I placed it in a heat press to bond the plastic together, I then added texture with my own silicone mould.



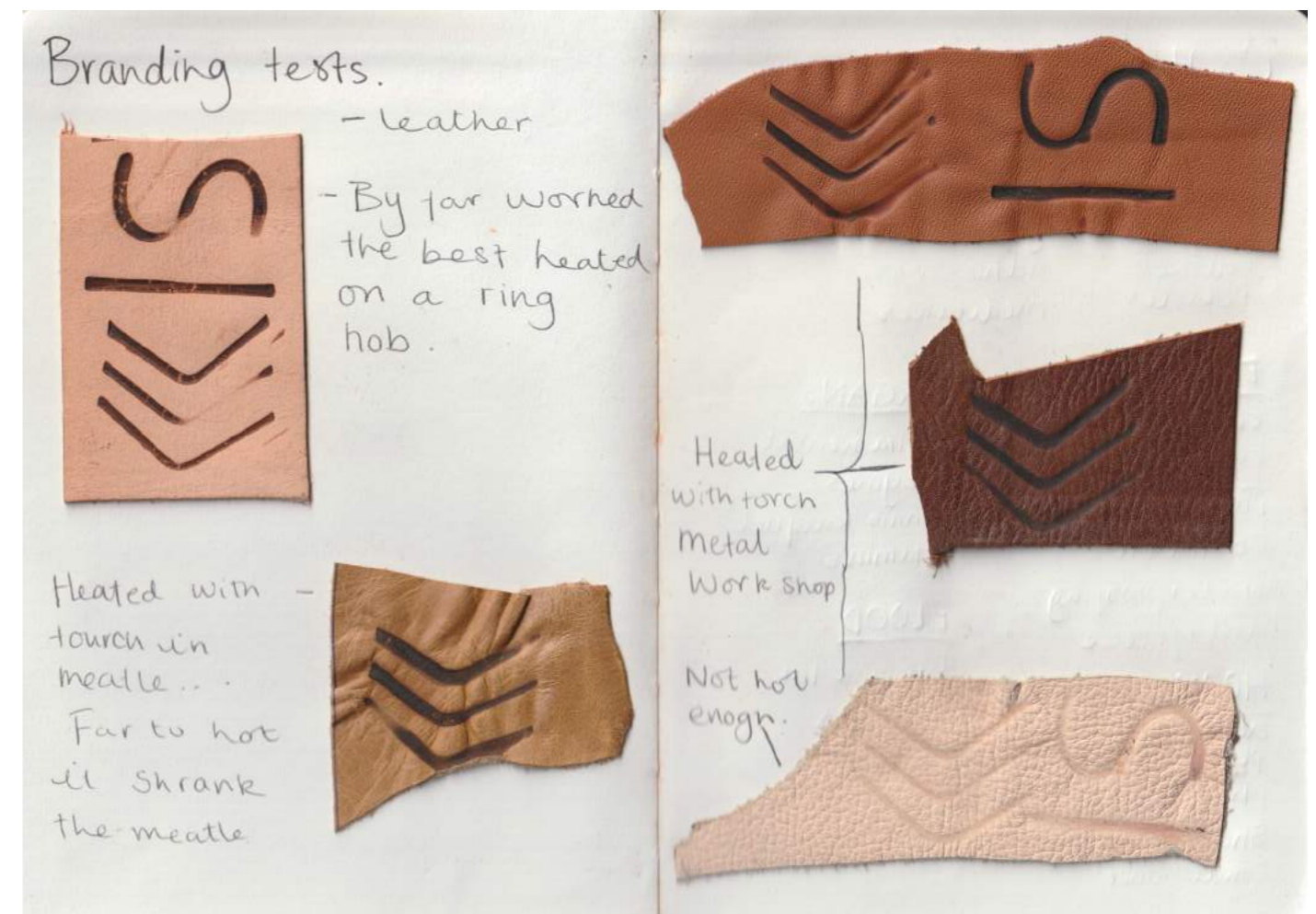
BRANDING ALPHABET



Hot iron branding is not so commonly used now, or if used in a place less visible on the cow like the cheek or stomach to prevent it ruining the leather quality. There are thousands of different branding codes, letters and numbers, all so the same thing, identifying a cow to a herd. This is a branding alphabet that is used by a ranch, and I like that there is a full alphabet that can be used and be decoded.



