

SOUTH DOWNS



GN SAFARI

Welcome To The Living Museum

SOPHIE VILE

LEVEL 6 - STC

PROJECT INTRODUCTION

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SEMESTER ONE

(PROGRAMME CATALYST)

Last semester, I was tackling the mass production of tourist waste left on Brighton beach by the visiting tourists. The amount of waste produced is also increasing as the temperatures are rising, encouraging more tourists to visit the beach. This then led me on to the concern of lack of biodiversity, as we are running out of landfill sites to dispose of the litter, and will therefore begin destroying natural spaces to make room for more landfill sites.

Therefore, in order to raise awareness for the mass of un-recycled waste, I created a recycled floating sun-park made up from plastic waste left on Brighton's beach. The structure was a plus for the city as tourists were able relax on the seating area and admire what's still available of the Brighton's beach and it also served an ecological function, as nature can flourish in the crevices along the bottom. The overall aim was to predominately stimulate ecology in Brighton, whilst reducing the amount of waste turned into landfill which would have destroyed habitats.



Fig 1- My Semester One Collage

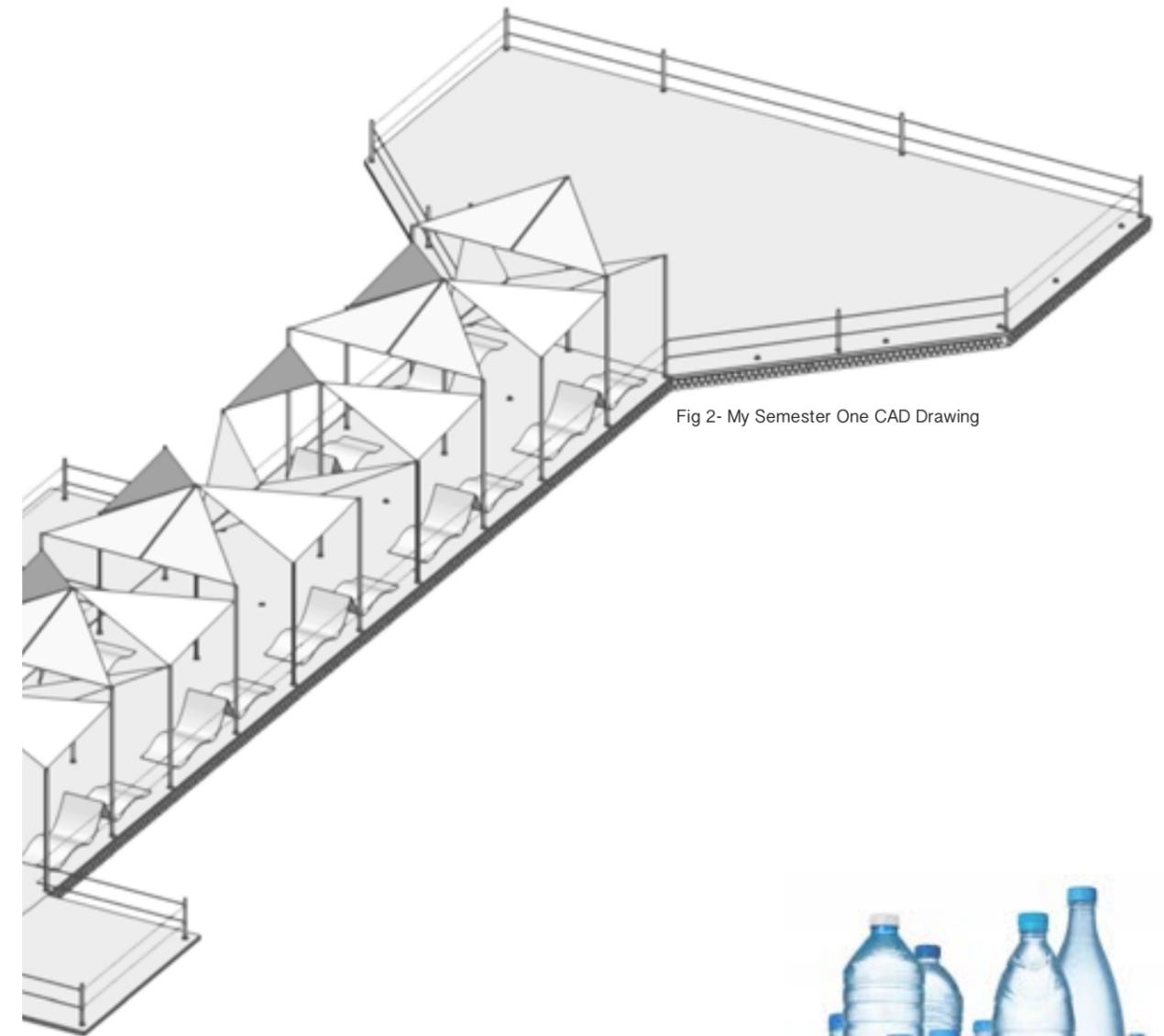


Fig 2- My Semester One CAD Drawing

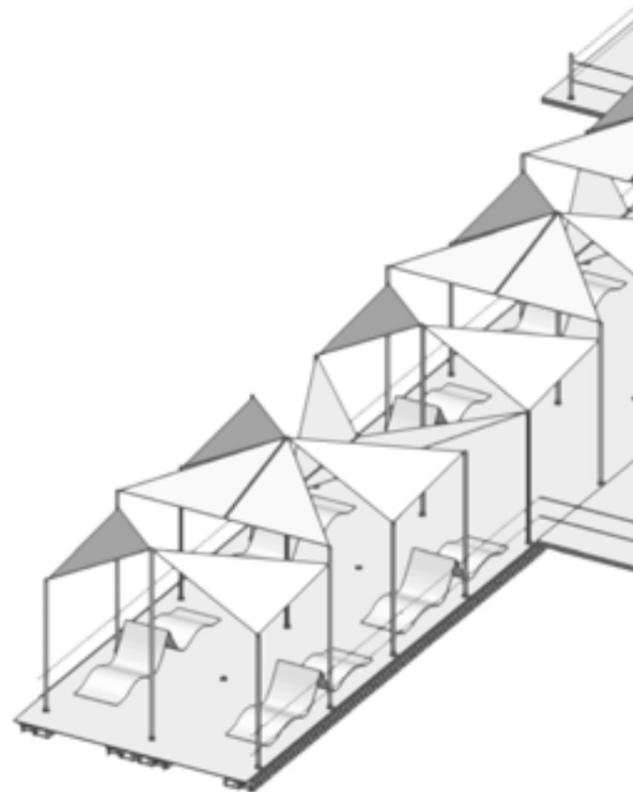


Fig 3

THE BRIGHTON HIPPODROME - HQ SITE

Formerly - The Hippodrome Theatre of Varieties

HQ Site - The Former Hippodrome



Located in the narrow Middle Street, off the main sea-front. The building was built in 1897 as the Real Ice Skating Rink, designed by architect Lewis Karslake.

Over the years the ice skating rink was not popular enough to remain open, so the landlords decided to convert the building in a circus. They chose Frank Matcham, a theatre architect to do the job, he enlarged and rebuilt the interior, the ice rink was removed and became the site of the stalls seating and a circus ring. The venue re-opened in 1901 with the new name, the hippodrome, however merely a year later the circus declined and was therefore auctioned off.



Fig 4

On 22nd Dec 1902, it re-opened as a variety theatre. It 'quickly became Brighton's most important variety theatre. Shows of all types were staged there'¹, entertainers such as Frank Houdini and Charlie Chaplin, Lauren and Hardy and many more. After WW2 1945 popularity of variety theatre waned, the hippodrome hosted concerts by the Beatles and Rolling Stones but this could not stop the decline. Dec 1964 the theatre was closed.



Fig 5

Next, in 1966, the theatre was transformed into a television and film studio, unfortunately this only lasted one year and in 1967, it was converted into Mecca bingo hall which ran for 40 years. The bingo hall closed in Aug 2016 and has been empty ever since.

There has been plans drawn up for the building, however none of these have followed through. The building continues to show signs of dereliction and its future remains unknown.



Fig 6

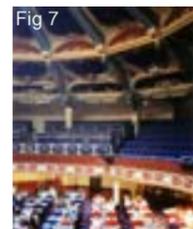
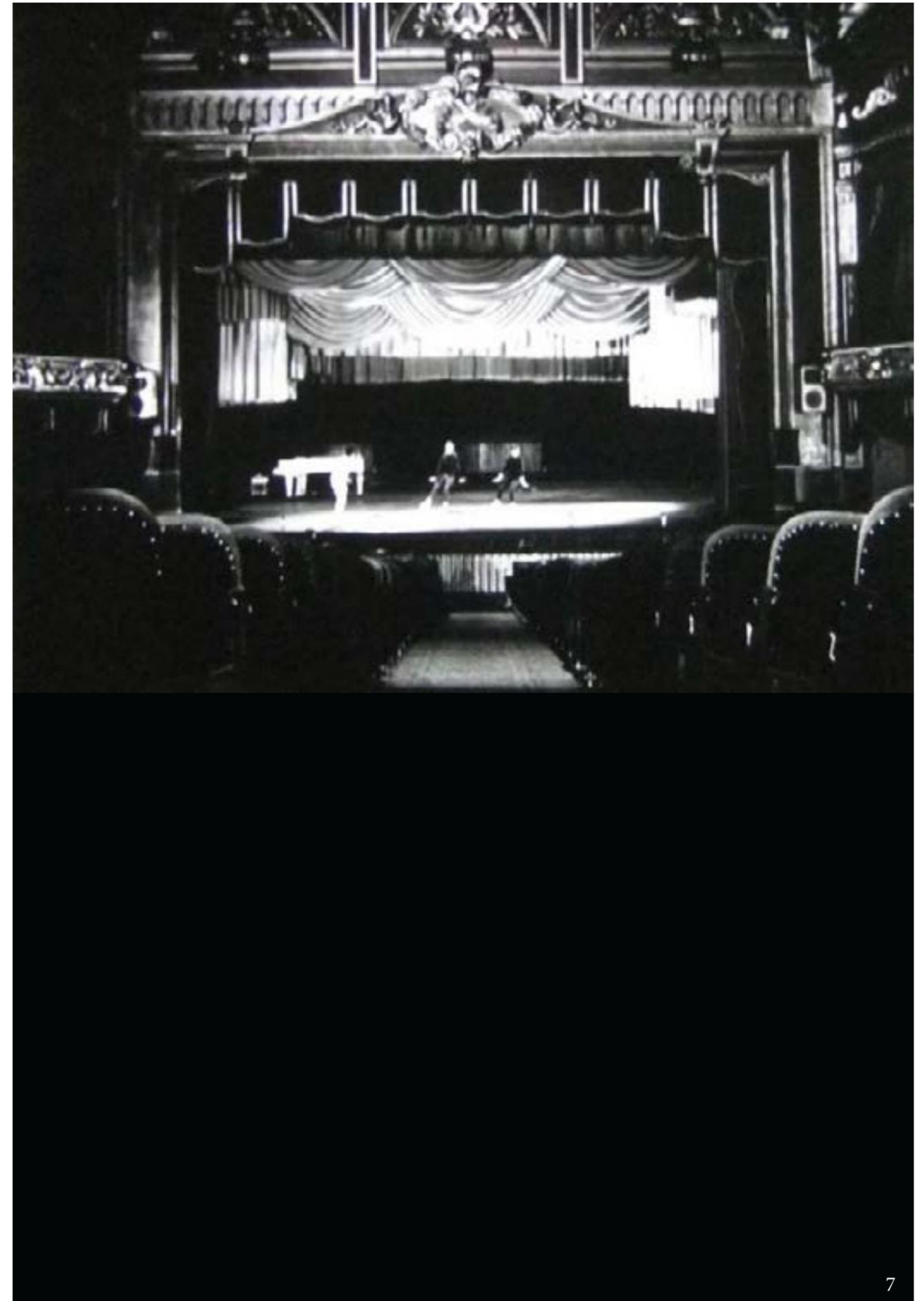


Fig 7



Fig 8

¹ Brighton Hippodrome, (Last edited on 6 November 2019) Wikipedia, The Free Encyclopedia.



SEMESTER TWO INTENTIONS



Moving forward with my programme, I intend on continuing to cherish the ecosystem by designing a local environment preservation and education centre. As a society, we are unaware of the future holds and what impact climate change is to have on the world around us. Therefore, by protecting and preserving our local ecosystems, we not only become more aware of the living organisms that fill our surroundings such as the wonderful South Downs National Park, but this also gives future generations the opportunity to also experience the wildlife that we once did, through preservation of endangered species. I also want to simultaneously propose a use for the berries and plants flourishing within the preservation centre- an idea for this is for the botanicals to be used as an ingredient in gin, a very popular alcoholic spirit widely consumed around the world.

The use of these botanicals therefore means I am able to add a second segment to my preservation centre by including a gin bar within the heart of the facility. Here, local gins will be distilled on site, along with other popular pre-made gins, providing tourists with a fun destination and viewing platform to engage with the local nature.



LINKING MY PROGRAMME TO THE HIPPODROME

An Interior Landscape

In order to weave my ecological programme into the derelict Hippodrome, I intend on transforming the existing building into my own interior landscape. As I re-design the interior of the building, I will be mindful of the existing architecture, leaving the structurally sound historic architecture alone (especially aspects such as the exterior shell and the central pillars). I will then bring new life to the building, quite literally, as the hippodrome becomes home to hundreds of threatened South Downs species.

The future of Tourism - Social Aspect

I am also reinstating and evolving the hippodromes former use for entertainment in 1901, where the building was used as a circus with live animals such as elephants, as seen in the image below.



Fig 10

'Circuses aid conservation through breeding programmes and by raising awareness. It was largely the tricks performed by dolphins in aquariums that convinced the public they were intelligent and worth saving. Animals in the wild are endangered by human predators and shrinking habitats, and live short, dangerous lives. Circus animals receive food, shelter and veterinary care. The average life expectancy of a tiger in captivity is 26 years compared to 15 in the wild.¹

My programme is similarly creating habitats for these previously wild animals, however I intend to do so on in more sensitive nature, with the wildlife's care and preservation coming first and being the main aim.

² Douglas McPherson (2 May 2015) 'Circus Animals - 10 Reasons the Show Must Go On'

CHAPTER ONE

PART A - The Living Preservation Museum

FACT

The UK's wildlife is on a strong decline, with a report stating that 1 out of 10 of its wildlife species are at risk of becoming extinct. Since the 1970s, the population of endangered species in the UK further decreased by as much as 65%. As of 2016, the number of critically endangered species in the UK reached 165. With the significant drop in the abundance of its wildlife, the UK is now considered "one of the most nature-depleted countries in the world"

HABITATS WITHIN THE URBAN ENVIRONMENT



HQ Site
(The Hippodrome)



Urban habitats are extremely diverse and full of hidden wildlife. Examples of these environments are parks, beaches, lakes, ponds, gardens, cemeteries, golf courses and landfills. These habitats are highly dynamic, influenced by both biophysical and ecological elements on one hand and social and ecological elements on the other. In fact, Urban landscapes often represent cases of extreme habitat fragmentation, both caused by humans and issues such as the climate crisis.

The diagram beside documents a variety of different habitats spotted in the urban territory between the catalyst site and the new HQ site. It also shows a variety of different animals and insects that would be likely to live within these environments, such as seagulls, cockroaches, mice, dragonflies and hedgehogs.



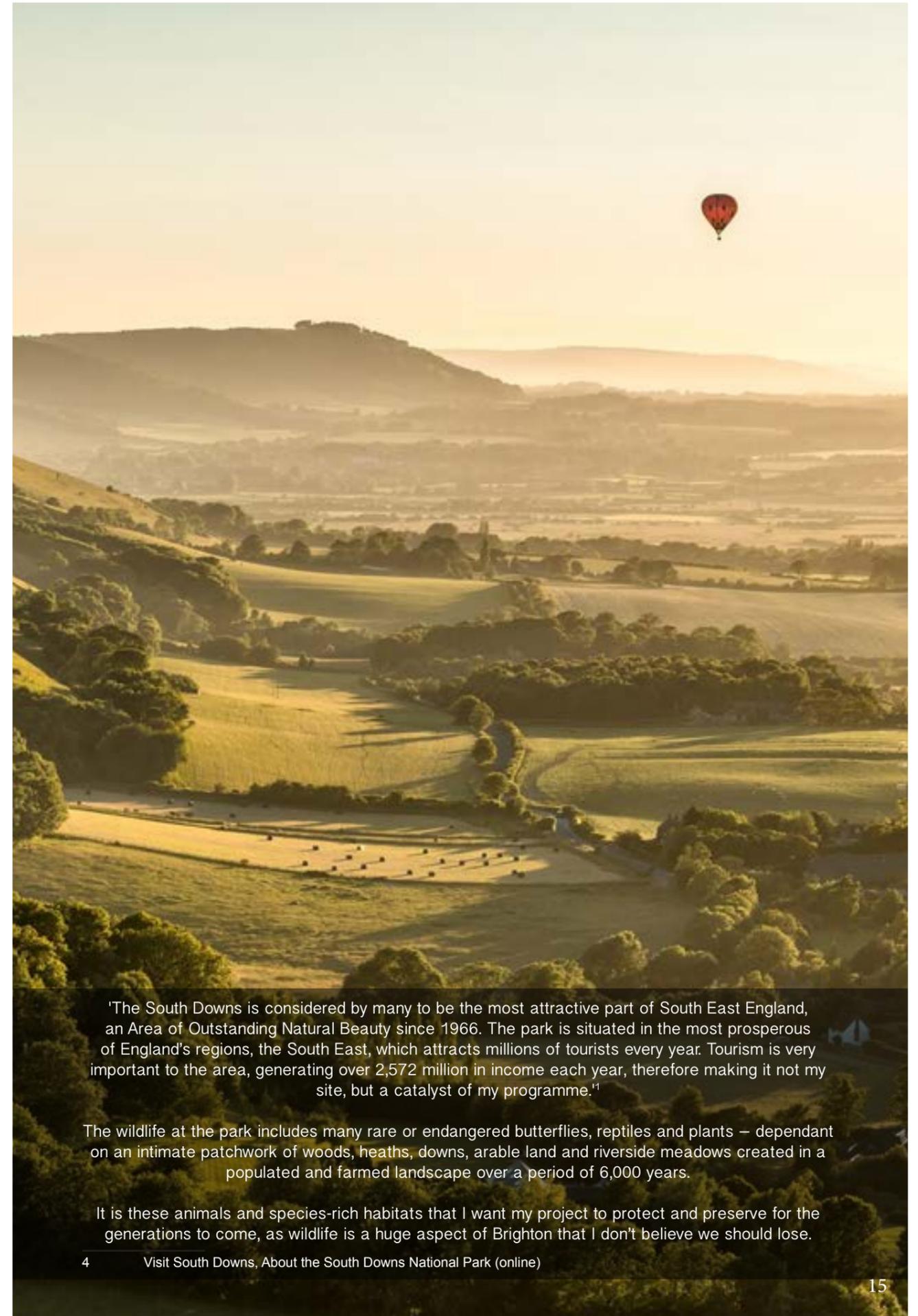
Catalyst Site
(Madera Drive)



KEY

- Buildings
- Greenland (Gardens/Parks)
- Narrow Crevices (Allyways/Building Gaps)
- Wetland (Ponds)
- Coastal Environment (Shingle & Sand)

SOUTH DOWNS NATIONAL PARK



'The South Downs is considered by many to be the most attractive part of South East England, an Area of Outstanding Natural Beauty since 1966. The park is situated in the most prosperous of England's regions, the South East, which attracts millions of tourists every year. Tourism is very important to the area, generating over 2,572 million in income each year, therefore making it not my site, but a catalyst of my programme.'¹

The wildlife at the park includes many rare or endangered butterflies, reptiles and plants – dependant on an intimate patchwork of woods, heaths, downs, arable land and riverside meadows created in a populated and farmed landscape over a period of 6,000 years.

It is these animals and species-rich habitats that I want my project to protect and preserve for the generations to come, as wildlife is a huge aspect of Brighton that I don't believe we should lose.

⁴ Visit South Downs, About the South Downs National Park (online)



'THE SOUTH DOWNS LIVING MUSEUM'



River Itchen

This 45km long habitat with clear, chalk filtered water, is ideal for a variety of plant and wildlife such as water voles, otters, white-clawed crayfish, brown trout and salmon.

Fig 12

South Downs Way



Fig 13

Black Down & The Serpent Trail

Here you will find enchanting woodlands and huge blooms of heather.



Fig 14



The first step in designing was to research and narrow down exactly which species of animal, insect and plants, currently found in the South Downs, are most important to preserve for current tourists and future generations. I decided to chose species that are either greatly threatened / endangered or sacred and specific to the South Downs identity. This is a very important site for me as this is a very diverse area running through Brighton that is already home to many fragments of nature.

On the map of the South Downs national park below, I have highlighted where some of my chosen endangered or sacred animals, plants and insects would be located along the park, in order to gain a better understanding of their habitats.



Ditchling Beacon



Fig 15

Sussex Heritage Coast



Fig 16

The following pages display key information about the animals, plants and insects that I have chosen to protect in my safari following my research into endangered species living in the South Downs...

THE NATTERJACK TOAD

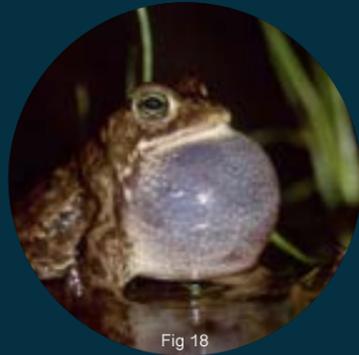


Fig 18

- There is merely 2 species of toad residing in the United Kingdom, with the Natterjack being one of them. These amphibians are attracted to coastal sand dunes with shallow ponds, and heaths as the warm water increases successful breeding.
- Sadly, these amphibians are slowly being considered endangered, despite being reintroduced into areas such as Hampshire and Surrey

HEDGEHOG



Fig 19

- The population of hedgehogs have been on a huge decline for the last 70 years, this is partly down to the climate crisis, as hotter winters have been disrupting their hibernation routines- They are woken up during the incorrect season, before there is enough food for them to eat.
- Hedgehogs around the UK can be found in a variety of different habitats such as gardens, woodland and farmland, however it is also the destruction of these natural habitats that have led to the species catastrophic decline.

WATER VOLES



Fig 20

- European water voles were previously a common sight along the UK's water banks, including habitats such as the River Itchen along the South Downs. These furry animals feed on a variety of fruits, grasses, tree barks and insects.
- Unfortunately, across the UK the species have become one of the highest risk mammals as their species is quickly reducing, so far reducing sightings by 90%.

SAND LIZARD



Fig 21

- Throughout Britain, the sand lizard is massively restricted to Southern UK and Wales due to the limited availability of lowland heathlands and coastal sand dunes. Although, they have been spotted along man made habitats such as field boundaries, roadsides and railway lines.
- Reintroduction programmes have so far helped the sand lizards population in areas such as Dorset, Hampshire, Surrey and Merseyside.

RED SQUIRREL



Fig 22

- The total red squirrel population in the UK been recently estimated at approximately 120,000, 3/4 of which are located in Scotland.
- Red squirrels usually reside within the tree tops, in a range of different woodland.

HAZEL DOORMICE



Fig 23

- Hazel dormice are small, native rodents with golden-brown fur, large black eyes and long whiskers. They can be found amongst the high trees and low shrubbery during the spring, summer and autumn months. Like hedgehogs, they also hibernate during the winter in nests.
- The growing human population, habitat fragmentation, the lack of management of woodlands or their removal, has caused the reduction of suitable habitat, leading to the drop-in dormice population.

BARBESTELLE BAT



Fig 24

- The Barbastelle bat (*Barbastella barbastellus*), a rare species found in the South Downs, is under threat from loss of deciduous woodland habitat and pesticides.
- Barbastelles tend to live behind loose bark of trees, or on inside / on-top of tall buildings.

ANIMALS

JUNIPER BERRIES



Fig 25

- Juniper berries are best known as the key ingredient in the flavouring of gin.
- A densely branched growing habit for various butterflies and moths.
- Habitat: Full sun or light shade
- Status: In order for Juniper berries to revive, they tend to rely on animals such as deer or rabbits as they knock their seeds onto the soil. The lack of this activity has led to the berries decline throughout the UK.
- Tree height: 2-8 m, width: 0.8m
- First Bloom: January through April
- Second bloom: September through December

WILD ROSES



Fig 26

- The rose is England's National flower. An example of this is England's national rugby union team. It is therefore a very important flower and I feel it should be protected and preserved for future generations.
- Late-March/April to Late July = the first bloom cycle.
- Wild Roses prefer to be in sun, well-drained soil and water at the base of the plant in the mornings.
- Height: 3ft- 6ft (0.8-1.8m)

JAPANESE HONEYSUCKLE



Fig 27

- Japanese honeysuckle (Botanical name: Lonicera japonica) is a climbing plant that weaves around vertical structures such as trees, poles and pillars.
- The white flowers attract butterflies and a few species of birds.
- Length: 15 to 30 feet
- Spread: 2ft to 6ft (1 to 1.8m)
- Sun Exposure: Full sun to part shade
- Bloom Month: Late spring to fall
- Habitat: Well drained soil
- Status: Threatened in UK

CORN MARIGOLD



Fig 28

- Found across the South Downs farmland habitats.
- This corn marigold attracts bees, butterflies and moths. In Asian countries such as china, marigold shoots are eaten as a vegetable.
- Bloom time: June, July, August, September, October
- Habitat: Grassland, arable and farmland, full sunlight
- Status: Amber - Vulnerable and near-threatened
- Size: 80cm tall, 5-20cm leaves

MILK THISTLE



Fig 29

- Milk thistle is a botanic used in gin, found in the South Downs.
- Height: 3 – 4 feet tall
- Bloom time: Spring
- Habitat: Grows in light shade or full sunlight, usually dry rocky soils. Milk thistle flowers attract pollinators such as bees and butterflies.
- Bloom Time: This plant is biennial which means it has the ability to flower from April to October.

ANGELICA



Fig 30

- When used as an ingredient in the making of gin, angelica gives the beverage a bitter, earthy flavour.
- The herb can be located in damp environments such as lakes, rivers and shores. It requires full sunlight.
- Height: 1 to 2.4 metres tall
- Bloom time: Early Summer, but is biennial so usually dies after flowering the second time round. This means it needs re-planting.

HAWTHORN BERRIES



Fig 31

- The Hawthorn Bush has been spotted in many areas of the South Downs.
- The edible Hawthorn berries which are stewed, jellied, or used to flavour traditional spirits. Rarely used in gins today, it's likely they were once far more common in European distilling.
- Habitat: Located in hedgerows, woodland and scrub with full sun, but not fussy on soil type.
- Height: Hawthorn hedges are easily maintained at 5m high
- Bloom month: Blossoms during the month of May, berries in Autumn as the tree loses its leaves.

BIRDSFOOT TRIFOLIUM



Fig 32

- The South Downs is made up of a magnificent field of rapeseed plants as seen in the image beside, making it a very important plant to preserve.
- Habitats: It can be found in locations such as large fields, parks and by roadsides. Grows in full or partial sunlight, with average soil levels.
- Bloom Time: It has bright Yellow Flowers which generally flower during May and June
- Height: 2 to 3 feet

PLANT

LIFE

CICADA



Fig 33

- Cicada bugs may be thriving throughout Europe, however, in the UK they are a rare sight. With its only recent sightings in Britain being in Hampshire.
- Habitat: Female cicadas lay from 200 to 600 eggs in tiny holes made in branches and twigs in trees and shrubs, including junipers.

COSNARD'S NET-WINGED BEETLE



Fig 34

- Habitat: Due to the loss of their natural habitat, beech trees, the Net Winged beetle has rapidly declined throughout the UK. The only locations it has been spotted are the South Downs, Wye George and the Forest of Dean
- Adults are usually seen at sundown either resting on flowers and other vegetation, or in the air, moving between stops.

WART-BITER CRICKET



Fig 35

- This cricket can only be found in four naturally occurring locations across East Sussex, Dorset and Wiltshire
- While another population has been re-introduced in Kent, the wart-biter is at a high-risk of extinction due to loss of its habitat on heathland and chalk landscape as well as its prey.

WASP SPIDER



Fig 36

- The wasp spider warns of predators with its striking wasp like patterned body.
- Habitat: These spider are mostly found in grasslands where they weave their large webs, but they can also be spotted in coastal areas, woodlands, heathland such as the South Downs, farmlands and gardens.

BEARDED FALSE DARKLING



Fig 37

- The bearded false darkling beetle is now a listed insect as it is regarded as endangered. This is due to rural development which has led to the destruction of woodland and field habitats in which the beetle would live. It can now only be located in 5 areas of south-east Britain.

SMALL TORTOISESHELL

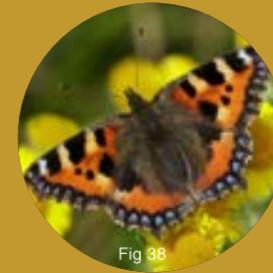


Fig 38

- Over the past through years, the small tortoiseshell butterfly has largely declined in the UK, especially in the South. This species had previously flourished, and the cause of its decline is unknown, making it all the more worrying.

LONG-TAILED BLUE

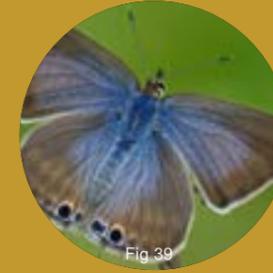


Fig 39

- The Long-Tailed blue butterfly is one of 3 migrant butterfly species that has appeared in Brighton and Hove during 2013 and 2015.
- The adult butterfly is most-often seen flying around garden flowers, especially those which are potential food plants. However, it may also be found on open downland.

LARGE BLUE



Fig 40

- The large blue butterfly became extinct in the UK in 1979 but since then successful reintroductions have returned it to limestone grasslands in Dartmoor, Somerset and the Cotswold.

SMALL WHITE



Fig 41

- Current conservation status: The small white is 20 per cent down in numbers since 1976.

MARBLED WHITE

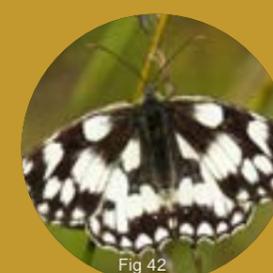


Fig 42

- The Marbled White occurs where long grass grows, where they lay their eggs, as a result it has an extensive distribution across Brighton and Hove
- Spotted in the South Downs.

INSECTS

COEXISTANCE OF KEY ENDANGERED SPECIES

(Within My Programme)

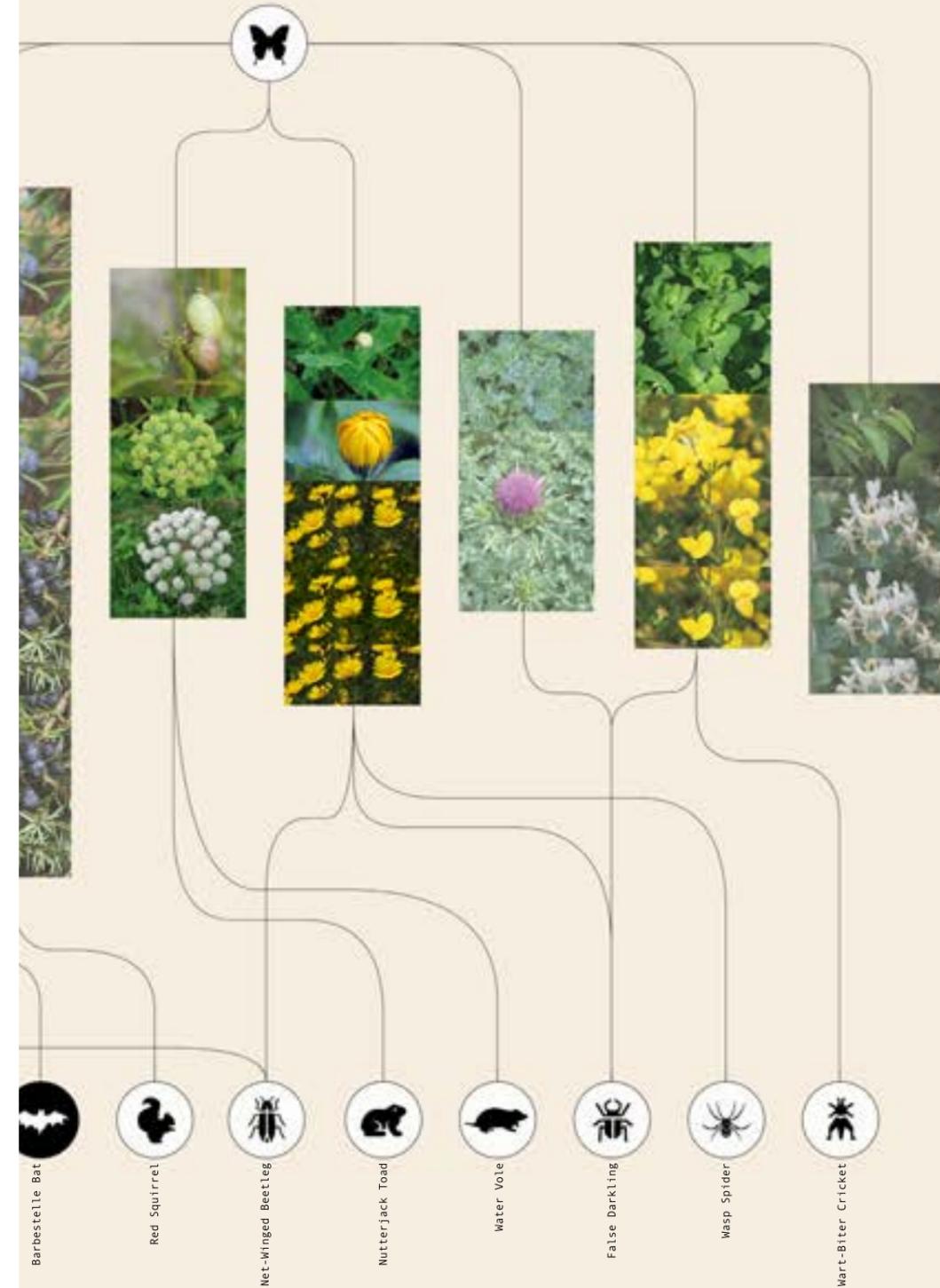
Key

- Flower/Berry Bloom = Botanicals Ready for Harvest
- Species Live in Tandem
- Diurnal
- Nocturnal
- High Specificity = Plant Needs More Sunlight

Perrenial Growth Cycles Of My Chosen Plant Species (In Months)



A graph to show the harvest time of key botanical plants that will inhabit my programme, and their interaction with other previously threatened organisms.



THE EXTINCTION MUSEUM

OPPORTUNITY FOR ADDITIONAL LEARNING

Along with the living species that I will be preserving, i will be adding an additional element into my design. This element will be called the extinction museum. The museum aspect of my design will consist of a collection of historic artefacts and objects that relate to animals that over the years have become extinct. These animals will vary from the medieval times to the 1900s, as throughout time we have continued to lose a variety of species.

The introduction of the sector gives tourists the ability to learn about species that once lived amongst us. It is also once again pulling through the idea of preservation as we encourage remembrance of the animals that we have lost over time, rather than forgetting them.



Fig 70



Fig 71

EXAMPLES OF EXHIBITED EXTINCT ANIMALS

1



Fig 72

The white Stork

Due to persecution, with the likes of hunting and habitat loss, the white stork has been made extinct in Britain. The species had a considerable presence in culture and folklore across the world, with familiar and unusual tales about their relationship with, and significance to, humans. The last record of breeding was by a pair who famously nested on St. Giles Cathedral in Edinburgh 601 years ago back in 1416.

2



Fig 73

The Brown Bear

Brown bears became extinct in Britain around 1,500 years ago, in the early Medieval period. Although, there has been efforts to see extinct species reintroduced to it's British ancient woodland habitats.

3



Fig 74

The Mining Bee

Mining bees such as the *Eucera tuberculata* and *Halictus maculatus* became extinct throughout Britain in the early 1900s. This extinction can be down to habitat loss, pollution, climate change and many more. Unfortunately this species is not the only that has been endangered as many species of bee are still at risk of extinction in parts of the UK.

PART B - The Gin Distillery & Bar

Part B of my programme is going to be the gin bar, where tourists are able to sip on fresh gin, flavoured directly from the botanicals grown within the protection programme. The bar space that I am creating is not only a place for sitting and relaxing, but will span over a wide area of the building including private pockets and viewing platforms, allowing tourists to get up close and personal with these sacred animals.



RE - USE OF BOTANICALS

'The basic definition of gin is a spirit made of ethyl alcohol and flavoured botanicals. Juniper berries must be included and should be a 'predominant' flavour. The alcoholic strength of the spirit must be no less than 37.5% ABV.'

Gin is made from a base spirit that has been distilled to a high strength then reduced to 60% ABV. This spirit itself is made from a variety of grains and to this spirit, a variety of natural botanicals are added. The number of botanicals varies from gin to gin, but a good quality premium gin may have six to ten botanicals and these may include everything from spices to tea and from flowers to exotic fruits.

WAYS TO R-E DISTILL GIN



Fig 43

Steeping Of The Botanicals - Traditional Method

- The base spirit, juniper berries and botanicals are put in a pot still for up to 48 hours.
- Finally, water is added to reduce the alcohol to its bottling strength. (Method used by Beefeater's Gin)



Fig 44

Vapour extraction

- With vapour extraction, botanicals never come into direct contact with the neutral base spirit.
- Botanicals are instead placed into baskets inside the still, above the base spirit.
- When the still is boiled, it vaporises and rises up, infusing with the botanicals. The infused vapour then condenses into a liquid.
- Finally, water is added to reduce the alcohol to its bottled strength.
- This method gives the spirit a more gentle flavour. (Method used by Bombay Sapphire)

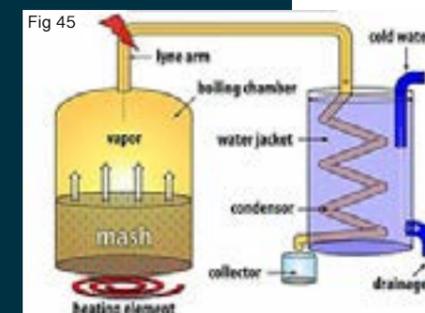


Fig 45

Individual extraction and blending

- Some distillers take each botanical separately and put it through the distillation process.
- Then the collection of different botanical distillates are blended to produce the required gin.

Study Of Interior Space & Equipment

Pair of 1200 litre Pot Stills



Fig 46

Lyne Arm from still running into vapour infusion chamber



Fig 47

Lid and basket being lifted from vapour infusion chamber

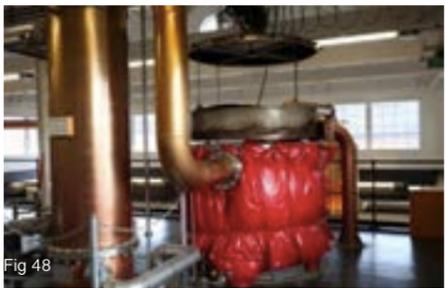


Fig 48

Botanicals after Infusion



Fig 49

Spirit Safe



Fig 50

Bombay Sapphire Distillery - At Laverstoke Mill

Bombay Sapphire is a very unique gin in the way it is created, however also uses some well known methods too. A derelict Mill in Hampshire, England was chosen as the Bombay Gin distillery site that could be visited by tourists. The site was open in Autumn 2013.

Thomas Heatherwick has also played a big part in the design process of the Bombay Sapphire distillery itself. The design included two sculptural glasshouses that are heated using warm air created during the distilling process, these are shown in the image to the right.

I decided to research this site because it has given me a greater understanding into the amount of space gin distillation will take up within my site, the hippodrome. It has also informed me on the equipment that I need in order to complete the process as seen beside.

I have also decided that I am going to use pre-sourced base spirit and purely use my site to flavour the gin rather than create from scratch as the infusion of botanicals is what I am focussing on.

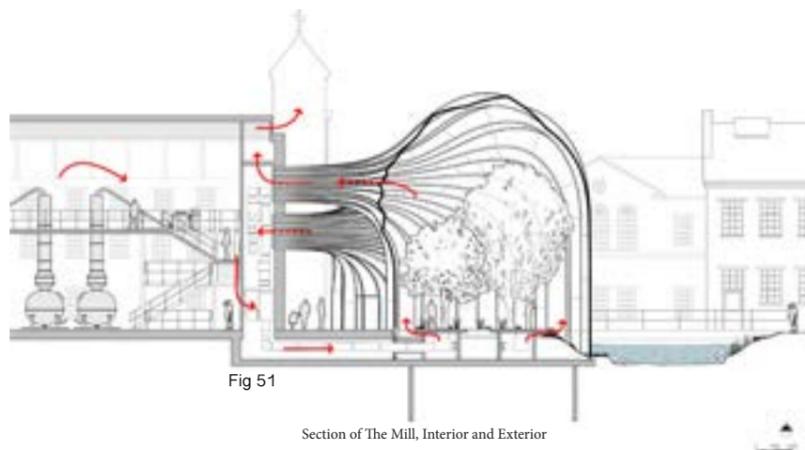


Fig 51

Section of The Mill, Interior and Exterior



Fig 52

Study of Adapting a Historic Building Into a Modern Distillery

Bently Heritage Mill (Minden)

The Historic Minden Flour Mill was originally constructed in 1906. By the 1920s, the mill had become one of the largest in the state, processing 100 barrels of flour a day as well as chicken and cattle feed. In the 1960s it closed down and changed ownership several times until eventually being purchased by the Bently family.

The building has since been transformed into a new mill consisting of 3 stories, tasting rooms and retail spaces. When the construction process took place they focused on repair rather than replacement; on maintenance rather than remaking. Wherever they rebuilt, they carefully removed the original materials, got the work done, and then put the pieces back together.

The story of the new mill is similar to that of the Hippodrome, I want to make sure I am preserving the artefacts and structural elements that I believe to still be safe and in working order as the dialogue between the old and new gives a sense of preservation and culture to the building. It allows the buildings story to be told without the need for words, not forgetting the positive sustainability aspect of re-working as oppose to completely re-creating.



Fig 55



One aspect in particular stood out to me with the transformation was the amending of the roof. During construction, the original roof was completely removed, leaving only the frame behind, before being put it back on, piece by piece. I would like to similarly remove the roof panels of the Hippodrome and keep the existing frame, however I would like to replace the panels with glass, allowing light into the building so that my wildlife are able to grow and flourish.

Bently Heritage Mill (Minden) - The Creamery

The mill also consisted of a new Creamery Building where distillation of vodka and gin, using Carl pot stills takes place. The building is made up of a small public area, tasting rooms, toilets, a kitchen and a second distillery used for malting grains, producing neutral spirits, storage, bottling, packaging and loading. This study gave me a better understanding if the additional rooms I could embed within my design in order to make it more holistic and inclusive.



Fig 56



Fig 57



58



59

SOUTH DOWNS GIN SAFARI

Additional Room Ideas...

The bar

- Main Open Bar Area
- Various Seating Spaces
- Viewing Platforms
 - Toilets

The Distillery

- Distillation Area
- Bottling room
- Storage
- Tasting Rooms
 - Spirit Shop
 - Private Bar

Spacial Requirements of Equipment

THE UNIQUE BOMBAY SAPPHIRE DISTILLATION PROCESS

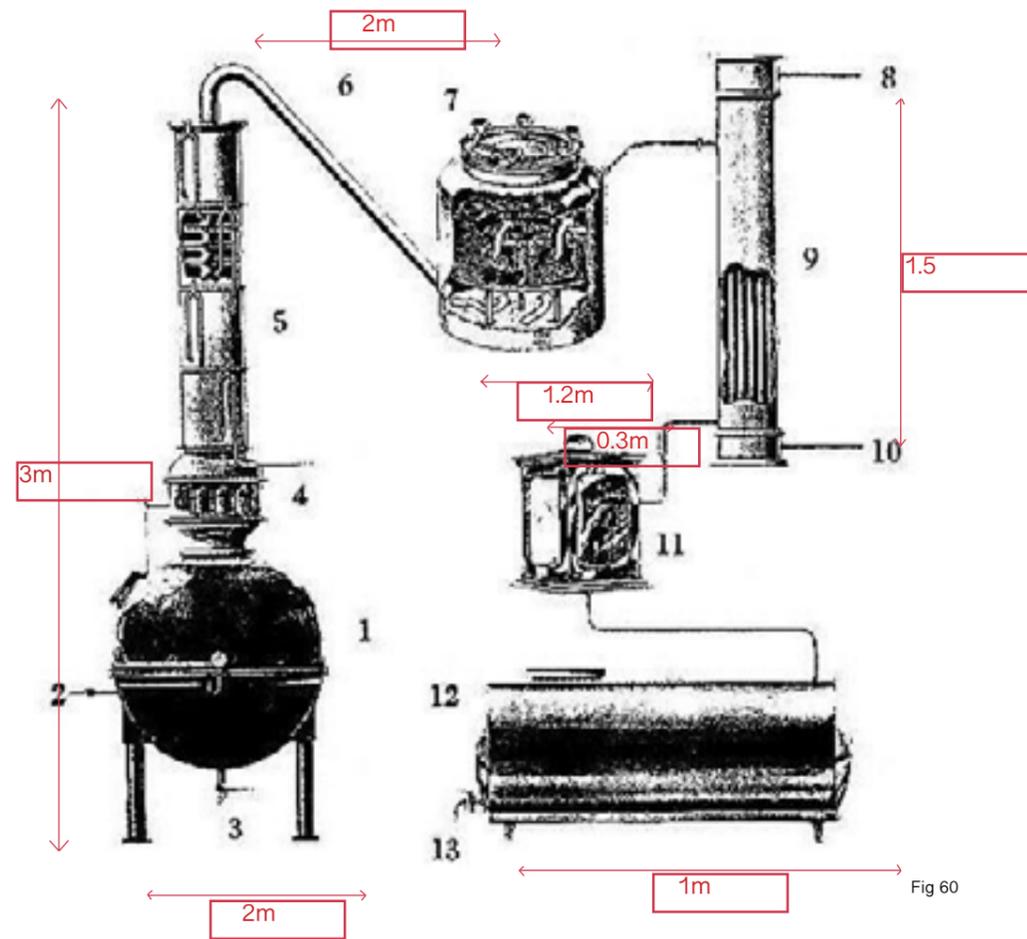


Fig 60

(Not to scale)

- | | | |
|----------------------|-----------------------------|------------------------|
| 1. Carterhead still | 6. Vapour pipe | 11. Spirit safe |
| 2. Steam inlet | 7. Copper botanicals basket | 12. Receiving tank |
| 3. Steam outlet | 8. Water outlet | 13. Bottling line feed |
| 4. Feints chamber | 9. Water condenser | |
| 5. Rectifying column | 10. Water inlet | |

PROGRAMME LEAFLET...

Across the next two pages is my programme leaflet aimed towards tourists, summarising the activities that will take place inside my South Downs gin safari.

VISIT BRIGHTONS VERY FIRST LIVING MUSEUM!

The South Downs gin safari, an indoor protection programme, has just launched in the heart of Brighton. The aim of the project is to protect and preserve a variety of the beloved South Downs bath farm- and woodland species, including insects and animals, many of whose current habitats are under threat as a result of the climate crisis.



The Living Museum is not only fun but it is also a great learning experience, as you can discover and observe creatures that you previously thought had the chance to disappear. And don't worry, the tiny creatures hiding in little pockets of the space are detected with the use of magnifying glasses.

The interior architecture itself is designed to offer different spaces as it contains habitats for them to enjoy. The diverse environments of the bar, downs, arable land and the botanical plants such as the lavender amongst them, create an amazing atmosphere. These botanical plants are part of our program. Not only do they provide shelter and food for the wildlife, but when ready to harvest rather than going to waste, some of these organic berries and plums are directly used within our gin. One of our distinctive gin flavours, our unique array of



KEY

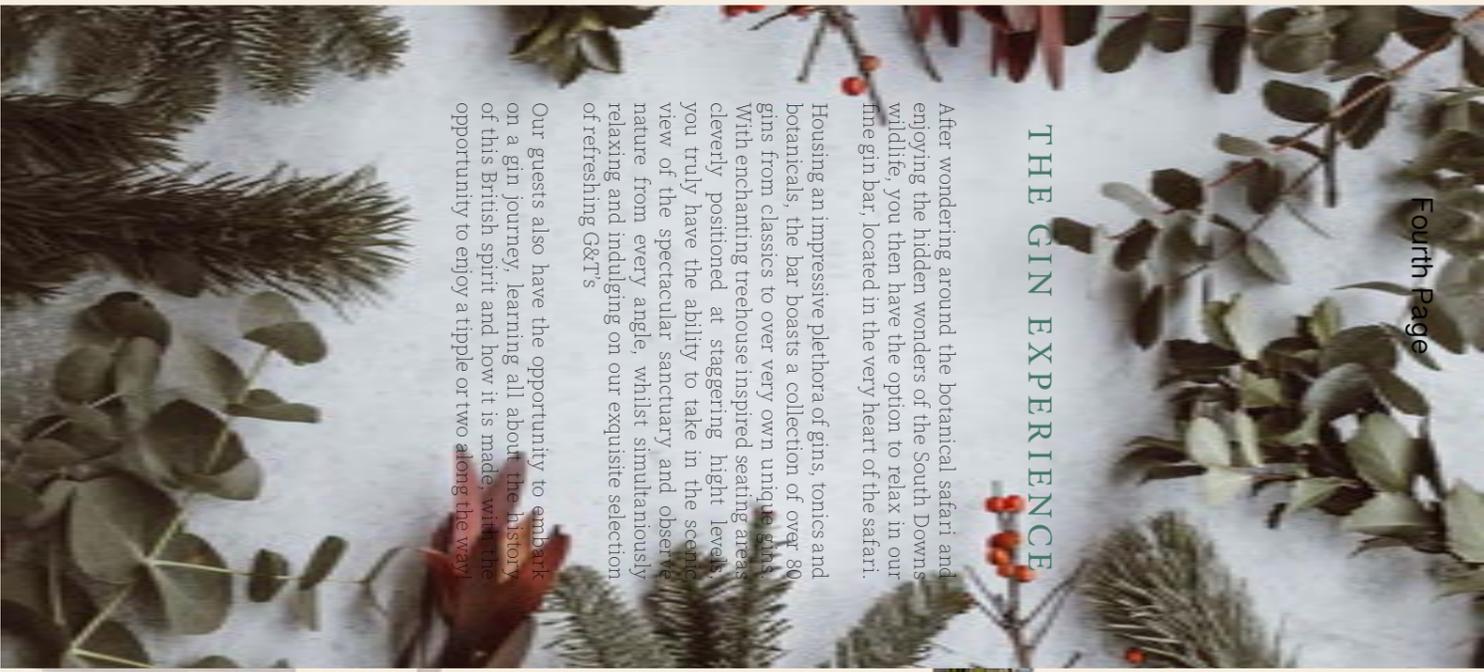
- Buildings
- Greenland (Gardens/Parks)
- Narrow Creevices (Allways/Building Gaps)
- Wetland (Ponds)
- Coastal Environment (Shingle & Sand)

THE GIN EXPERIENCE

After wondering around the botanical safari and enjoying the hidden wonders of the South Downs wildlife, you then have the option to relax in our fine gin bar, located in the very heart of the safari.