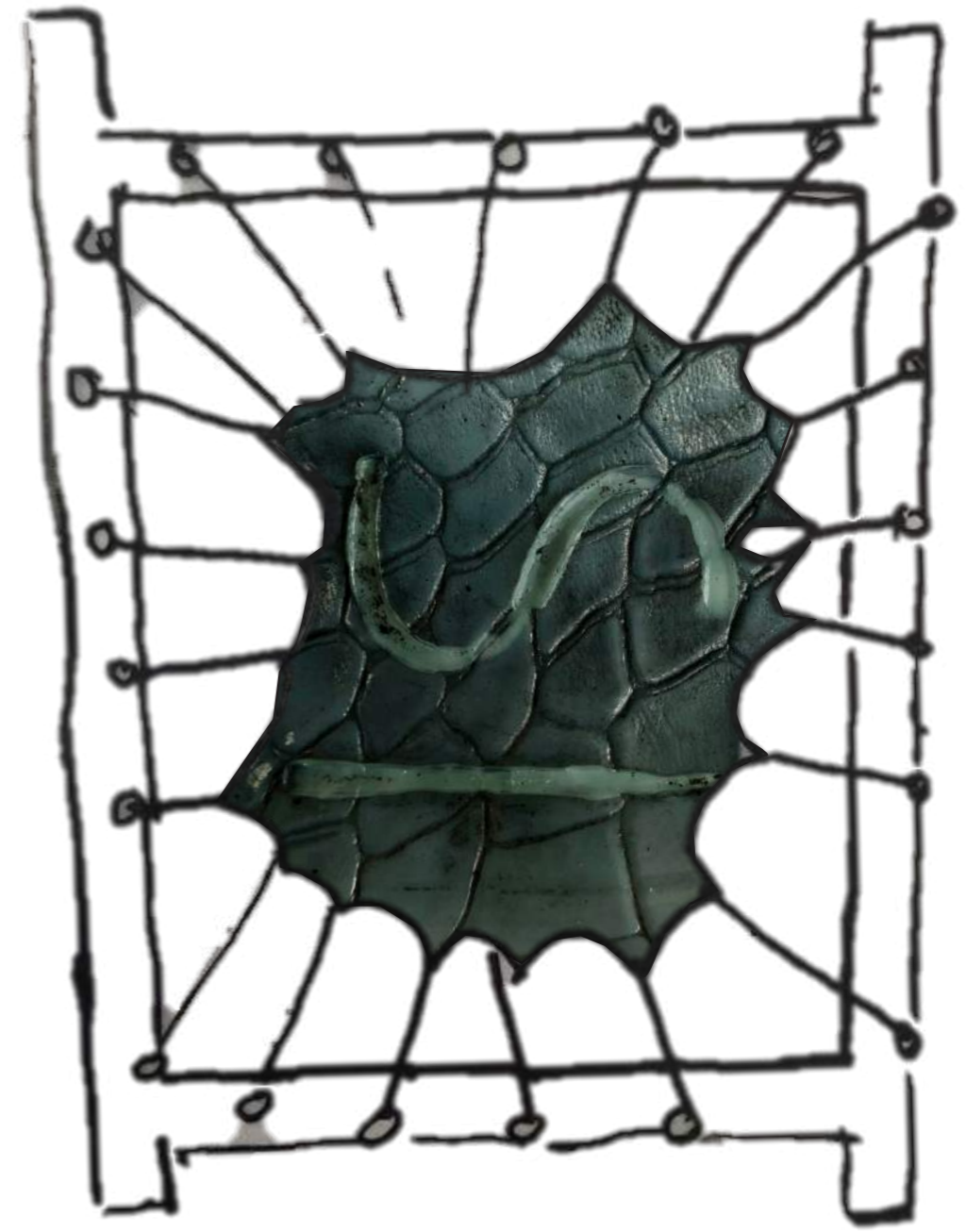
Louis Vuitton (LV) have been linked to using deforestation linked leather, the designer trade fuels operations like this and makes leather desirable. During the time of the fire in the Amazon they have £10 million to help... however, they continue to fund the destruction of the Amazon by creating the demand for leather



LV branding tests on leather scraps



My original test looked like it a dried hide that had been stretched and harden or like a specimen that would be sandwiched between two pieces of glass, when I was walking with my dog I stumbled upon this big piece of tarpaulin that was stretched and tied over a frame, I'm not quite sure why it was here or its purpose, but again it reminded me of a hide that had been pulled flat on a frame to dry. I decided to look into the reason why some leather is stung up from all its edges and stretched and how this could apply to my work.



The ancient history behind this technique of parchment making was developed in the second century BC due to a shortage of papyrus (a natural reed paper developed in Egypt). Parchment is made from natural animal skins preserved in salt, the skins are cleaned in lime and this helps lift all the hair from the hide, you then pull the hides from the solution and use a draw knife to remove all the hair from the hide, you then use a frame and tie the hide with rope to make it taut for the removal of fat and flesh from the underside with a rounded knife, they are final left to dry till stiff. This lengthy process ends up in a large sheet of parchment that can be used to write on. This is still occasionally used today, the demand for it ceased at the end of the 15th century.

1 William Comley, Makers of the finest quality parchment. <http://www.williamcowley.co.uk/about-us/>. Accessed 16 May 2020.

2 Pergamena, <https://www.pergamena.net/workshops/parchment/wxvwh81t79pzm3r9ixzqcctc3w6to2>. Accessed 16 May 2020.

REFLECTION

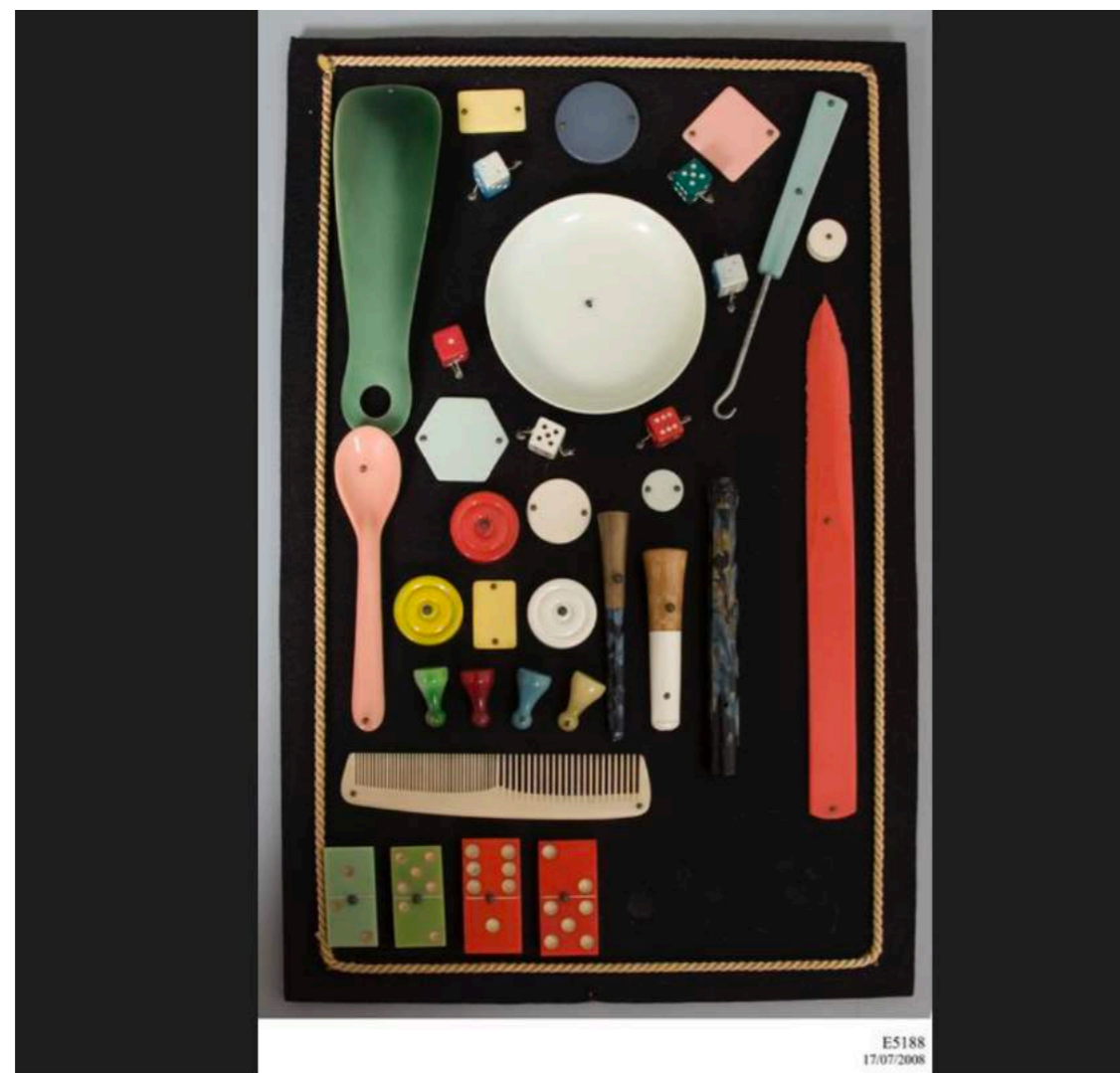
HDPE is a very versatile plastic, and a recycling success story. However, with more consumers opting for milk being delivered to them again, what will happen to the back log of HDPE milk bottles. This material can be dyed rich colours that help transform and reinvent it. For example the black/blue colour applied to my pieces. It is the least leather like material out of all my chosen materials, however, unlike the other alternatives discussed this can be embossed and branded. My final object with this material would have been read like a scroll or scripture with branded symbols that you could translate. The material is strong, waterproof, bendy but a bit ridged, reusable and recyclable.