Housing an impressive plethora of gins, tonics and botanicals, the bar boasts a collection of over 80 gins from classics to over very own unique gins. With enchanting treehouse inspired seating areas cleverly positioned at staggering height levels, you truly have the ability to take in the scenic view of the spectacular sanctuary and observe nature from every angle, whilst simultaneously relaxing and indulging on our exquisite selection of refreshing G&T's

Our guests also have the opportunity to embark on a gin journey, learning all about the history of this British spirit and how it is made, with the opportunity to enjoy a tippie or two along the way!



OUR PRINCIPLES

I To conserve and enhance the natural beauty, wildlife and cultural heritage of the National Park by the public.



II To promote opportunities for the understanding and enjoyment of the National Park by the public.

KEY

- Buildings
- Greenland (Gardens/Parks)
- Narrow Creevices (Allways/Building Gaps)
- Wetland (Ponds)
- Coastal Environment (Shingle & Sand)

Diagram 1: Five Principles of Accommodation, Brighton Biodiversity Strategy, Climate Change Adaption Principles



WHO YOU'LL SPOT

Below are just a handful of the many, mammals, insects and reptiles who reside in the South Downs, that you have the opportunity to meet face to face...

Wasp Spider (Rare in UK):



Water Voles (Threatened):



Barbastelle Bat (Near Threatened):



The Nutterjack Toad (Endangered):



THE

KEY

- Buildings
- Greenland (Gardens/Parks)
- Narrow Creevices (Allways/Building Gaps)
- Wetland (Ponds)
- Coastal Environment (Shingle & Sand)

SOUTH DOWNS

GIN SAFARI

A Living Museum Experience



The South Downs Gin Safari
52 Middle Street, Brighton, BN1 1AL
Phone +00 000 000 0000
info@southdownsginsafari.com

South Downs Safari:
Map Location

CHAPTER TWO

STRATEGY ITERATION

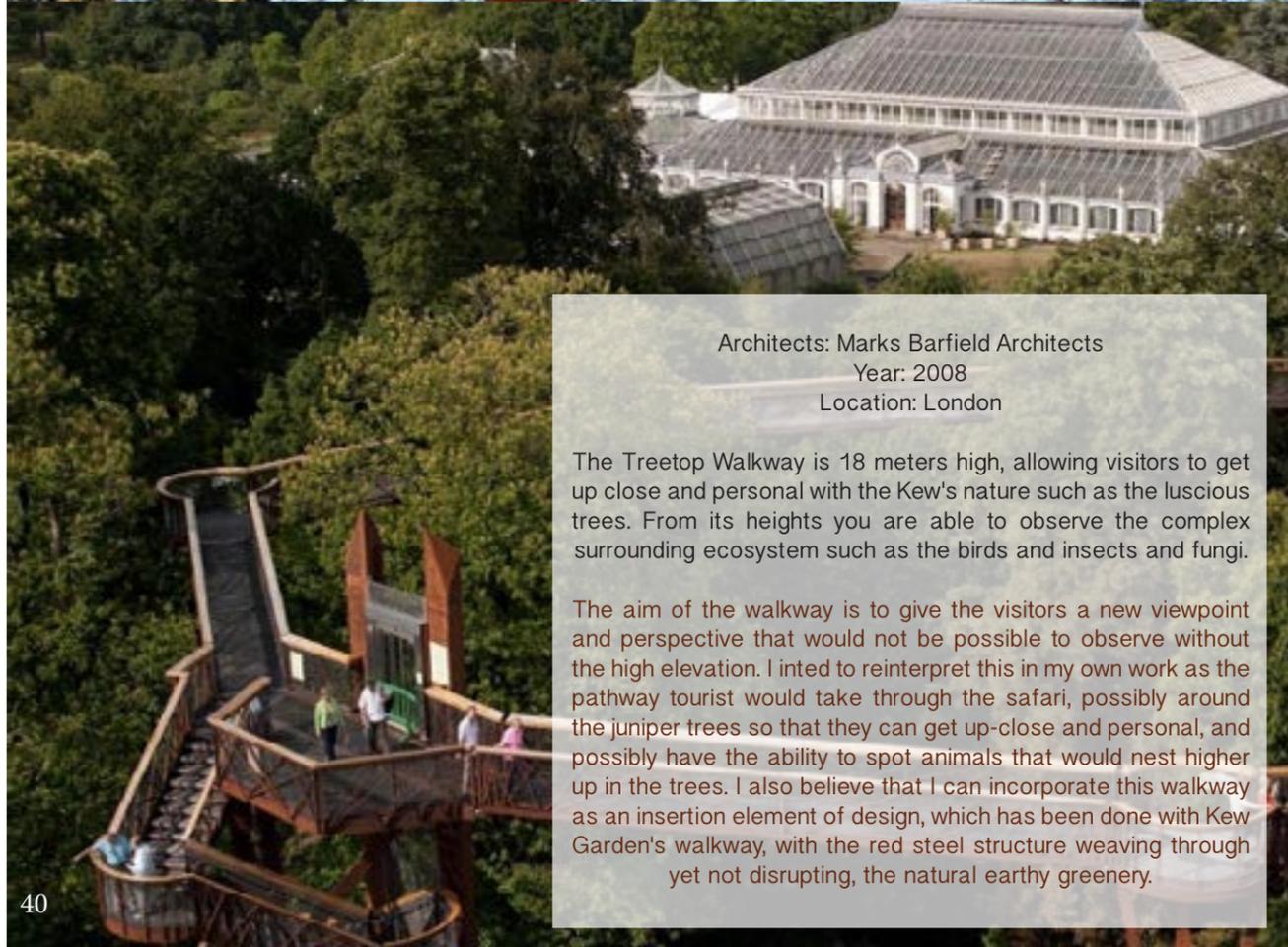
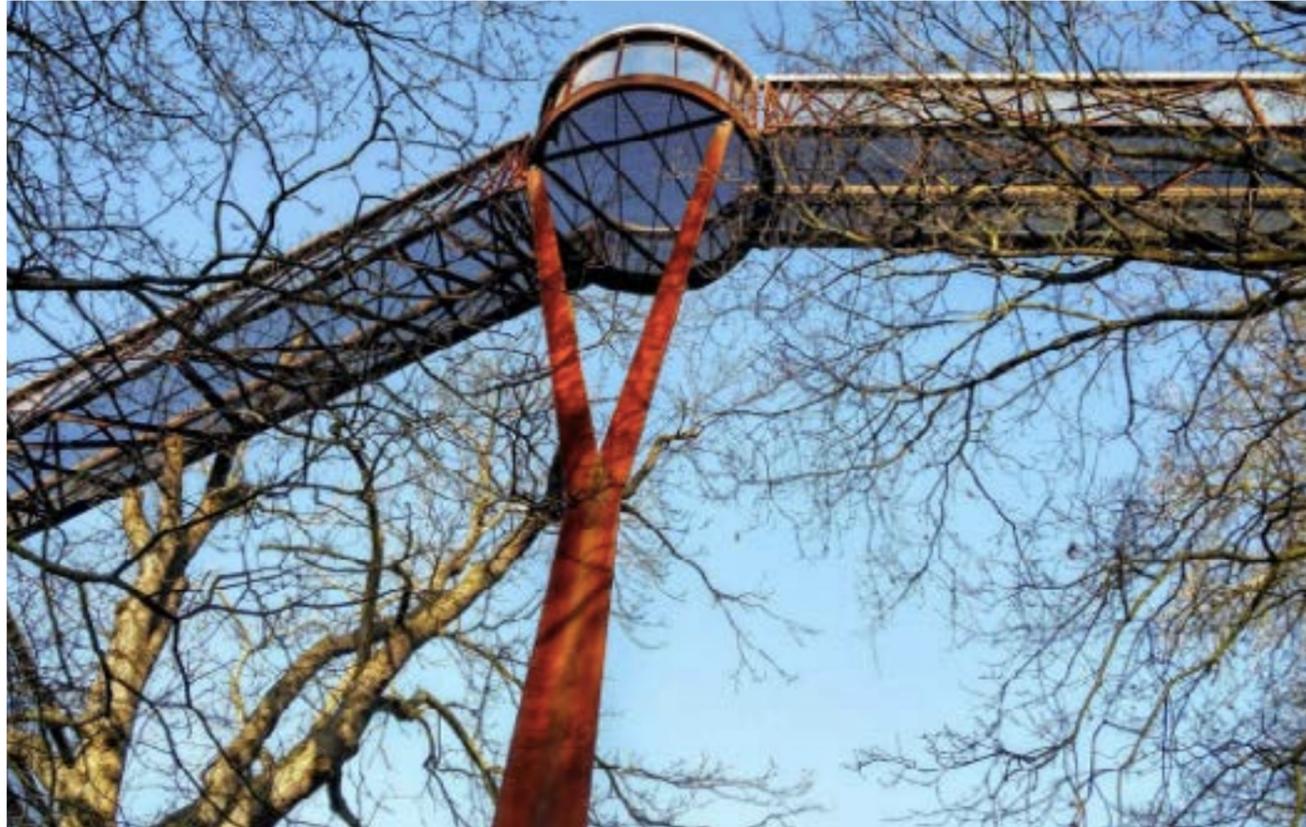
In this Chapter, I will be researching existing projects that have similar elements to my gin safari, such as projects with large viewing platforms or projects that have living species becoming part of the design. I will use this research to inspire my own strategy inside the hippodrome.

PART A - VIEWING PLATFORMS

Having elevated elements throughout my design is important for my southdowns gin safari, whether it be a viewing platform, raised seating or other social spaces. The range of different levels enables a variety of viewpoints, getting the customer involved in the wildlife. It also makes the design more playful and provides an element of structure as you are forced to take a specific journey through the site.

Precedent Study One
Kew Gardens Elevated Walkway

Fig 62



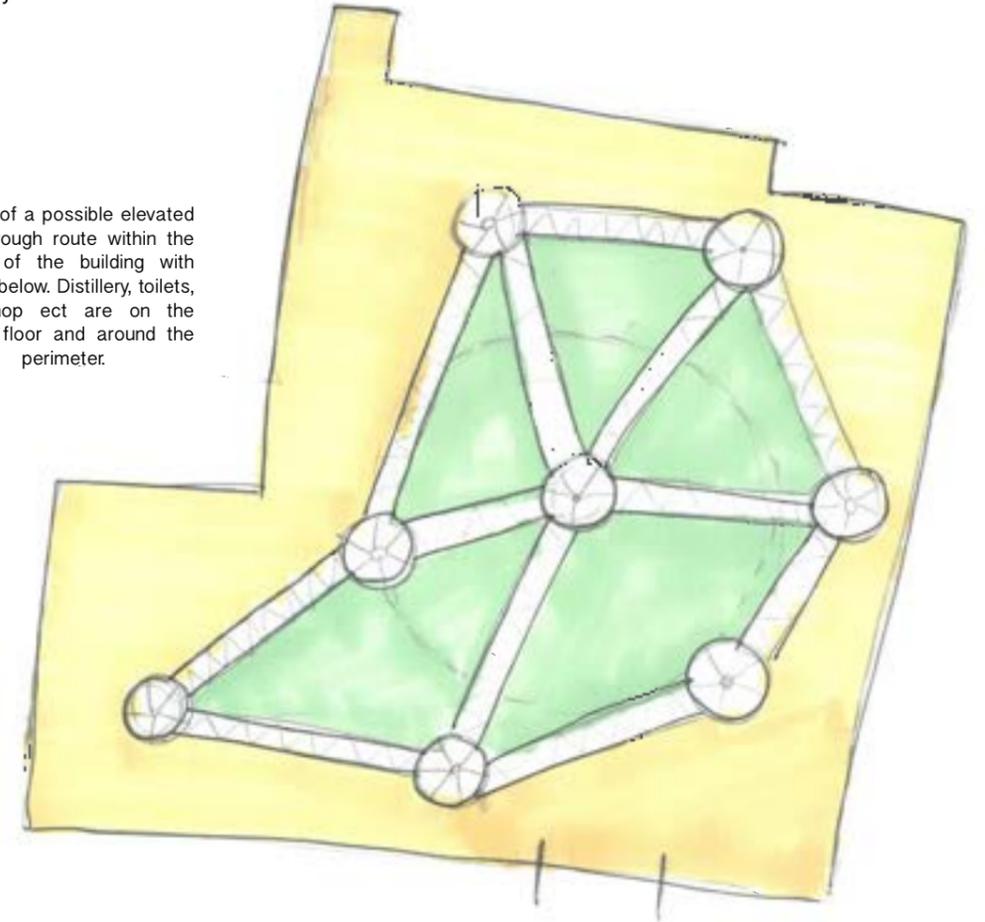
Architects: Marks Barfield Architects
Year: 2008
Location: London

The Treetop Walkway is 18 meters high, allowing visitors to get up close and personal with the Kew's nature such as the luscious trees. From its heights you are able to observe the complex surrounding ecosystem such as the birds and insects and fungi.

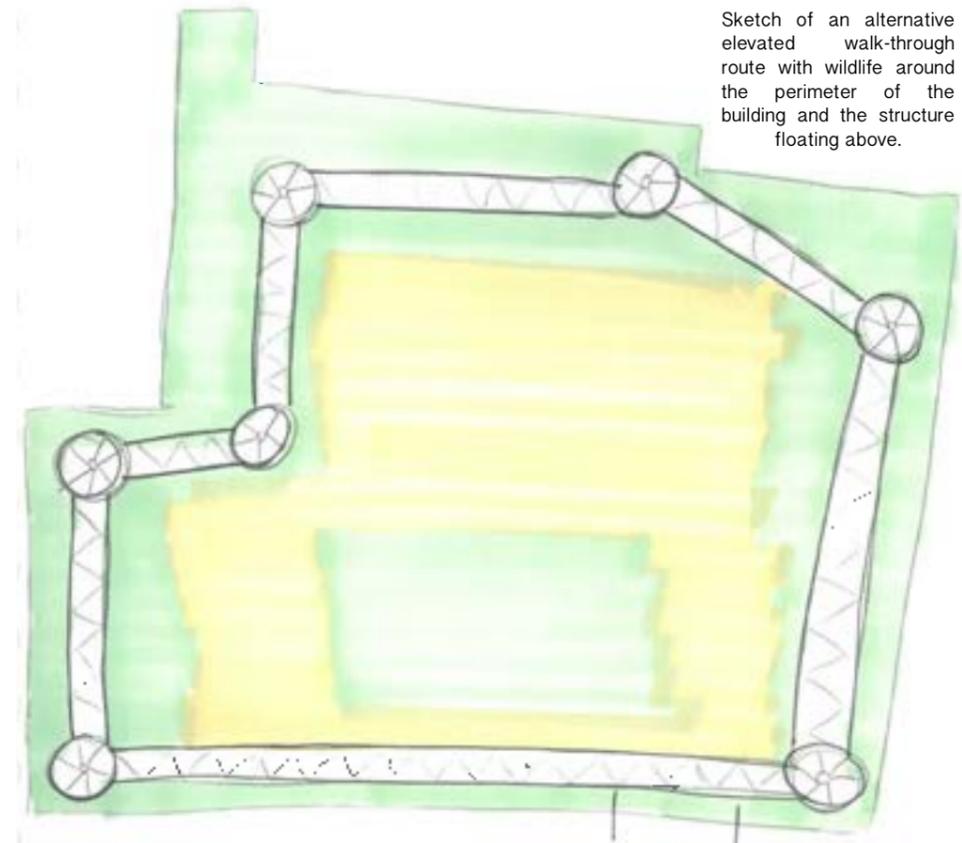
The aim of the walkway is to give the visitors a new viewpoint and perspective that would not be possible to observe without the high elevation. I intend to reinterpret this in my own work as the pathway tourist would take through the safari, possibly around the juniper trees so that they can get up-close and personal, and possibly have the ability to spot animals that would nest higher up in the trees. I also believe that I can incorporate this walkway as an insertion element of design, which has been done with Kew Garden's walkway, with the red steel structure weaving through yet not disrupting, the natural earthy greenery.

Sketches in Plan of Possible Elevated Walkways
Passing Through my Gin Safari:

Sketch of a possible elevated walk-through route within the centre of the building with wildlife below. Distillery, toilets, bar, shop ect are on the ground floor and around the perimeter.



Sketch of an alternative elevated walk-through route with wildlife around the perimeter of the building and the structure floating above.



Precedent Study Two
Cafe Terrace Ho Chi Minh

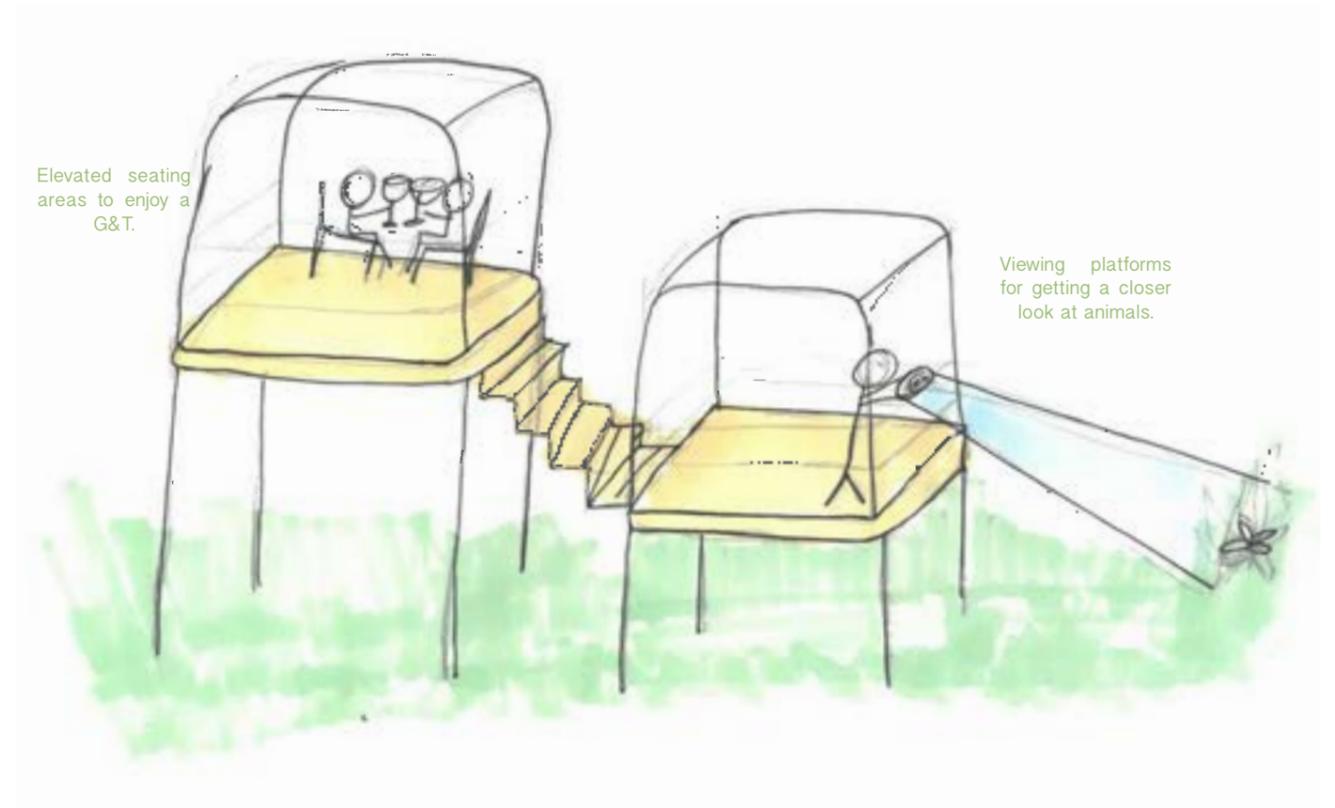


Year: 2013
Location: Vietnam

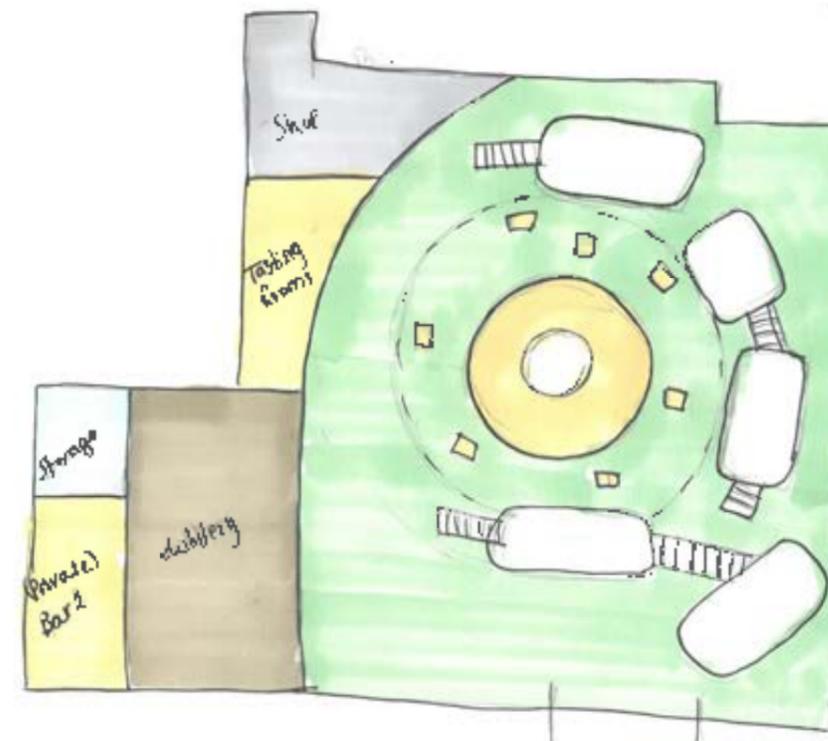
Cafe Terrace, is a small restaurant which makes use of the small area by introducing staggering seating areas climbing up the walls. The customers are surrounded by greenery and natural elements as they dine. There is also regular seating available for those who would prefer.

An alternative way to incorporate level changes within my design will be to raise some of the bar seating areas, this not only provides people with the option for a private dining experience, but it also gives the ability to enjoy the bar whilst s Architects: Marks Barfield Architects

The use of Staggered seating within the safari:
(Inspired by Cafe Terrace)



Plan View Iteration of the Staggered Seating Inside the Former Hippodrome:

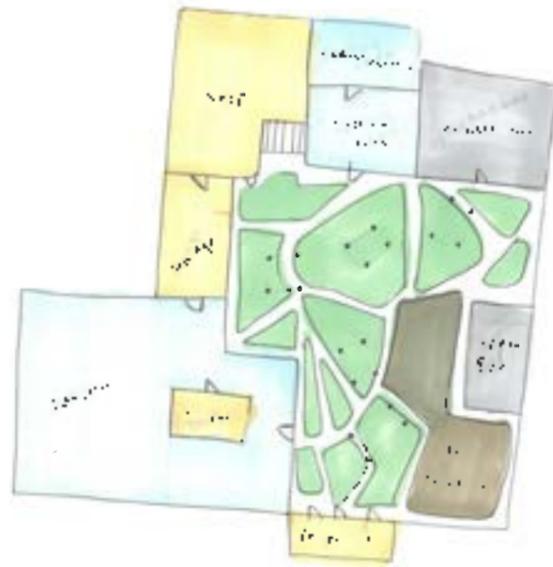


In this sketch I have split up the ground floor to gain a better grasp of spacial necessities, I've decided to have the main bar and safari area on the right / middle which is open planned. Here I have incorporated the staggered seating which allows for tourists to walk around underneath and have the option to get a better look up high, whilst simultaneously saving space.

On the left I have decided to put the more private rooms such as the distillery, shop, private bar, storage room and tasting rooms.

Plan View Iteration 2 of the Staggered Seating Inside the Former Hippodrome:
(Split Up into Plan Layers)

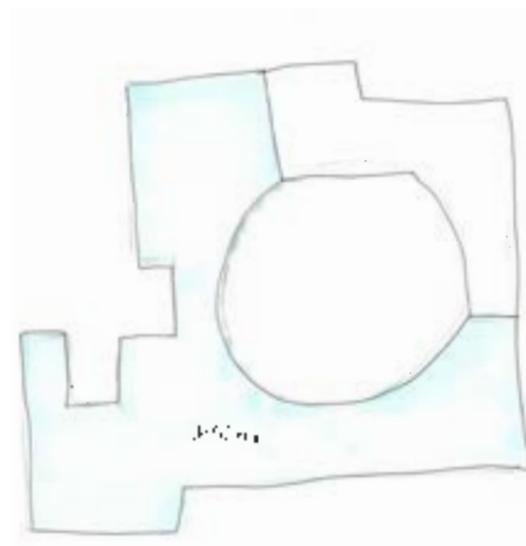
Ground Floor Plan -



Mezzanine Floor -



First Floor -



PART B - STUDY OF REINFORCEMENT (THE GLASS ROOF)

Precedent Study Three
 Hanza Platform Concert Hall

Architect: Sudraba Arhitektura
 Year: 2020
 Location: Riga



Fig 64

'Sudraba Arhitektra has reinforced the dilapidated shell of an abandoned 20th-century railway warehouse in Riga and turned it into a concert hall called Hanzas Perons (Hanza Platform). The venue is in a cargo warehouse that was formerly part of a large freight railway station on the edge of the Latvian capital's historic city centre.

The old structure had been deemed structurally unsound, similarly to the hippodrome, so Sudraba built an external load-bearing steel structure that encases and extends the original building.¹

¹ Jon Astbury (Jan 2020) *Steel and glass exoskeleton transforms abandoned warehouse into concert venue*

CROSS SECTION

Blue lines = Where new structural materials have been added

Grey = The original brickwork

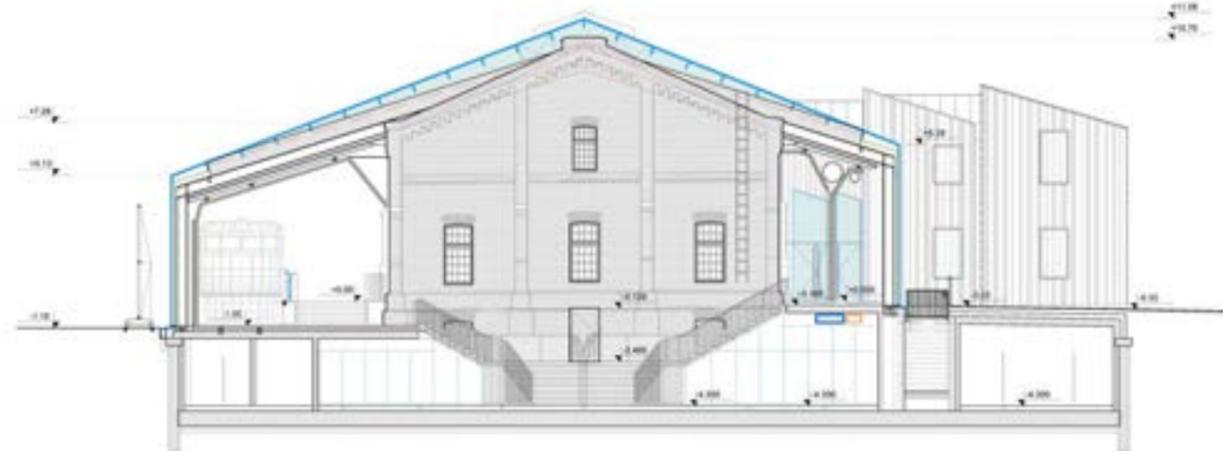


Fig 65



Fig 66

Hanzas Perons original brickwork and timber fabric is covered by a new roof with skylights.



Fig 67

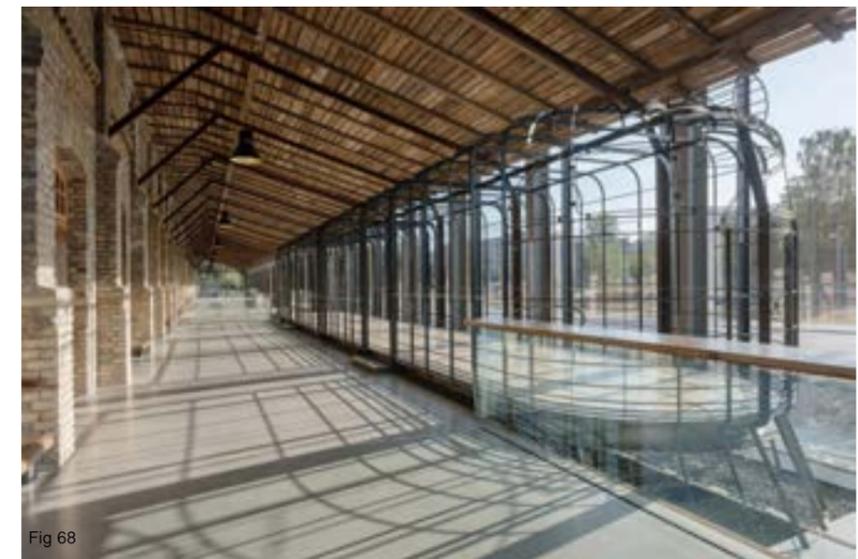


Fig 68

The use of the glass shell encasing, yet not intervening with the original structure, is something that I am interested in replicating throughout my design. I also like the contrast between the modern materials and the primary materials, so its very clear what is new and what is old.

EXPERIMENTING WITH REINFORCEMENT DESIGN & LIGHT NECESSITIES

One aspect of the first image that particularly stood out to me in the previous study are the skylights that lie in-between the existing brick wall and steel frame. For my programme, I will need to transform the roof into an open skylight. A way I can do this without changing the roof completely, would be to keep the existing framework and replace the damaged panels with glass, so you can still see the primary structure. This allows natural sunlight to flood the building, allowing wildlife to grow.

Original Hippodrome roof



Hippodrome with adapted glass roof panels



PART C - SPACIAL DESIGN ITERATIONS USING C.A.D & 3D MODELLING

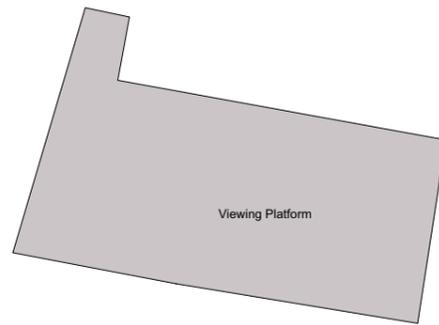
ITERATION ONE

Vectorworks Drawings

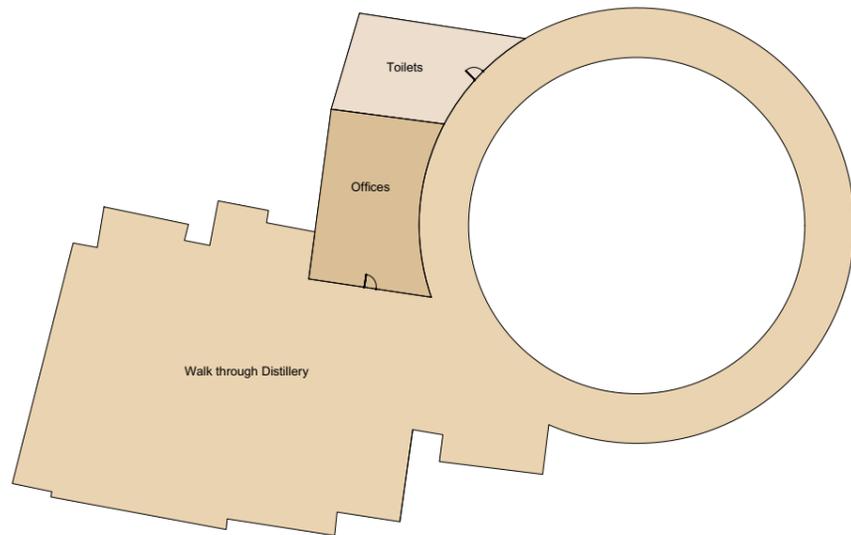
Ground Floor



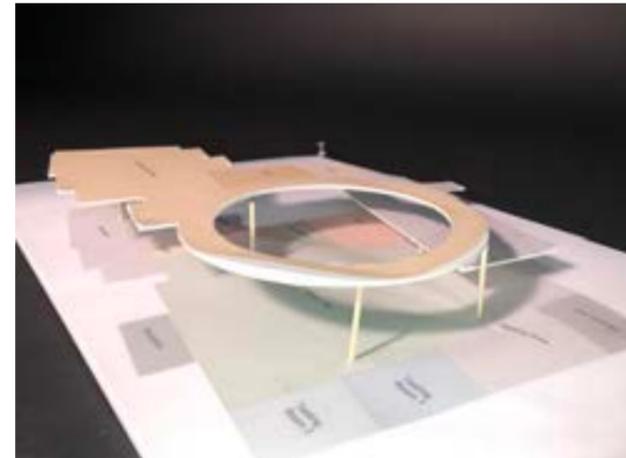
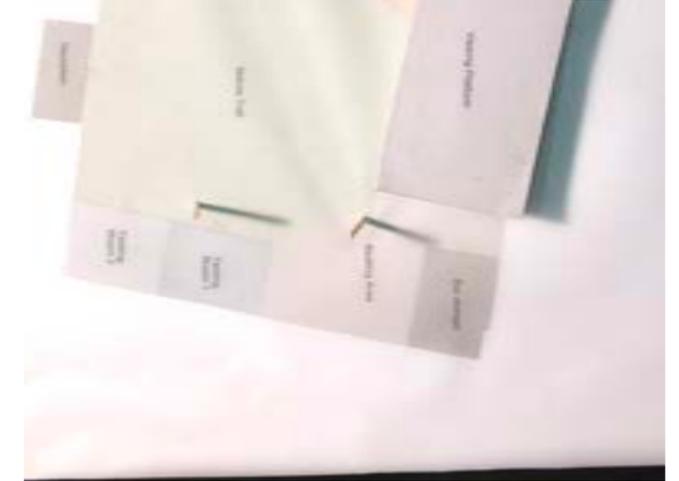
Mezzanine Floor



Floor One



3D Model



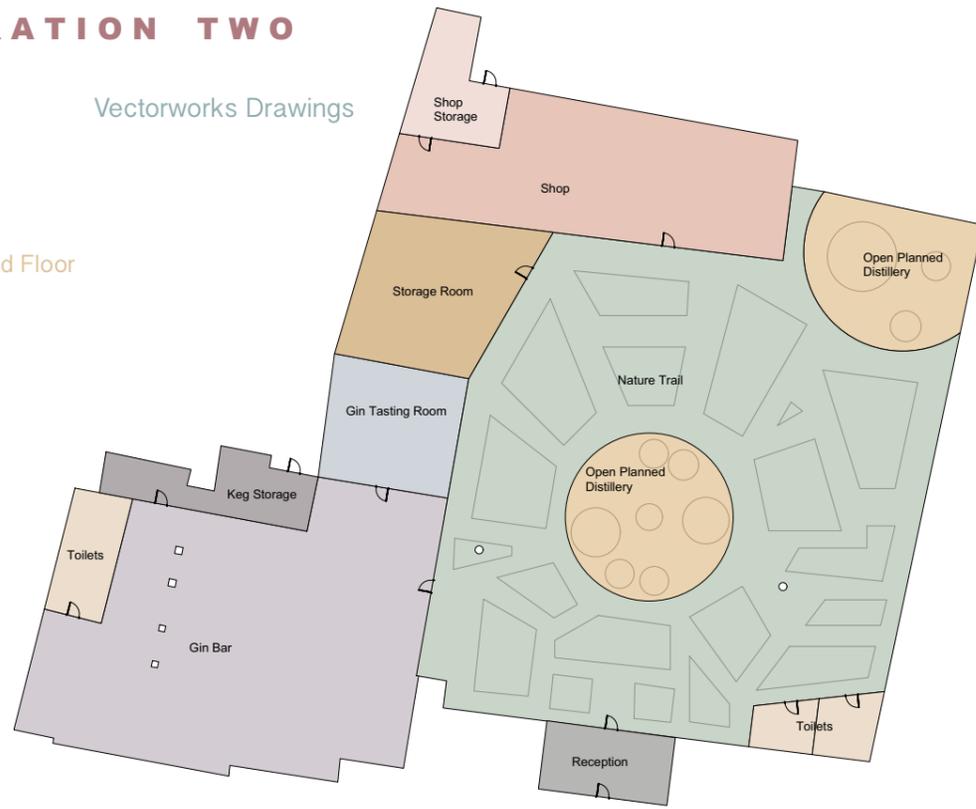
In this first design, my aim was to break the space up into two separate floors, the bottom being anything with relevance to the wildlife walk-through and the gin bar, and the second floor being the distillery. This design has open floors with the use of the new viewing platform on the second floor, and the existing mezzanine as an additional seating area, and it also consists of a few private spaces such as the shop, preservation museum and gin tasting rooms.

IMPORTANT FINDING- Working in plan allowed me to realise the extent of the hippodromes large open planned design. This is what led me to the idea of adding an additional element which I have previously mentioned, the Extinction Museum as i have ample space allowing me to include it.

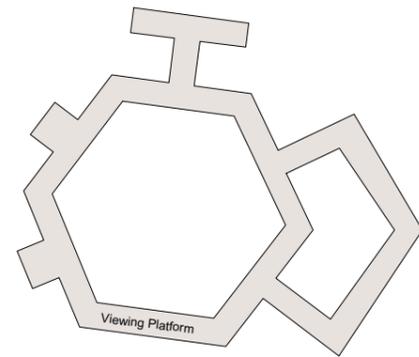
ITERATION TWO

Vectorworks Drawings

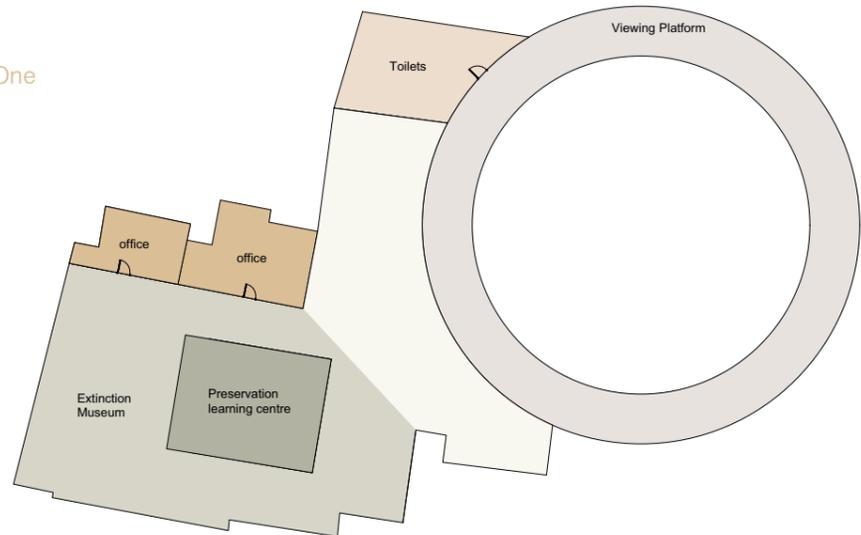
Ground Floor



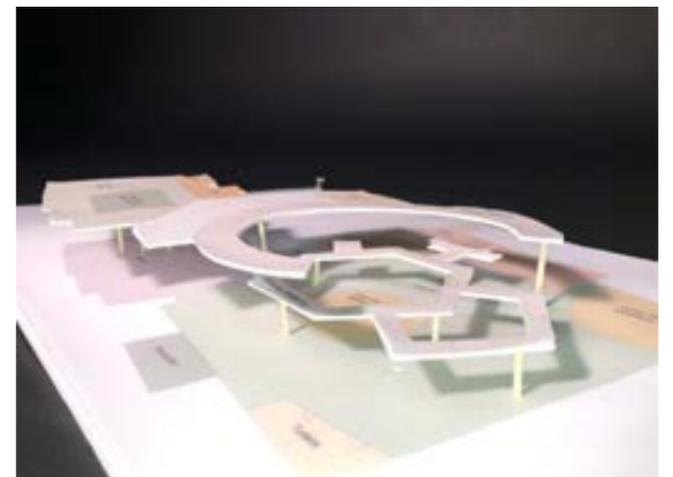
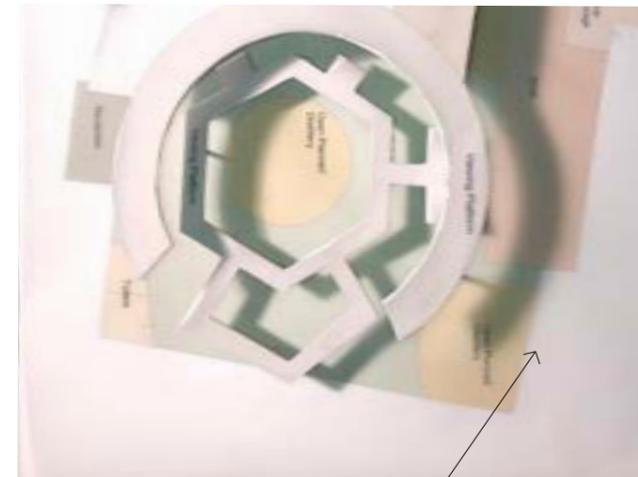
Mezzanine Floor



Floor One



3D Model

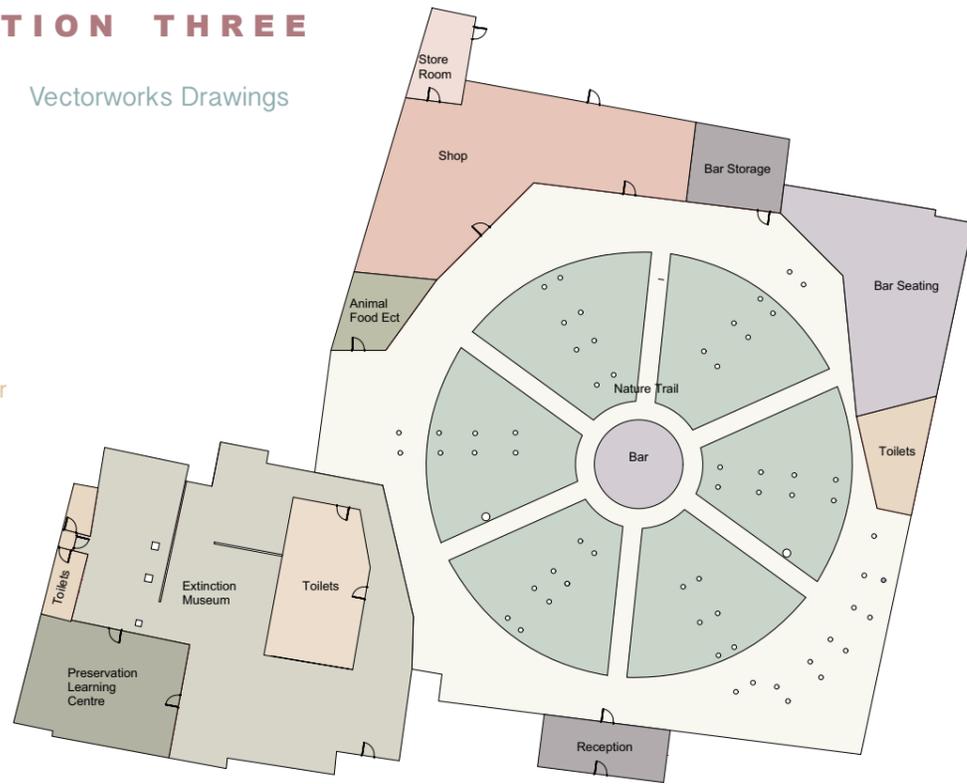


This second design was inspired by Kew Gardens Elevated Walkway. I introduced a similar style walkway, located on the mezzanine floor level, which circulates around the centre of the building, it also comprises of some pocket spaces along the way, giving people the ability to stop and view the wildlife from different perspectives. I've also played with the locations of the different rooms in this design, for example having the distillery as an open centre piece rather than the bar, with the wildlife surrounding it.

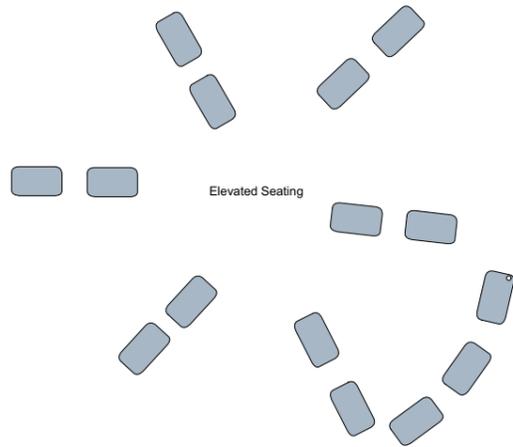
ITERATION THREE

Vectorworks Drawings

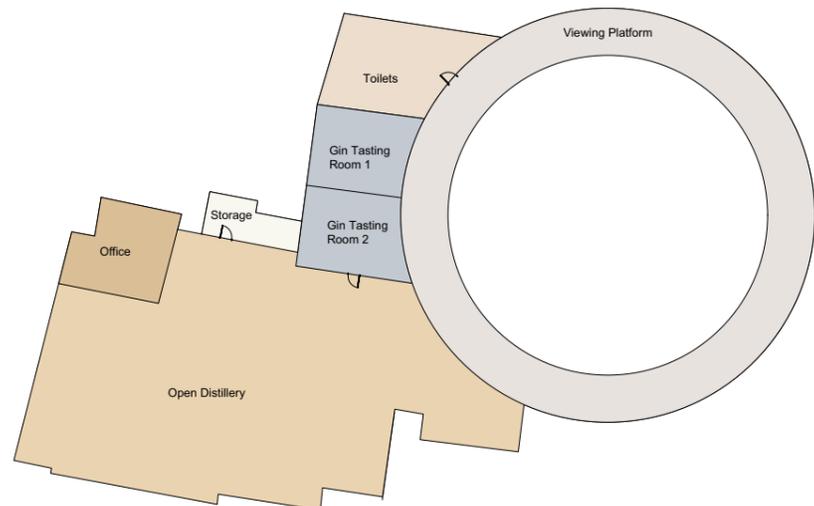
Ground Floor



Mezzanine Floor



Floor One



3D Model

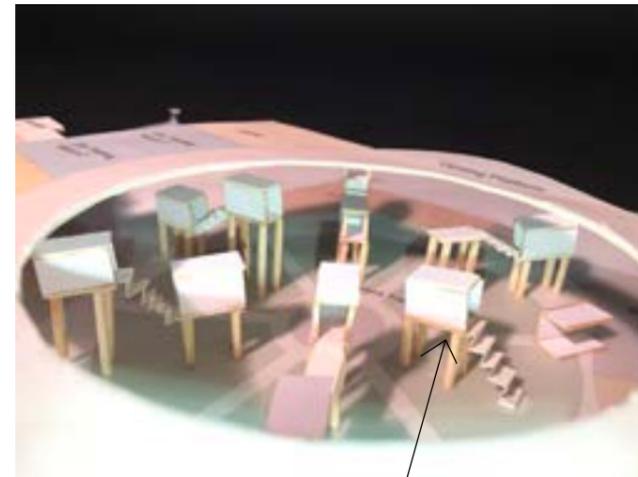


Fig 76

Design three was inspired by Cafe Terrace, Ho Chi Minh. The use of elevated seating areas slotted directly above the wildlife creates a much more involved atmosphere for the users. Rather than the seating areas for the bar being an isolated part of the design, with separate rooms and spaces, the integration of the two means that the design becomes more fluid. People would now be able to sit within the seating booths whilst acknowledging and analysing the nature, almost becoming part of the nature themselves.

The use of level changes and stilts holding up the booths also means that I don't have to alter much of the hippodrome's original structures as many aspects of the design are insertions.