Using it like a parchment could be a good, suggestive and clear way to display my symbols and texts as it is mimicking the original use for animal skin parchment.



DEVELOPMENT

Due to not being able to finish all my work because of COVID-19, I was left to wonder what other ideas would I have pursued or had ago at. The materials I have come up with all have very different quality's so in theory I can make a vast range of products that hold different attributes. I wanted to touch into some of the other smaller deigns and ideas that I have not so mcuh explored physicall. However, the research has been important in my creative journey.



Samples of Casein plastic

Made in [Hamburg, Germany](#), 1933.

These casein plastic products were made in 1933. Made from milk protein and formaldehyde and easily pigmented, casein was patented in Germany in 1899. It was one of several semi-synthetic plastics that initiated the plastics age in the nineteenth century.

Plastics have been described as "materials that can be moulded or shaped into different forms under pressure or heat." They were a cultural phenomenon in the twentieth century when they changed the way objects were produced, designed and used. It was also in the twentieth century that most plastic products moved away from natural raw materials to synthetically produced ones.

Museum of Applied Art and Sciences. Samples of Casein plastic. <https://collection.maas.museum/object/228523>. Accessed 19 May 2020.

Milking stools have three legs to keep it far more balanced on uneven surface. They are low to the floor to help you be level with the cow's udders.



Rubber aprons are used by workers when milking a cow, in a slaughterhouse, and even butchers wear them to keep their operations as sanitary as possible. They used these rubber-based or coated aprons to prevent any liquids from being absorbed into the fabric of the aprons. Traditional milking means the people doing it will be sat low down often with either leg on either side of the bucket that is collecting it, this means the apron often has a split up the middle to cover both legs.

OVERVIEW

Research has been an important part of my creative journey throughout the past three years, especially material research. I want my materials to be practical and exciting, but most importantly to have meaning behind them. The meaning does not have to be obvious, or obnoxious, but I wanted the items to tell a story with a deeper meaning upon investigation. I spent a vast amount of time developing these materials and have thus believe I have successfully created a solution to prevent leather from going to landfill.

Reflecting on my research, I have explored a corrupt unlawful business trade that is the cattle industry. This not only affects the biodiversity of the animals and plants that occupied the rainforest before it was burnt to make space for millions of cows to take over. This has huge adverse affects on communities that have taken care, and continue to protect of the sacred land they have lived on for thousands of years. There have been recorded targeted shootings against tribe leaders and ranchers because of stand offs against land ownership. Fires, deaths and endangerment of animal and plant species will continue to happen more frequently with the growth of the cattle industry,. As consumers, we need to be more vigilant to the fact that our life style and purchasing habits create the demand and thus have dramatic ramifications.

Reduce your purchasing power to prevent high demands for meat and leather... Sometimes less is more, reuse old leather items you have by remodelling them or choose to buy second hand or recycle your leather to companies that deal with leather waste to create new materials from