PART D -
FLUID DESIGN: INTERIOR LANDSCAPING

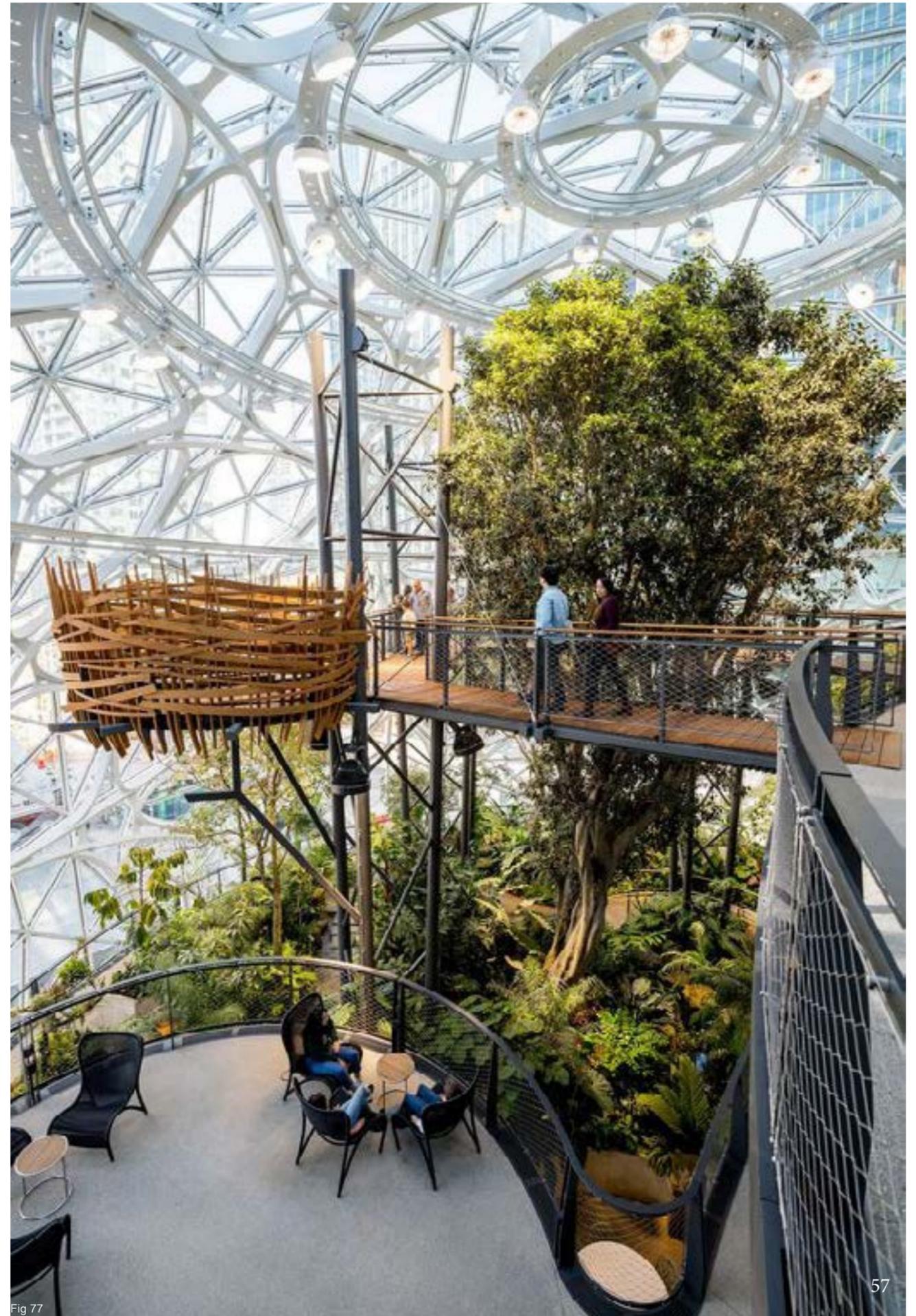


Fig 77

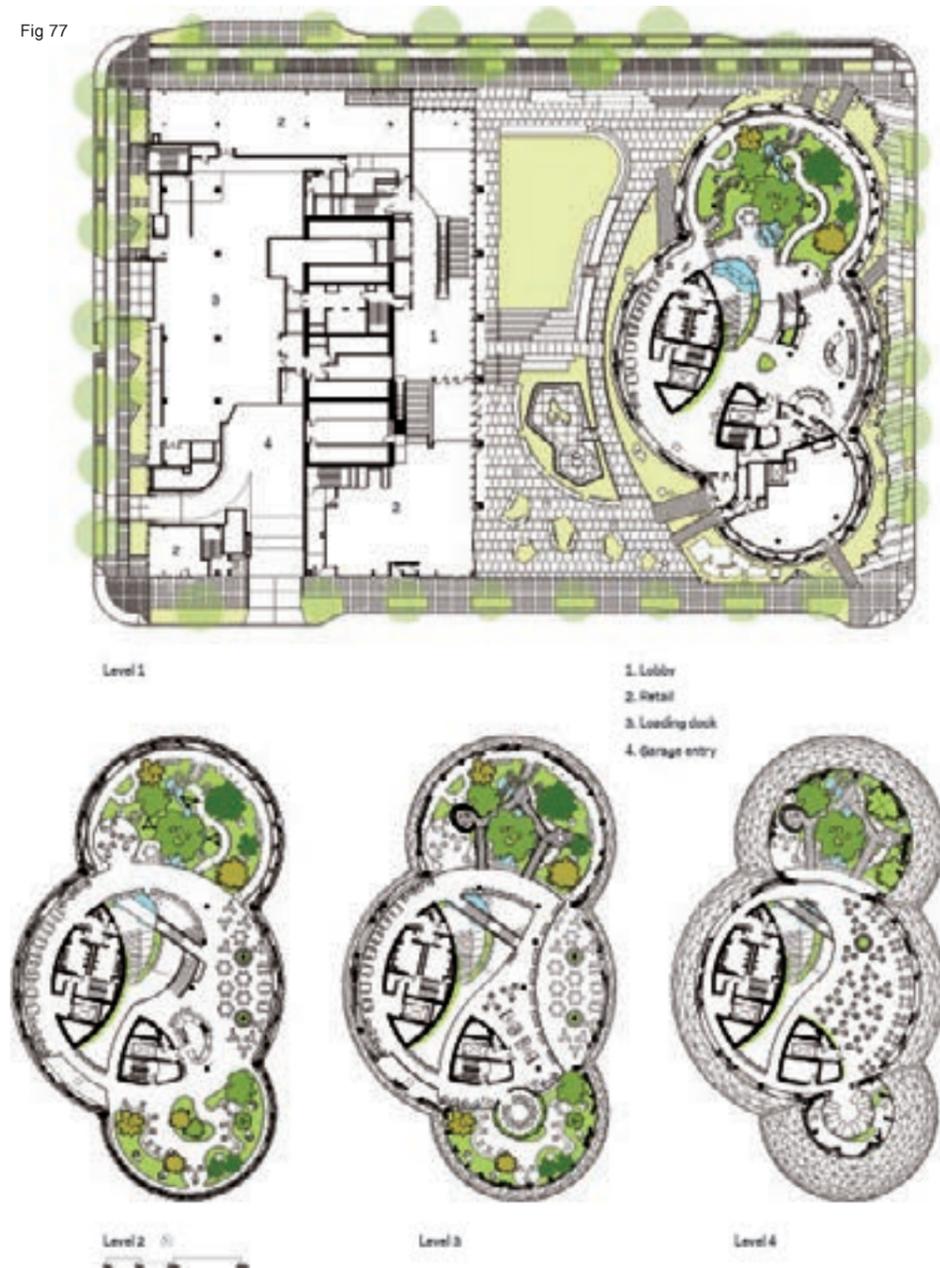
THE AMAZON SPHERES

Architects: NBBJ
 Year: 2013
 Location: Seattle

I then came across the Amazon Spheres which massively inspired me to alter my design. The workspace structure has been comprised of three giant three-story glass orbs and is home to 40,000 plants. In total, the structure amasses 620 tons of steel and 2,643 panes of glass - though it includes no formal offices.

There are many aspects of this design that appeal to me, from the fluidity of the spaces, the wildlife living throughout, the mass of light entering the room, the hidden pockets, the use of cut out level changes, the contracting materials and the wide open spaces. I can in turn alter and use all of these aspects to better my own design.

Fig 77



REFLECTION ON MODEL TESTS & THE AMAZON SPHERES

The Amazon Spheres

After comparing certain qualities of the Amazon Spheres design that I enjoy, with the models I have made of potential programme designs, I have decided to improve on my original designs. I have realised that a large part of the success of the Amazon spheres design is the use of large open spaces and fluidity as the different levels feel as if they flow into one another.

I feel that I can achieve this within my design by adding additional small level changes for viewing platforms and seating areas. I also enjoy the use of the huge living wall in the centre as it acts as the focal point of the design. Additionally, the material qualities used within the architecture such as the steel rails contrasting against the timber bridges and the modern glass, are things that I will consider to use within my own design.

3D Render Of The Amazon Spheres



Fig 79

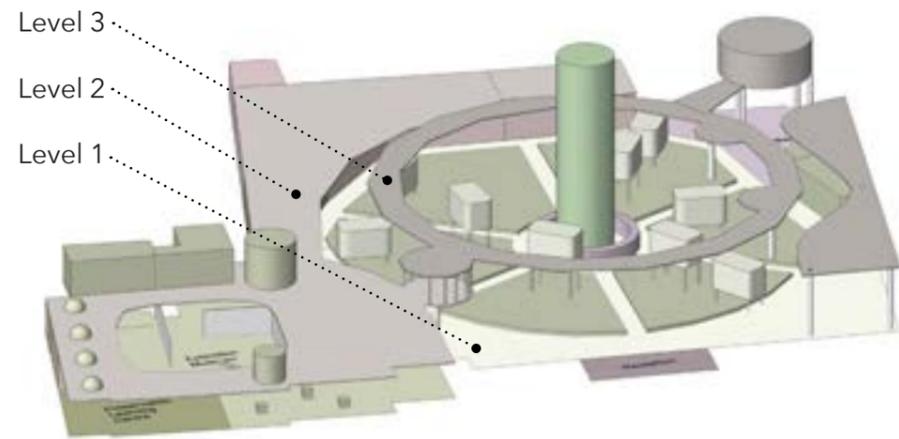
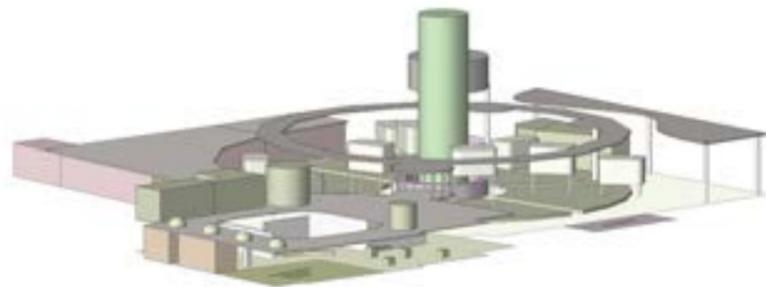
CHANGES MADE...

My Design

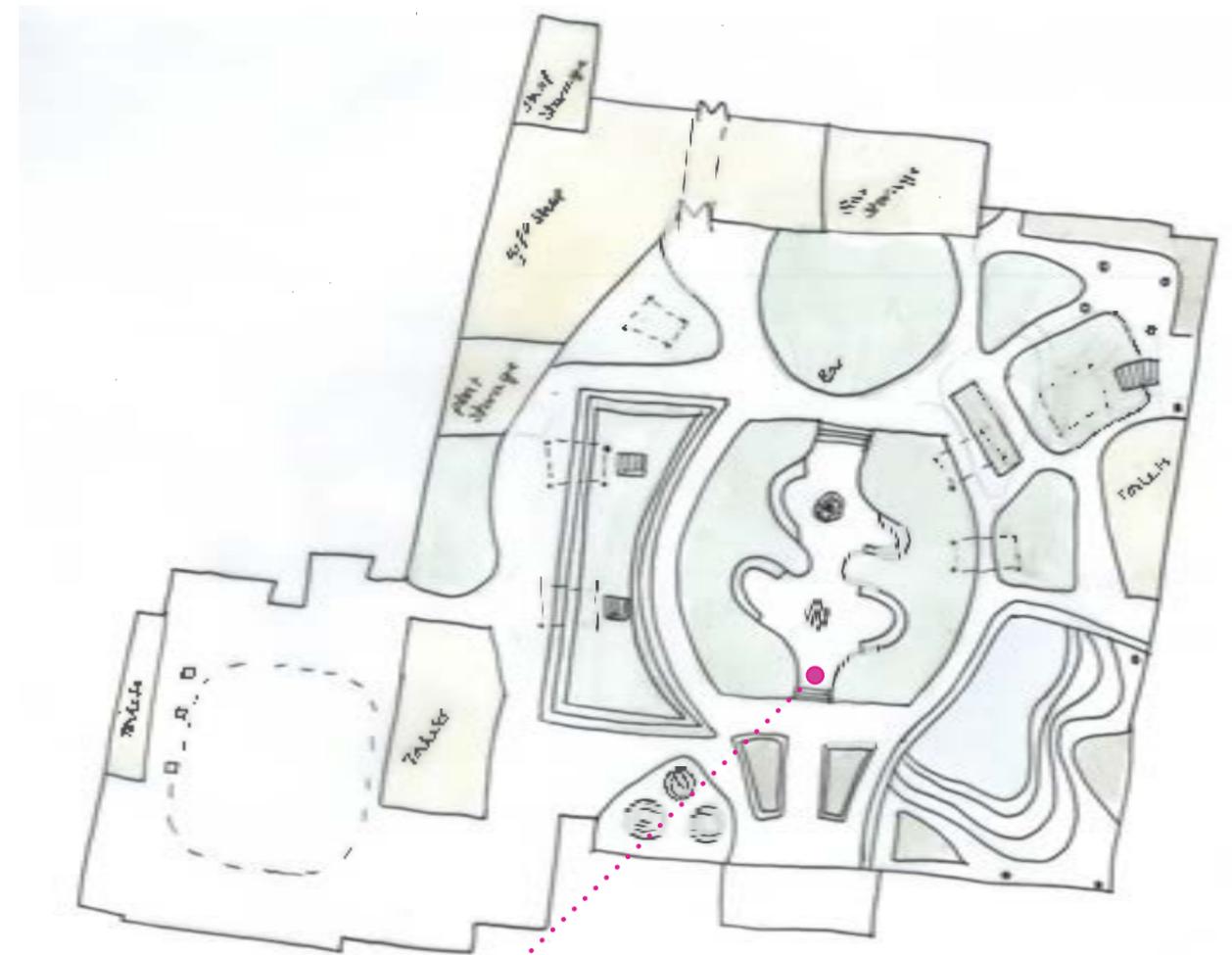
From this, I adapted my design by merging aspects of design two with the elevated walkway, and design three with the seating pods on stilts. I also made the design more fluid and intersecting by splitting up floor two into two and overlaying them so you can peer down onto the floors beneath. I also decided to put the gin tasting room on stilts to pull it away from the static floor.

Moreover, I decided to incorporate the idea of preservation a little more, not only will I be preserving the South Downs living species and teaching the public about the animals that have unfortunately become extinct, but I will also attempt to not interfere with the existing hippodrome structures when inserting the new modern aspects such as the seating on stilts. This will mainly be obvious in aspects of the design such as the museum and the distillery, which would be pulled away from the original building.

3D CAD Model Showing Alterations To My Design



ATTEMPT TO MAKE THE PREVIOUS GROUND FLOOR MORE OF A LANDSCAPE



Interior Landscaping

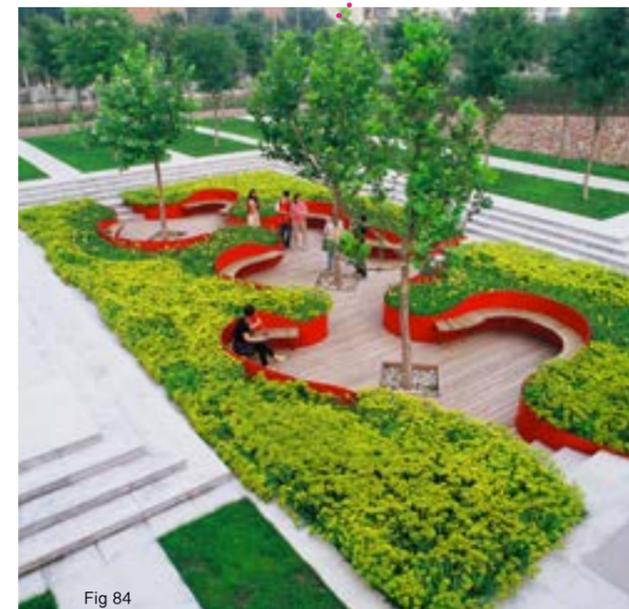


Fig 84

- This ground floor iteration was inspired by Tianjin Qiaoyuan Park by Turenscape Landscape Architecture, as seen in the image beside.
- I have adapted the Ground floor seating to be integrated within the wildlife and greenery rather than being a separate area.
- The bar is also part of the wildlife in cave life structure and is no longer central to the design.
- The museum is now weaved throughout the wildlife safari, with the previous museum space becoming an archive.
- Floor 1- Viewing platform is also part of the museum with engravement and information following along the floor

THE ARCHIVE & MUSEUM STANDS

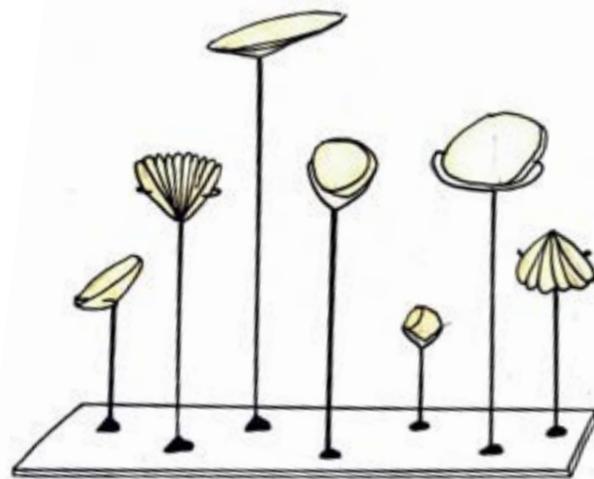
FINER DETAILS ABOUT THE MUSEUM

I decided when adapting the previous design, that it is important for me to integrate the museum into the wildlife rather than separating them. Therefore, I need to design ways in which I will exhibit fragments of history throughout the safari such as key information, bones, fossils, replicas ect. I will be presenting these in exhibit stands and these will be designed in more detail later on in the design process.

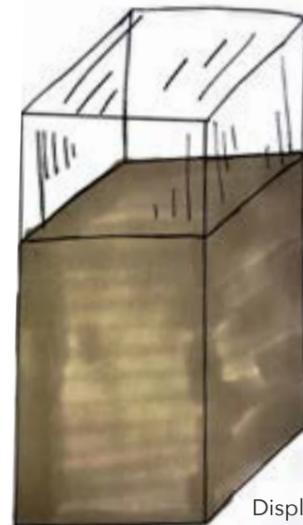
This therefore means there is ample space within the institution where the main museum previously was. This space will now be used as part archive, part museum, where historical records and documents will be located, available for academic study - alongside displays of physical objects which would be open to the public.

PART E - THE FINAL DESIGN

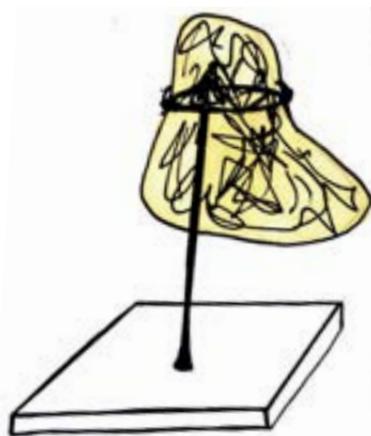
Rough Sketches Of Display Unit Designs...



Shell Display Stand



Display Cabinet

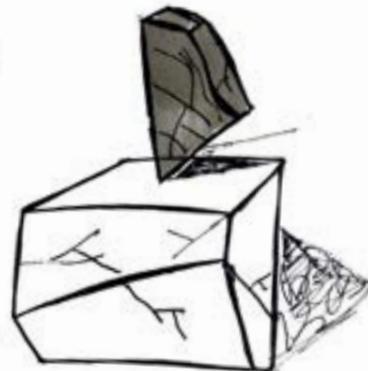


62

Simple Fossil Display Stand

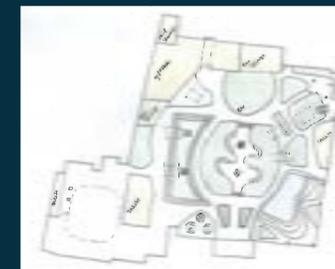


Information Stand

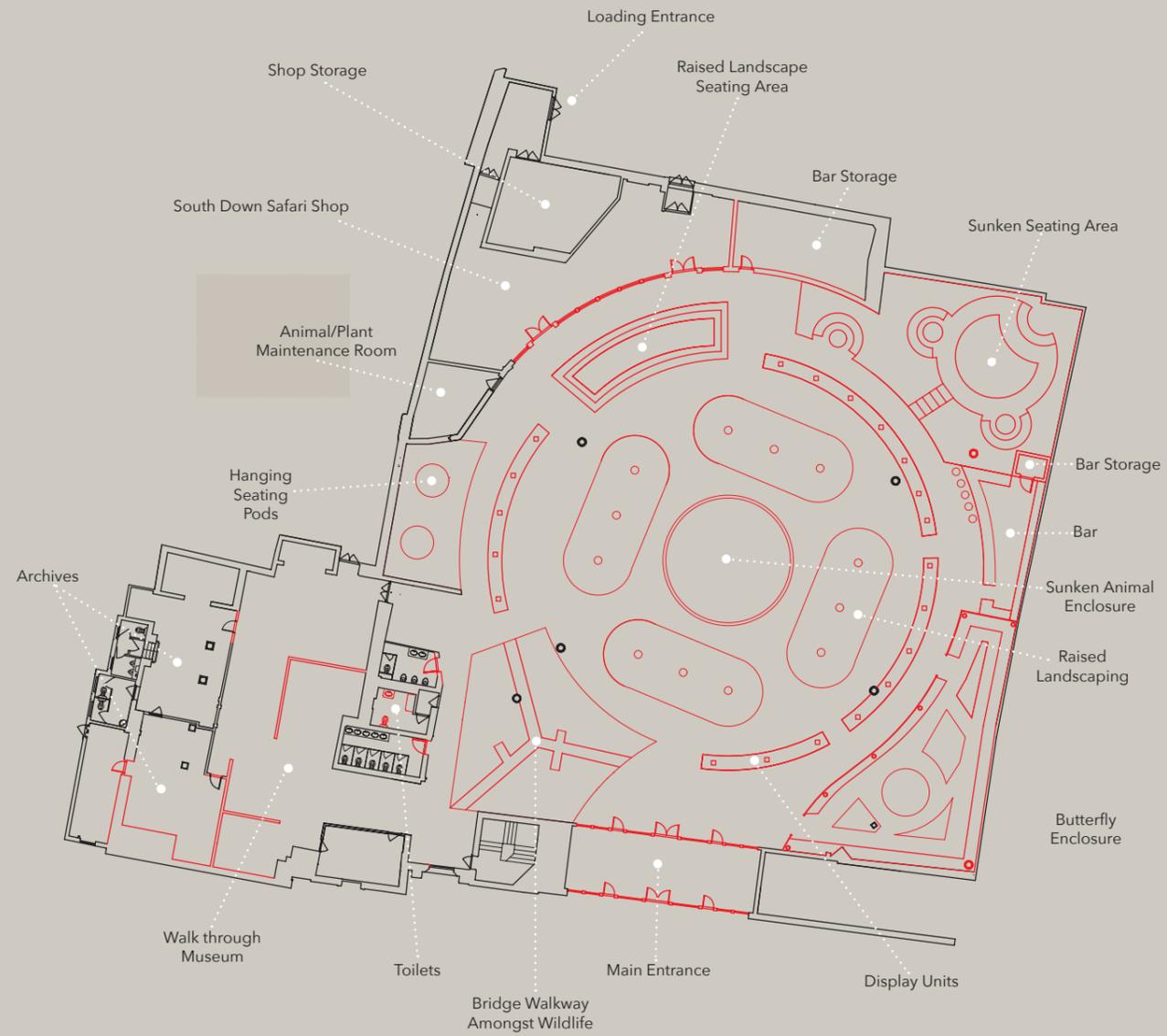


Display Pedestal

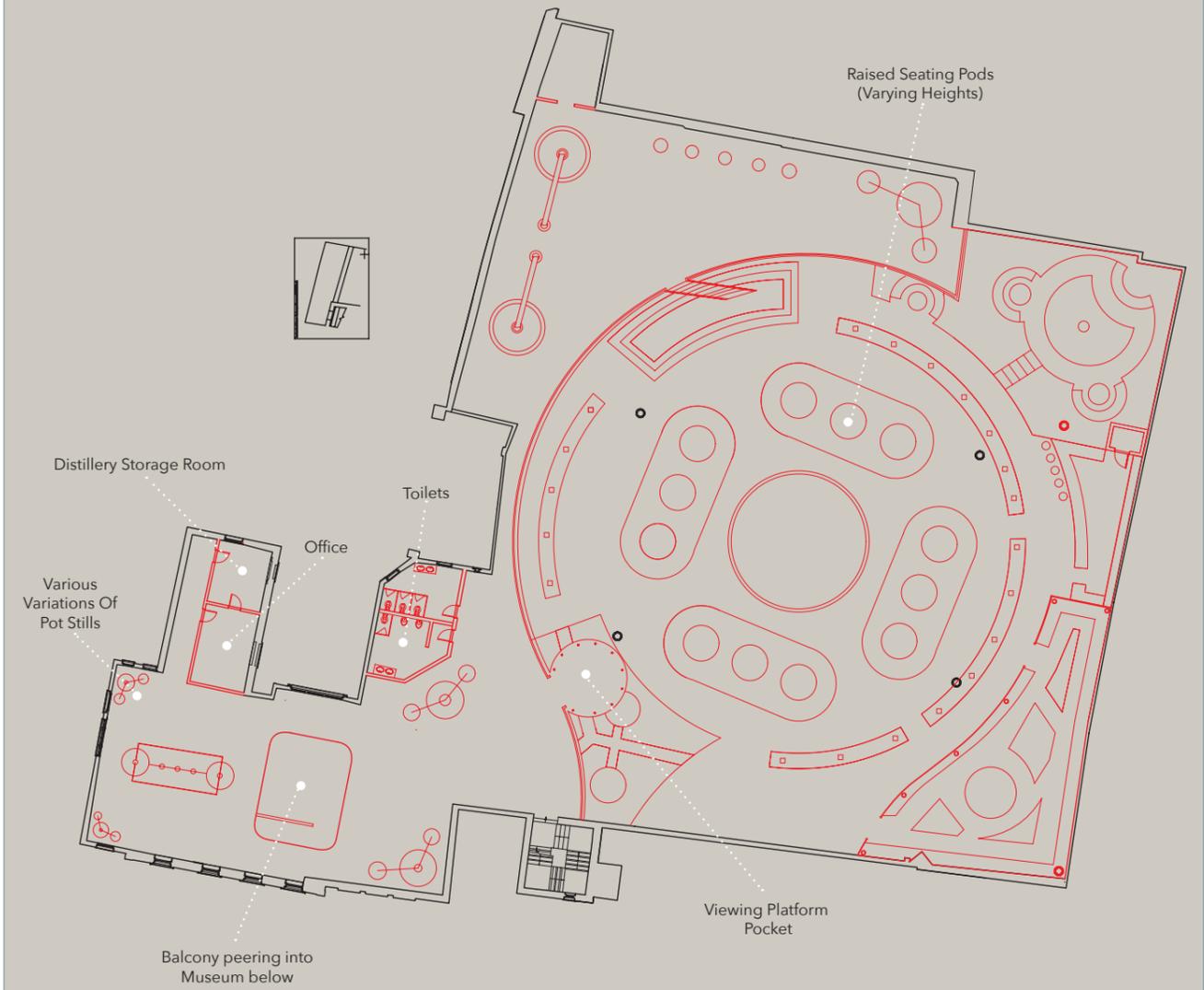
I decided to merge this extreme landscaping design with my previous 3D model, in which came up with the final design.



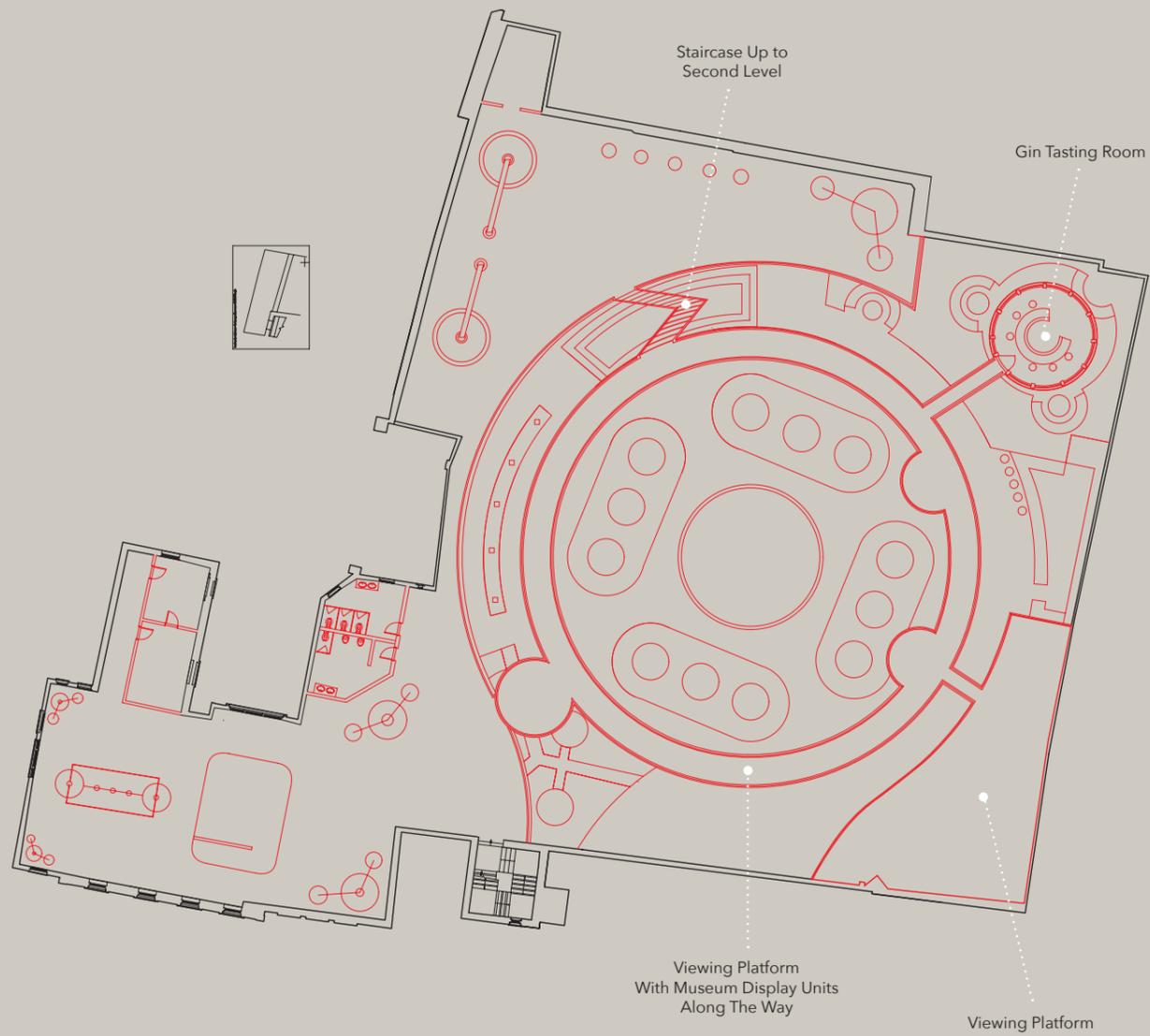
FINAL GROUND FLOOR PLAN



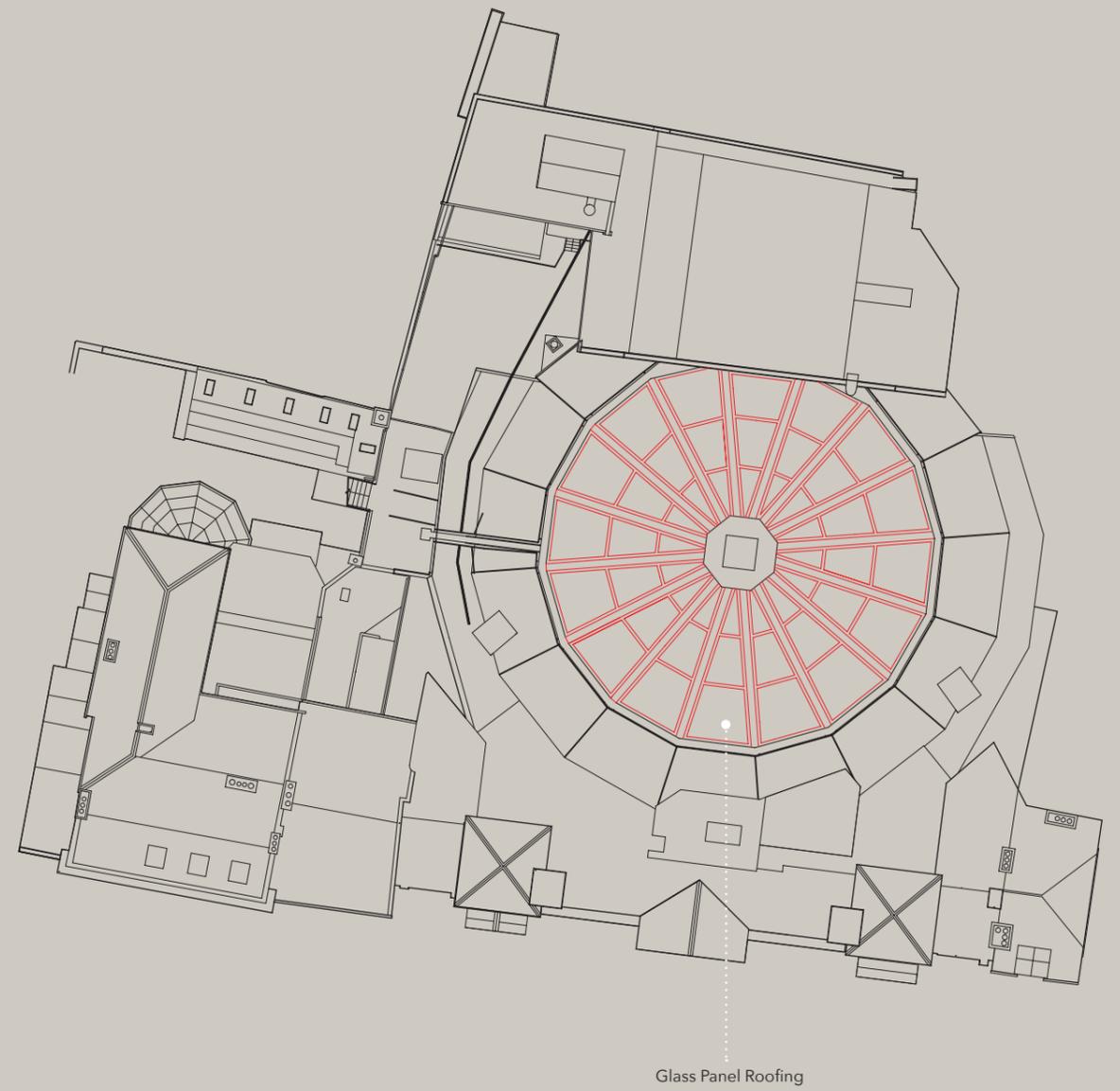
FINAL FIRST FLOOR PLAN



FINAL SECOND FLOOR PLAN

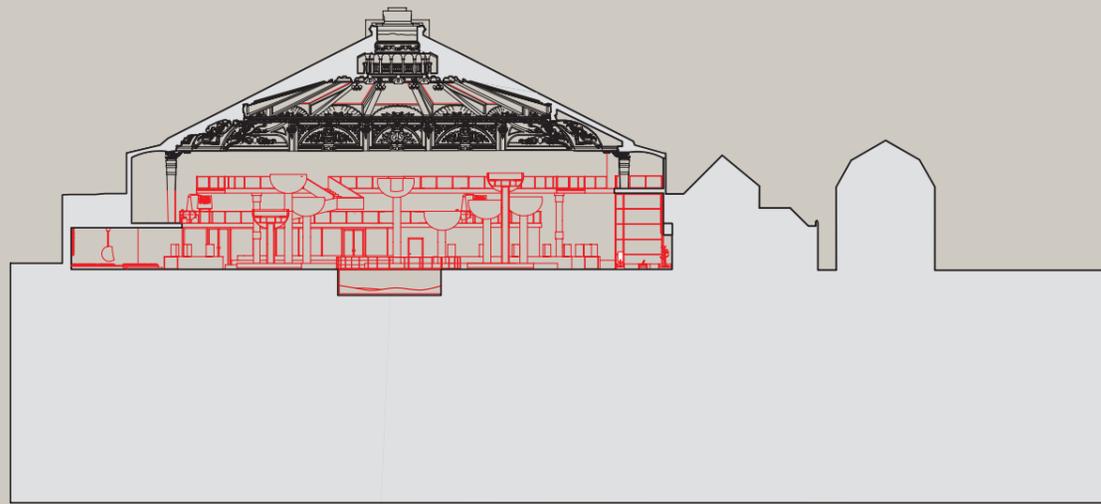


FINAL ROOF PLAN

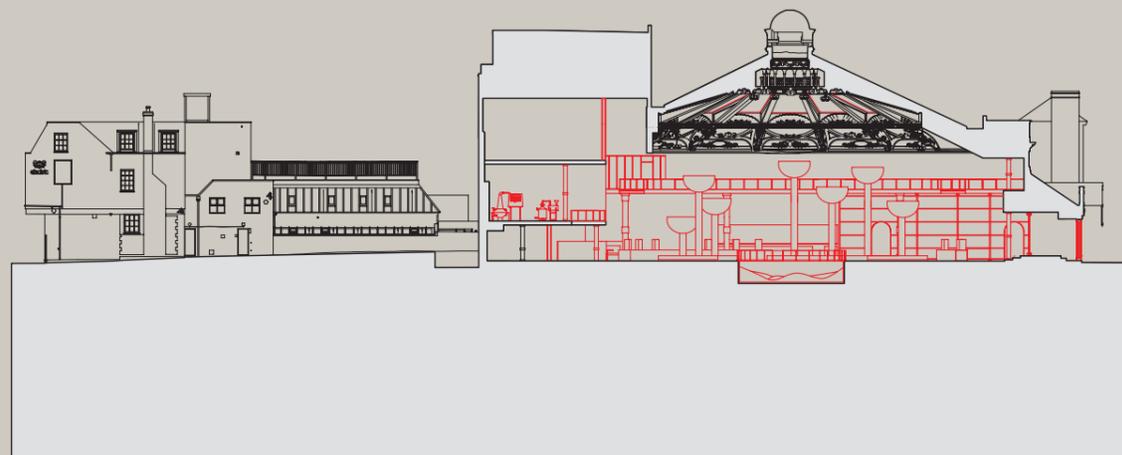


FINAL SECTIONS

Section AA



Section BB



CHAPTER THREE

TESTING SYSTEMS & MATERIALS

Bird Nest Structures - Background Research

The Seating Pods

An important element of my design that I want to focus on are the seating pods that are dotted about my design, paying particular attention to the pods in the centre of the design that are raised up in-line with the first/second floors.

I believe the pods are an important part of my design because not only do they provide intriguing ways for the visitor to sit and dine, but the pods themselves are a way for me to pull the museum element through the safari, tying the two elements together. The pods will simulate nests of rare/endangered birds, for example, Montezuma Oropendolas weaver birds whose species create a wide range of beautifully woven nests as their homes.

THE WEAVER BIRD NEST:



Materials - Weaver birds use a variety of plant materials to build their nests; including strips of grass, leaves, twigs and roots.

Tools - A weaver bird has a strong, conical beak, which it uses to cut blades of grass that it will use in nest-building. The bird can tie real knots in nest material with its beak and its feet.

Structure - Once a good location for his nest, the weaver bird starts to loop and weave strands of grass or strips of leaves around the ends of one or two branches in a tree. Having created a looped basis for the nest body, the weaver bird then builds the hollow body before adding the tubular entrance last.

THE BLACKBIRD:



The blackbird nest is more basic than that of the weaver bird.

Materials- The nest is a substantial cup of grass, straw, small twigs and other plant material. It is plastered inside with mud and lined with fine grass.

Structure It can take two weeks to complete, and sometimes the same nest is used for successive broods.

THE HISTORY OF WEAVING

Prehistoric Weaving

Humans used weaving to create baskets long before they used the process to make cloth. Early baskets were probably made by weaving grasses and plant materials around gourds to give them a useful shape.

28,000-20,000 B.C.

Early humans used fibres from plants to make the first threads. Woven plant fibres were also used to create shoes, hats, mats, shelters, and many other items that made the lives of early humans easier.

Today;
Weaving has become extremely commercialised, although many communities and individuals around the world continue to weave by hand.

Although the practice of weaving has moved almost entirely out of the public eye, it remains a crucial step in the long supply chain embedded within the global fashion industry. With a history that dates back some 30 000 years, weaving is truly one of the oldest extant skills practised by humans globally, so remains very important.

A woven hut from the Bronze Age:



Fig 104

A basket being created by weaving:



Fig 103

WEAVING STRUCTURES IN THIRD - WORLD COUNTRIES

In order for the pods to look like a replication of these birds nests, I have decided that I must research into similar weaving techniques, but at a larger scale where weaving has been used to create large scale structures.



Fig 97



Fig 98

Dorze Huts of Woven Bamboo

The notion of weaving is widely used to create physical structures in Southern Ethiopia. Here the Dorze people use bamboo to create huts, fences, ladders and baskets. In this technique, the whole bamboo cane is hacked and split into strips, making it flexible enough to be woven between uprights that are set into the base.

For my models, I could use the same weaving techniques, however I will be using areoply rather than bamboo as it is a material I have available, it is also a good comparison as it holds the same flexibility of bamboo that has been split.

WEAVING USED IN MODERN ARCHITECTURE

I also want to research how the technique of weaving has been used in modern architecture to create strong and striking facades/ shells of buildings. This will also enlighten me on how different materials can also be used to create the illusion of a weave, and how it is secured to the building.



Fig 106

Architectural Weaving Precedent Study 1 Aspen Art Museum

Architect: Shigeru Ban Architects
Year: 2014
Location: Aspen, US

The aspen art museum has used the technique of weaving throughout the whole design of the building. Firstly, the facade, made up of woven wooden strips that shade the glass walls (as seen in the image beside).

But also, the interior roofing is made up of a wooden truss structure, with a woven element in between, fully encased in glass (As seen in the images below).

This precedent teaches me how less flexible materials can also be used to imitate the notion of weaving, especially in the truss roof structure which uses thick and sturdy wood segments, carved into waves which slot together. I've also learnt that you can be clever with the use of weaving in design as a woven structure can produce a dynamic shadow pattern onto the ground below.

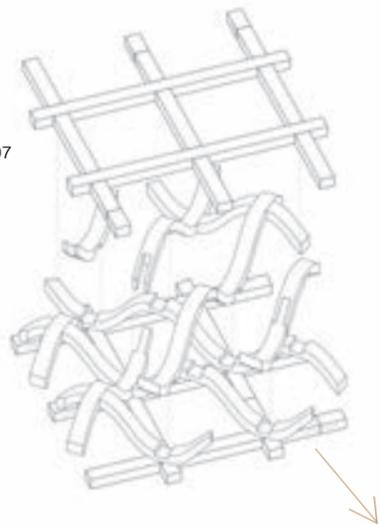


Fig 107



74

Fig 108



Fig 109

Architectural Weaving Precedent Study 2 Argul Weave

Architect: BINAA , Smart-Architecture
Year: 2014
Location: Bursa, Turkey

Bursa is home to Turkey's historic and celebrated textile industry. It was therefore important for the main manufacturing textile hub's facade to display and re-focus on this rich tradition of Turkish textiles. 'The Weave' is made up of the interweaving of individual threads by giant looms.

The material palette was kept to a minimum to emphasize the continuity and plasticity of the design. Dark red marble from the Turkish Aegean region forms the buildings plinth and reddish brown Iroko wood from West Africa clads the inner areas of the weave. The facade also creates a continuous play of light and shadow evolving throughout the day.¹

ArchDaily (25 Sep 2014) BINAA + Smart-Architecture Argul Weave

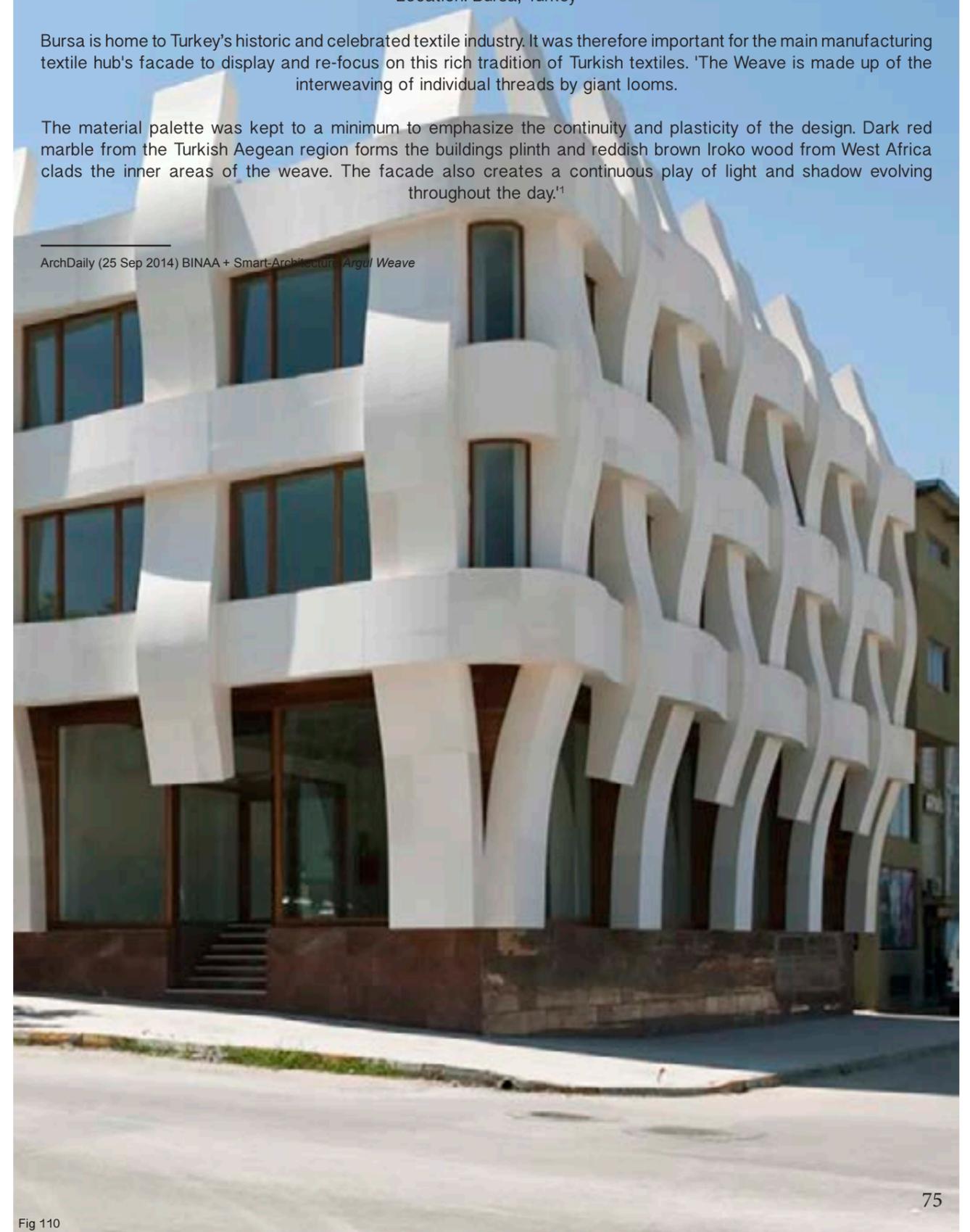


Fig 110

THE DETAILS OF CONSTRUCTION:



Metal Framework Structure



CNC Milled Stone Cladding (Porcelain Tiles)

A BAMBOO WEAVING TECHNIQUE



The project in the images below is the bamboo dome, constructed in Sao Paulo, Brazil 2019. The team of aspiring architects created a lattice like structure out of 30 strips of bamboo, a sustainable and locally resourced material.

How its made...

- The bamboo strips are woven together and tied at the points where the strips meet, so not nuts or bolts are necessary.
- This dome is assembled flat and popped up into shape, holding itself up through the 'under-over under-over intersections'
- A key thing to remember is to let the bamboo do what it wants to do.

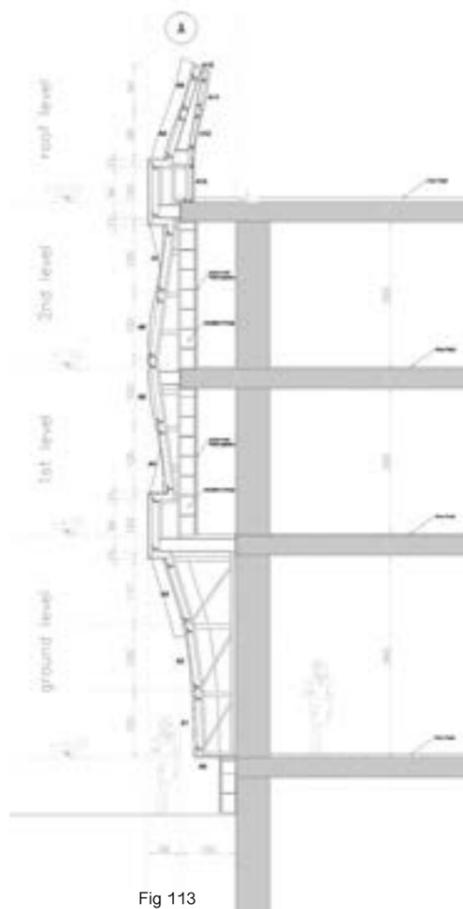
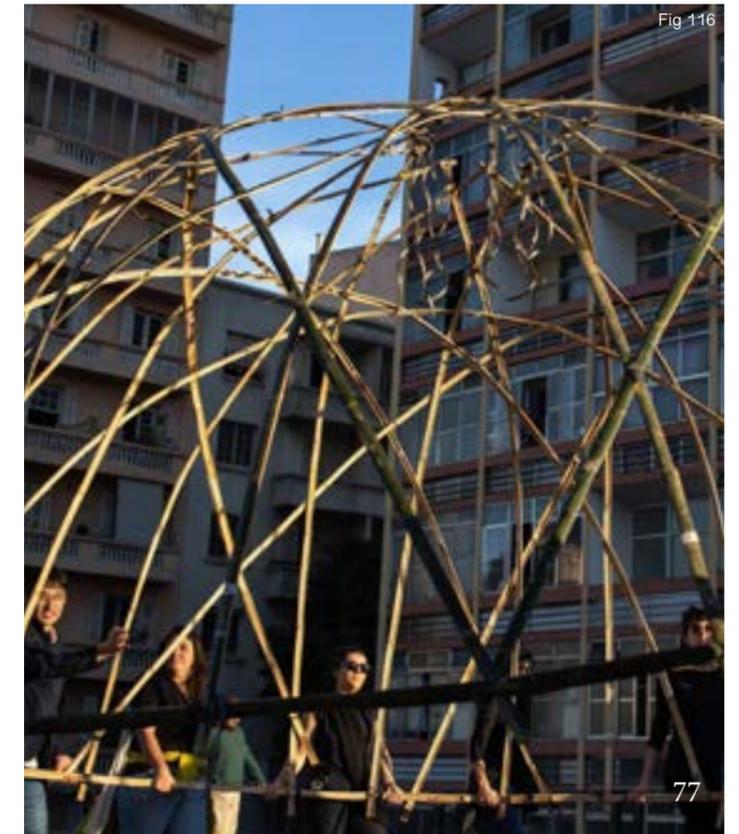
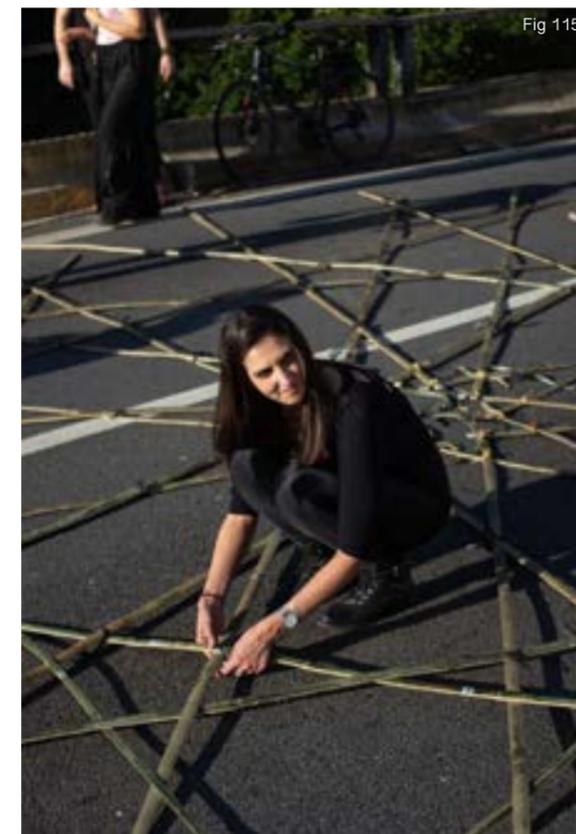


Fig 113

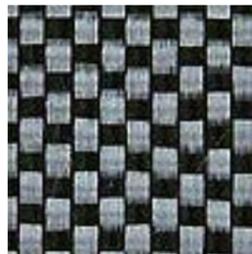
The design of the woven facade was successful due to the in-depth research into geometry and the use of framework both holding the porcelain tiles in place, and an additional frame behind each woven strip which sits inside the buildings walls.

This is useful for me to think about for my design, as I could essentially create the woven pods with a facade made up of similar tiles, a framework and separated interior, rather than having the exterior weaving as the interior as well. This is still a representation of the way birds create their nests as they too line the interior of their nests with leaves ect, contrasting from the exterior texture.



TYPES OF WEAVING

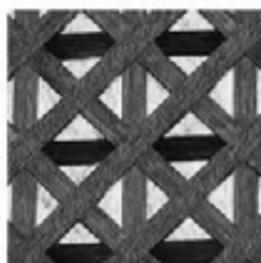
Single yarn weave



Biaxial weaving consists of two interlaced sets of yarns.



Triaxial braids is composed of a third set of yarns, which intersect and interlace with each other at 60 degree angles. The extra weave gives the material increased strength and prevents tensile deformation as it holds its shape better than biaxial weaving.



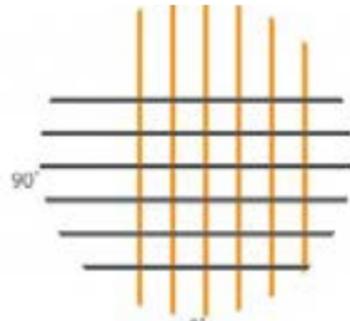
Once again, this type of weave adds an additional fourth yarn. This in turn increases strength.

UNIDIRECTIONAL



0°

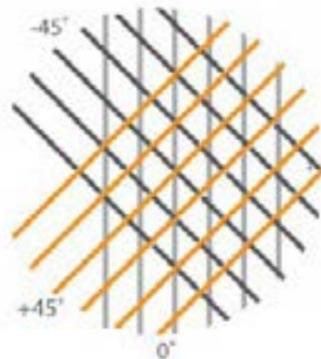
BIAXIAL WEAVING



90°

0°

TRIAxIAL WEAVING

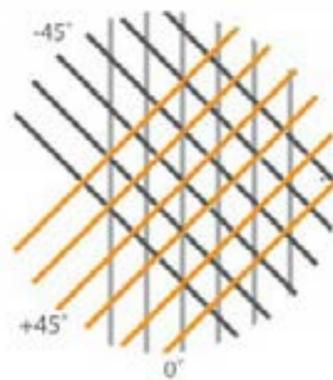


-45°

+45°

0°

QUADRIAXIAL WEAVING



-45°

+45°

0°

TESTING WEAVING TECHNIQUES

After undertaking research into different types of weaving, both used in an architectural and textile form, I decided it would be good for me to test the techniques out myself. This would allow me to gain a better understanding of their different strengths when being used as a building material.

Questions I will ask myself:

Can the weaves hold themselves in place without the need for reinforcement (super-glue in this case)?

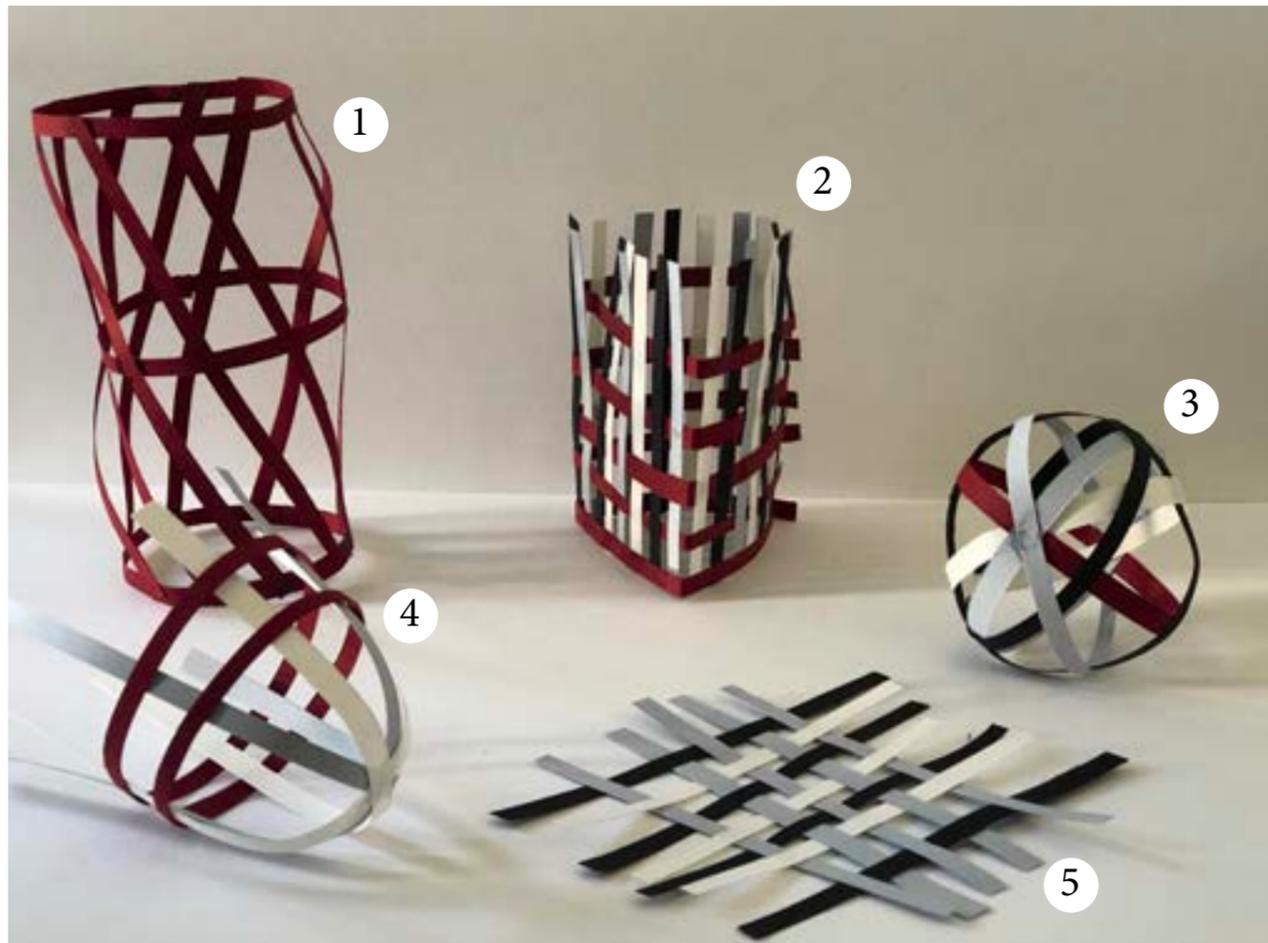
What different shapes can I make with the weaves?

Do the weaves aesthetically look similar to that of a birds nest?

Materials:

- Red, Blue, Black and White Card
 - Scalpel
 - Metal Rule
- Super-glue for Joints
 - Stanley Knife
 - Cutting Mat
 - Pencil
 - Rubber





1 Uni-Directional weaving technique with circular braces throughout- used to create a woven cylinder.

This technique needed adhesive to hold the strips in place at the ends due to its lack of security with the single weave and vertical shape.

2 Biaxial Weaving in groups of three strips per weave - used to create a woven triangular prism.

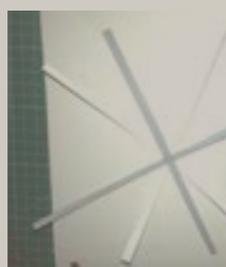
This weave was much stronger than the previous as the strips were a lot more dense, however reinforcement was still needed at the bottom to hold weave in place.

3 Overlapping circle weave- Used to create a woven sphere (a possible shape for my pods design).

This weave was good because the more layers I added, the stronger the shape became, it also resembled more of a birds nest and with slight reinforcement of tying fibres where the strips meet, it would definitely stay in place.

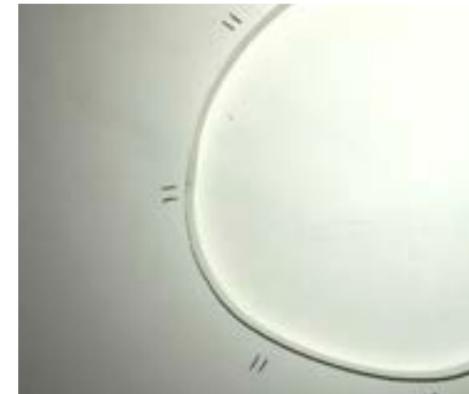
4 Experimental Weave - Creating birds nest base shape.

With this test I didn't use any glue at all and the design could be assembled from flat, pulled apart and put back together again. When inside the circle grasps, the strips would push against them and therefore hold themselves in place.



5 Biaxial Weaving technique - Used to create flat weave.

This design used no reinforcement at all and was therefore the strongest out of the 5. It was also very versatile so could be bent and still hold itself in place- I imagine this means I could use this technique for the pods as the weave can be curved.



Overall Findings :

- The Denser the weave, the stronger the shape and more likely it is to hold its place without reinforcement
- The more directions introduced, the stronger the weave
 - A woven shape is very versatile and flexible

Final Weaving Test:

(Inspired by the bamboo dome, constructed in Sao Paulo, Brazil 2019)

As seen in the images beside, I did a final test which merged the techniques of tests 3 and 5. Here, I aimed from more of a rounded semicircle shape to imitate that of my Pods, but also introduced multiple systematic weaves as in test 5 in order to heighten strength.

First, I got a base and marked out 8 pairs of strips to be secured to the base with super glue, each pair would weave under/ over the previous pair.

Next, I used red strips for my second set of weaves, these were lower weaves, with each pair weaving in and out of the outsides of the semi circle, like a wide V, rather than over the top like two II's.

The coordination of the strips left a perfect dome shape which was particularly strong, even when applying pressure

Next, I will be thinking more about different ways in which the Pod will be attached to the rest of the design.

For Example:

Suspension from the floor above

Some of the smaller pods that I will have in my design, ranging from 1 person to 4 people, can be suspended from the floor or ceiling. I need to explore different ways in which this can be done. An example of this is seen in the image beside.



Fig 88

Secured to the ground

The main pods in the centre of my design will be secured to the ground. I need to figure out the best way I can do this, I could use a single column, multiple stilts as seen in the images below, or even a counter-lever. I will also look into access points to get the pods when they are up at such heights.



Fig 89

VARIATIONS OF WOVEN STRUCTURES -
INSPIRED BY WEAVER BIRDS

PORKY HEFER DESIGNS / NESTS

Kubu Nest Design



Fig 91

Porky Hefer is famous for his many variations tree hung nests for humans, inspired by weaver birds. The design of the first nest was inspired by 'the weaving techniques of Bloemenkraal artisans Mariki and Beyers.'¹ And was built using a framework of welded steel, finished with a woven coat of natural materials such as kubu cane or grass.

¹ Kimberley Mok (March 22, 2012) More Breezy, *Tree-Hung Nests Inspired by Birds & Made for Humans*

Humanest Swing NYC R&Co Exhibition



Fig 92

Porky Hefer's designs are a good starting research for me as they give me inspiration into both materials I could use to replicate the birds weaving techniques that are strong enough to safely hold humans inside, AND they help me with different variations and ways I can attach my pods to the existing interior.

1) The Kubu Nest Design - This first variation using stilts to hold the structure up could be adapted within my design for the tall central pods as they are raised off the ground. This would allow the tourists to peer down into the safari from a height. The ladder is also a good way to access the pod as it doesn't take up much horizontal space.

Appropriated Structures



Fig 93

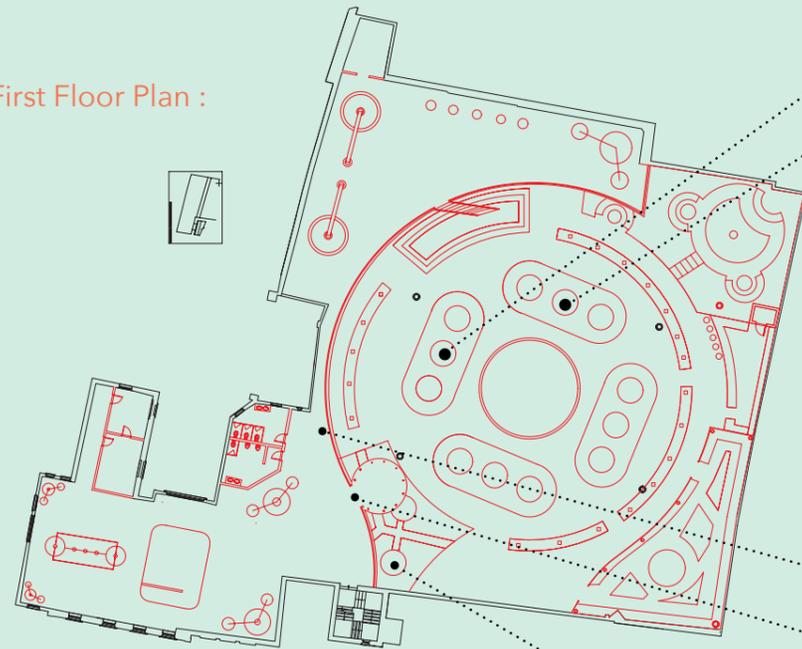
2) The Humanest Swing designs are a good way to suspend the seating nests from the floor above, Porky as used rope and sturdy knots to do so. His design only holds one person, so I could adapt this to hold 2-4 which makes them more sociable, however I do like the mechanism.

3) The last variation is secured to the floor, this could be used throughout the design for people who are less able to climb up the ladders/get in and out of the swing chairs. I like the freedom in this design, it very much replicates the shape of a nest.

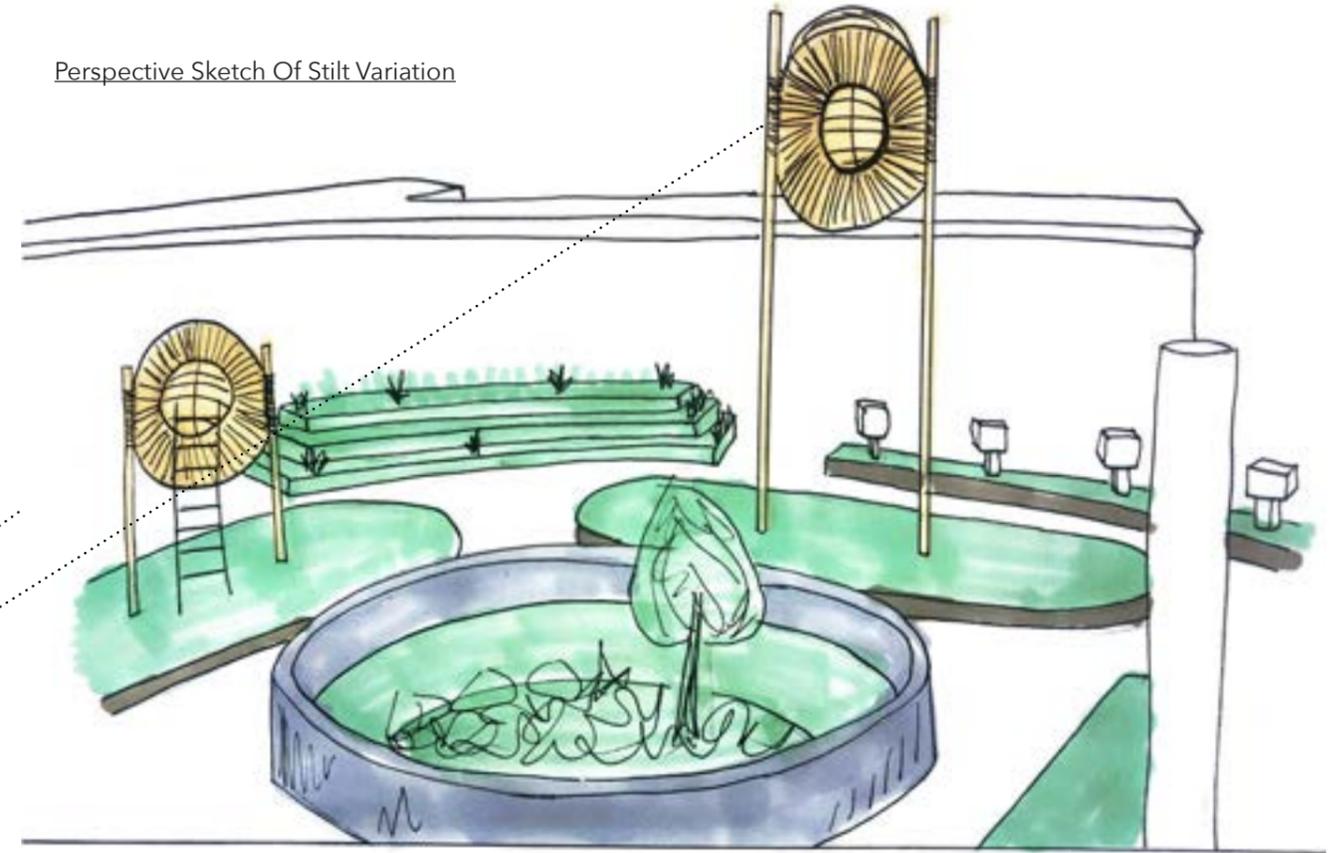
LOCATIONS OF POD VARIATIONS WITHIN DESIGN

The sketches below show where I will be locating the hanging seating pods and the pods suspended on stilts throughout my programme. It also gives a sneak peak into the forms and systems I will be exploring.

First Floor Plan :



Perspective Sketch Of Stilt Variation



Perspective Sketch Of Two Hanging Variations



① Single Seated Hanging Pods

② Large Hanging Pods

Mar Adentro Hotel Restaurant

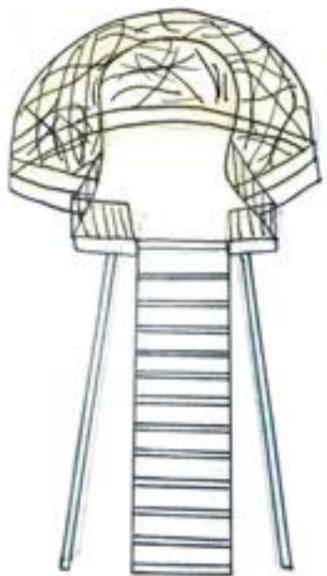
The Mar Adentro Hotel located Mexico contains three restaurants, designed by Miguel Angel Aragonés. One of which (Nido) was designed to look like a floating nest, constructed using a latticed timber structure, completely surrounded by water. It also has 'A network of walkways around the restaurant connect the pool, hotel, and restaurant to each other, making it a dramatic journey to travel from one place to the next.'¹ Which is similar to the safari surrounding the pods in my design.



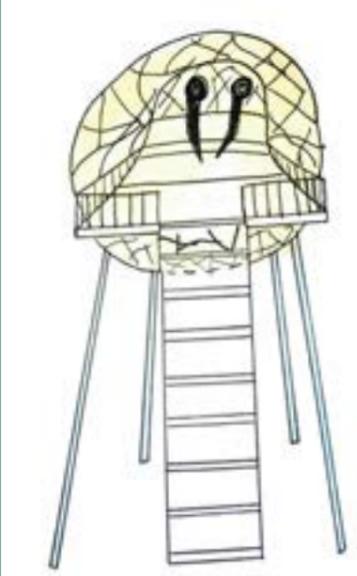
Fig 94

¹ Contemporis (August 20, 2016) *This Restaurant Is Designed Like A Floating Nest*

Alternative Variations of the Pods on Stilts, Inspired by The Mar Hotel Restaurant...



Semi-circle design with platform and staircase leading to the ground floor.



Full nest design with platform and staircase leading to the ground floor.



Sliced nest design with counterbalanced stilts.

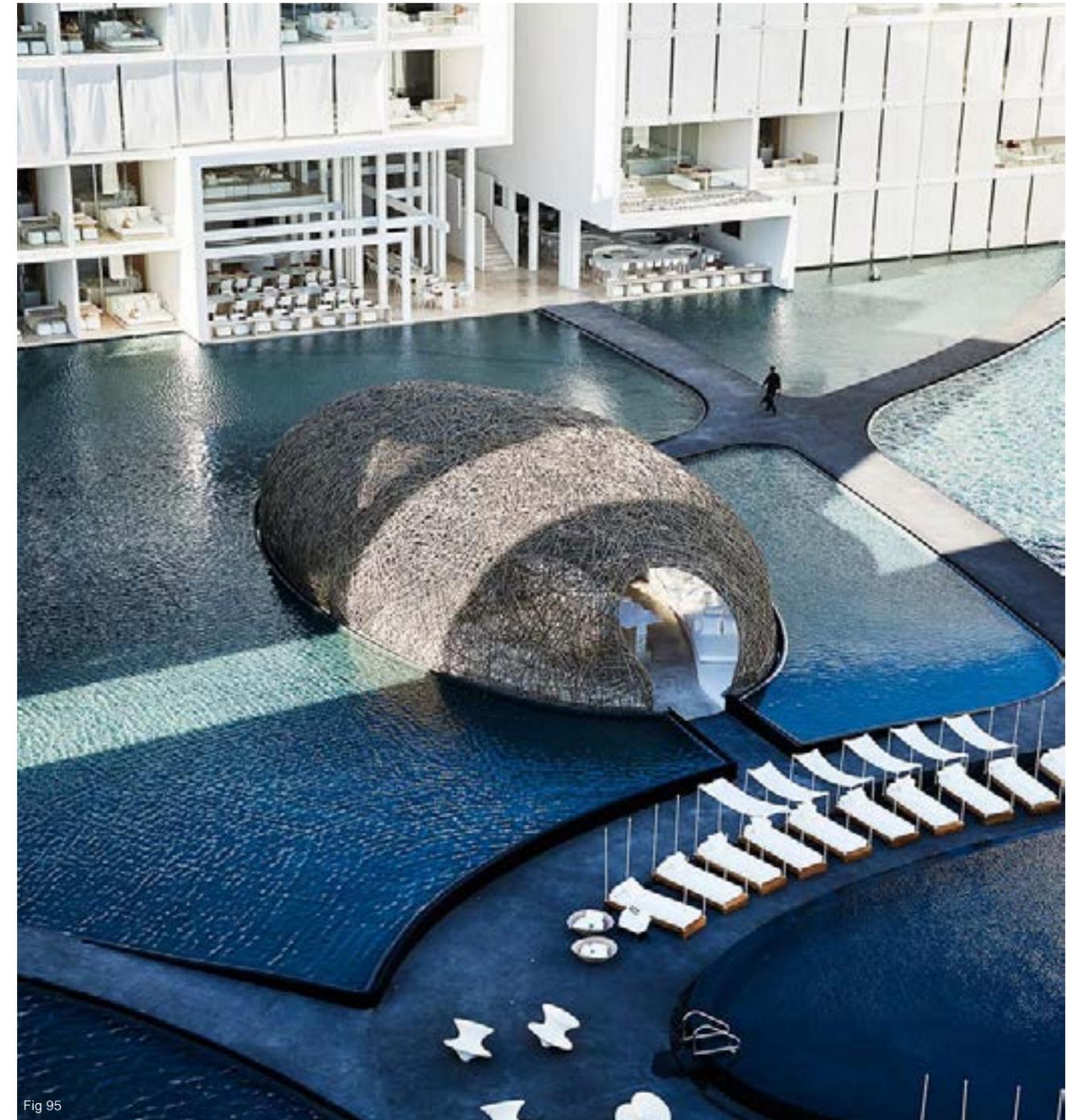


Fig 95



Fig 96

PART 3 - PHYSICALLY TESTING THE TALL STANDING PODS

ITERATION ONE 1:10 SCALE

FULLY WOVEN SHELL:



Materials:

- Thick white card
- Scalpel
- Cutting Mat
- Scalpel
- Metal Rule
- Hot Glue Gun

My first iteration was inspired by the final testing I did previously, where I created a dome shape. However I increased the pairs of strips from 4 to 5, due to the scale being larger.

Once again, this design uses multiple weaves that go in opposite directions to each other, creating a sturdy structure.

Unlike design two, this one does not need an internal frame, as the layers of weaving strips are strong enough to act as the frame of the dome.



ITERATION TWO 1:10 SCALE

INTERIOR FRAME WITH EXTERIOR WEAVING:

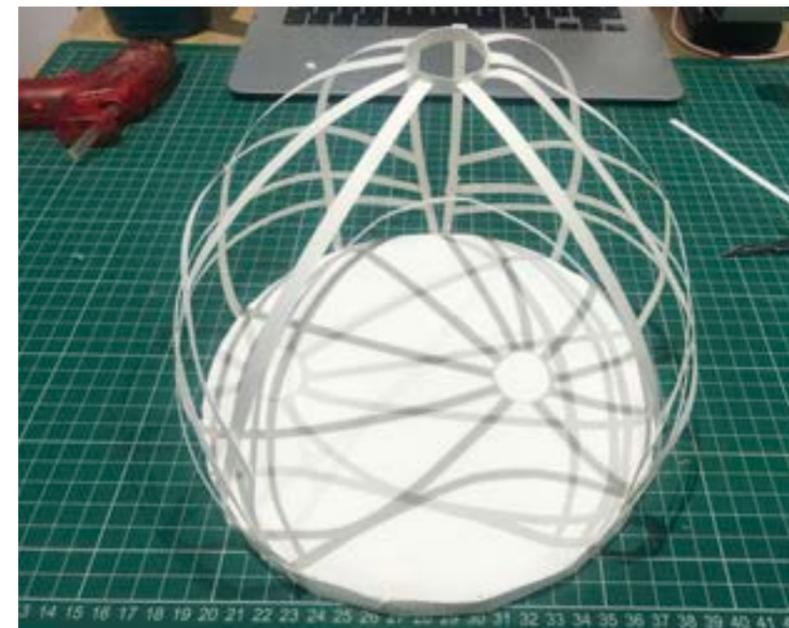
Initial Sketch of iteration two:



Iteration two is taking a different approach to weaving, rather than weaving the whole structure, I decided to do a test where there is a main framework made of a rigid material such as steel, which has a woven shell making up the exterior of the pod. This is similar to those birds nests that use large sticks as the main framework, followed by lighter foliage to fill in the gaps and provide comfort.

This technique is commonly used in the construction of furniture such as chairs, such as rattan or synthetic cord furniture.

Examples:



Materials Used:

- Thick white card
- Thick Beige Card
- Scalpel
- Cutting Mat
- Scalpel
- Metal Rule
- Hot Glue Gun

Beside is an image of what would be the steel framework, prior to exterior weaving.

TEST 2 IMAGES:



ITERATION THREE 1:10 SCALE (Chosen Design)

Aero-ply Variation - imitating flexibility of bamboo :

Out of the two previous designs, I was very happy with the way the first iteration came out, both with regards to strength of design, building capability and aesthetics. I therefore decided to adapt the second design further. I did this by testing the same structure, but using aero-ply, imitating bamboo as a modelling material.



I have decided to use bamboo as the main construction material of the Pods because bamboo is an extremely renewable resource. It needs a very small amount of energy to grow, provides biomass, grows extremely fast and offers refuge to wildlife. It is also stronger than both concrete and steel, with a high compressive strength and its extremely light too.

Bamboo has been commonly used to make scaffolding, houses and bridges when in its whole tubular form, however when shaved into strips, it also becomes very flexible which means I can use these strips to form the curves of my Pod nest shell.

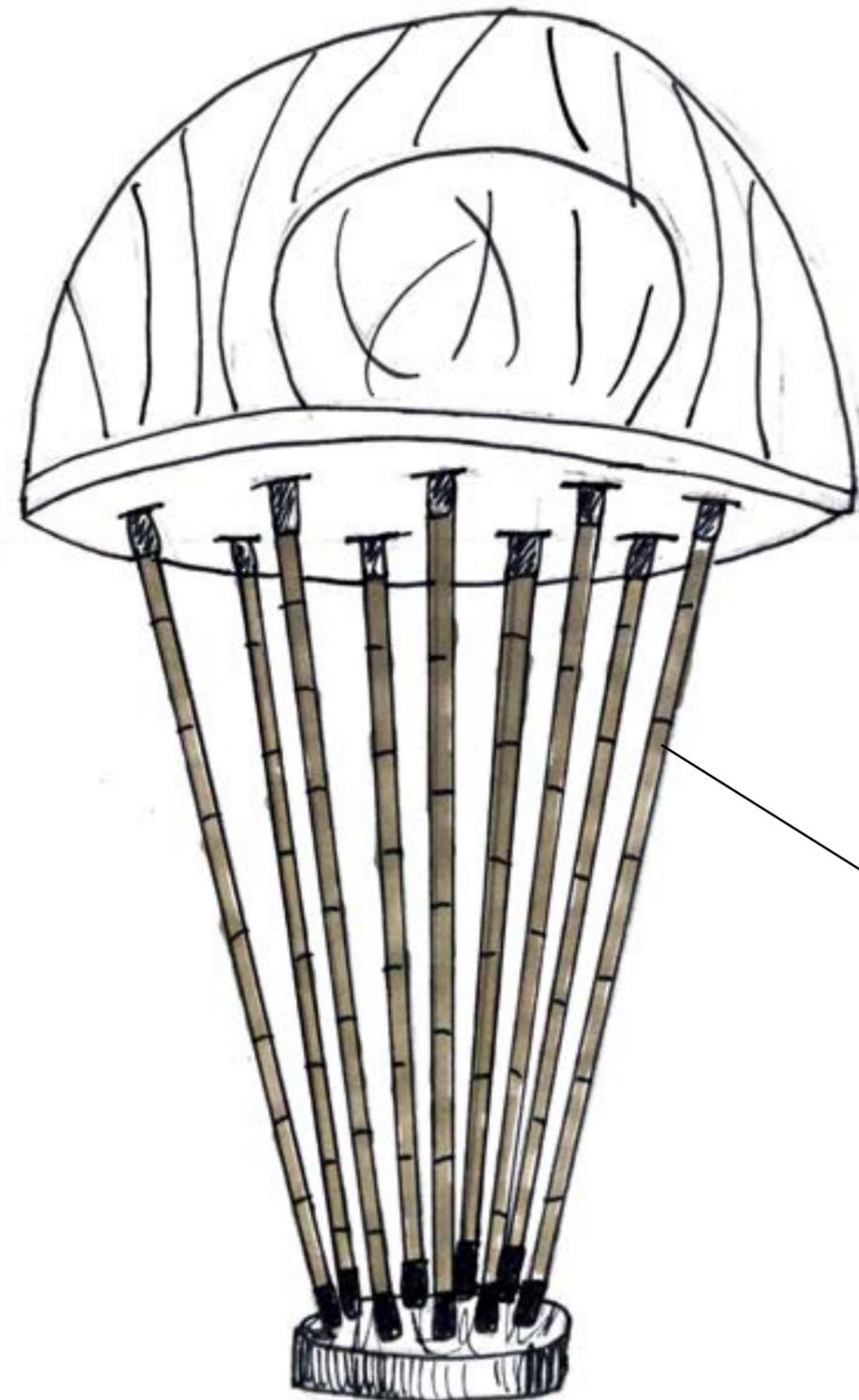
THE MODEL

- Aim 1 - Testing the aesthetic qualities of aero-ply/ bamboo when used to create the Pods
- Aim 2 - Testing the flexibility of the material- this will help me decide how I will secure the strips to the base later on in designing.

I found that this gave the perfect look at I was aiming for, therefore I will be going ahead with the bamboo strips. With regards to flexibility, once bent the strips wanted to bend back to their flat shape, therefore I think the best way to secure the strips will be to create slots in the base where they will sit sturdy as they push back on the base.



HOLDING UP THE POD WITH BAMBOO



With each pod being 2.1 meters in diameter, and therefore comfortably holding up to 4-5 people, along with the main structure being constructed out of bamboo strips, a very lightweight material, the pods are not too heavy bearing. This enables me to continue the use of bamboo for other elements of the pods such as the stilts holding the pod up into the air.

I have decided to use Bamboo in its natural form, as poles, to hold up the pods, I throughout about reinforcing the bamboo with steel, however the 8 bamboo rods will actually be strong enough on their own, as long as they are secured in the right manor to prevent snapping.



Fig 122

ATTACHING POLES INTO THE FLOOR

Diagram 1 - Foundation Focus:

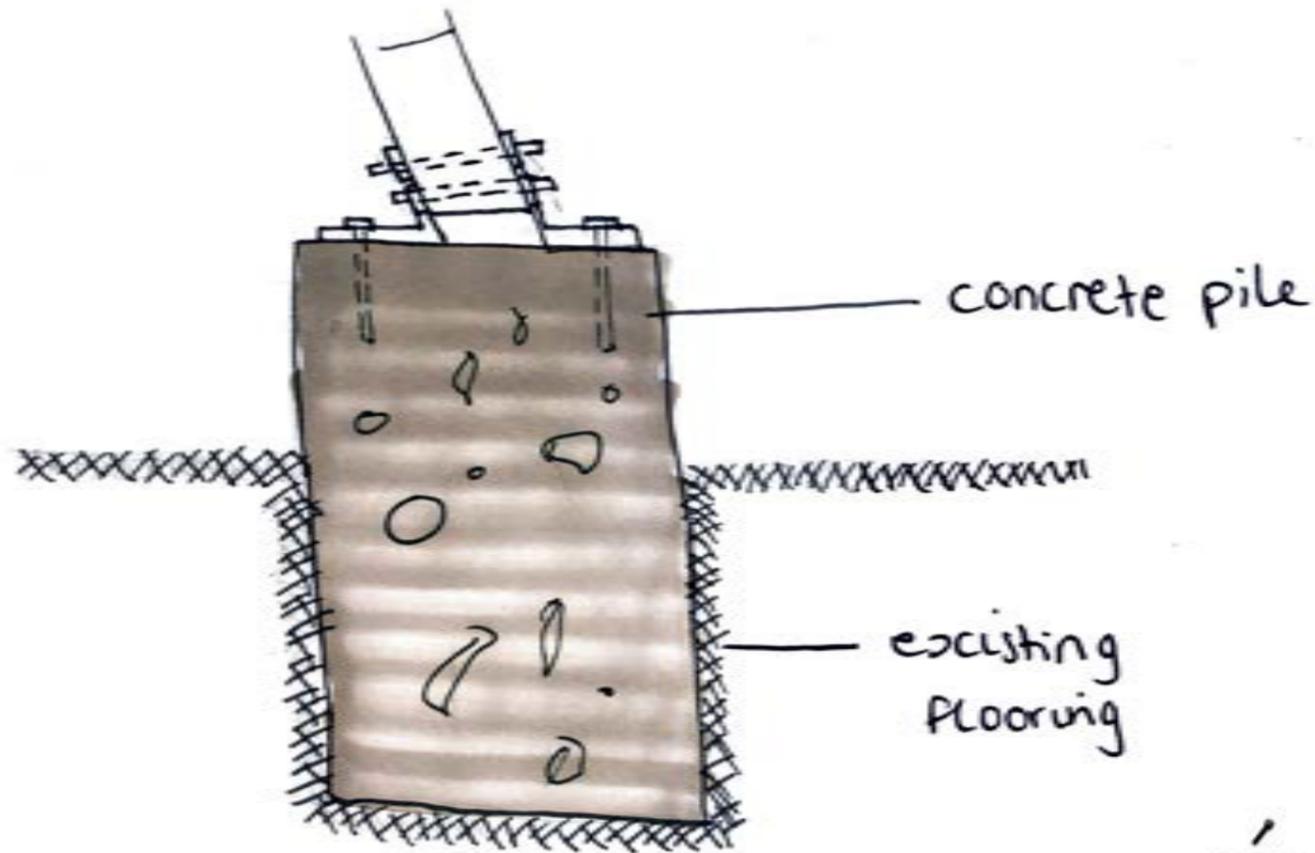
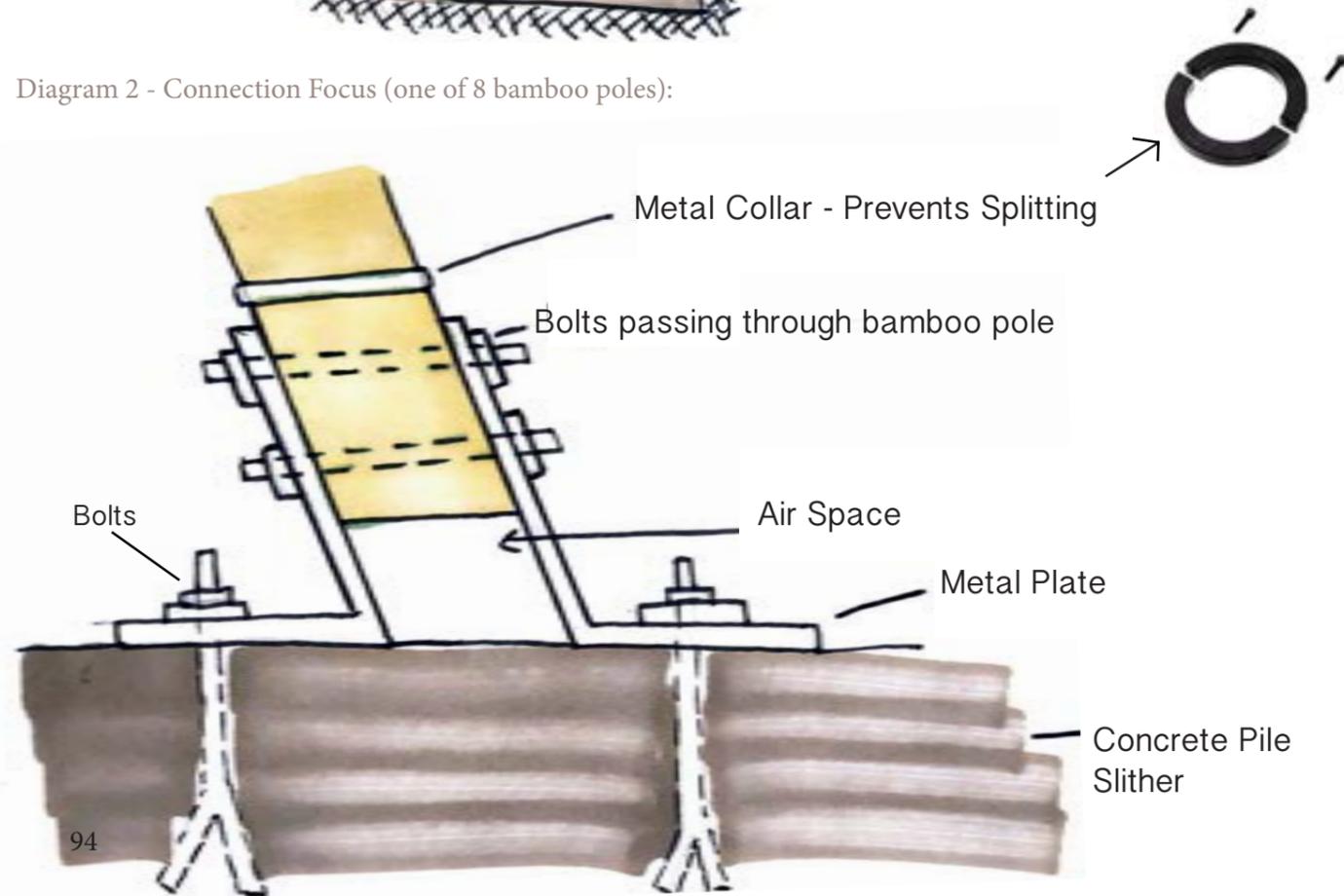
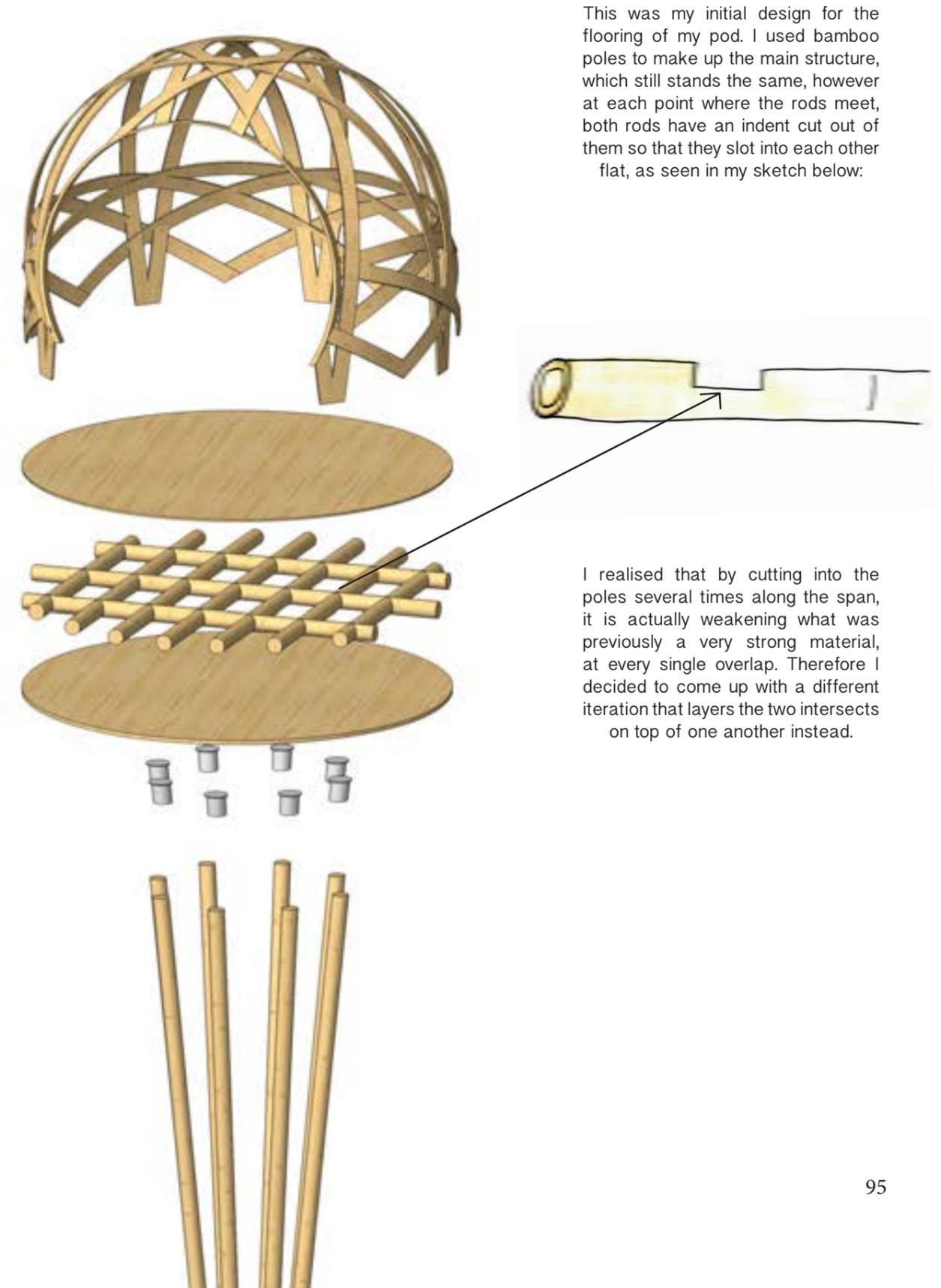


Diagram 2 - Connection Focus (one of 8 bamboo poles):



POD FLOOR STRUCTURE

POD Flooring Initial Design :



ADAPTATION - Structural Bamboo Grid
CAD Drawing:

In this iteration, the bamboo rods are still in the opposite directional grid formation, however they are sitting directly on top of one another and have not been cut into at any point.

To secure the joints together I will look into joinery techniques best used on bamboo in architecture.

Layer 2
Layer 1



Main Flooring of the POD -
Material investigation

5cm
Thickness



Securing the Bamboo Poles - Japanese Square Lashing

Rather than using pointless excess materials or ruining the bamboos strength by splitting it, I decided to go down the traditional route to secure the two layers of bamboo poles to one another, and this is with the use of natural fibres and knots.

A technique commonly used to secure two bamboo posts in architecture is the Japanese Square Lashing as it is great for binding two poles together, especially when being used for weight bearing joints in structural cases like mine.

For my Pod flooring joints, I will be using natural fibre ropes such as Manilla or hemp as the rope to perform the lashing.



Fig 123

Diagram of how Japanese Square Lashing is done:

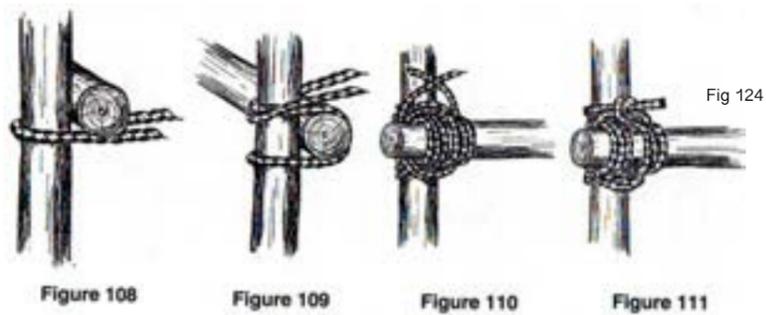


Fig 124



Fig 125

Engineered Bamboo Board (5cm)

I have chosen this for the material of the main flooring because the material is a sustainable, extremely tough and durable and additionally it is lightweight and fits in well with the rest of my bamboo design.

FLOORING TO SHELL CONNECTION

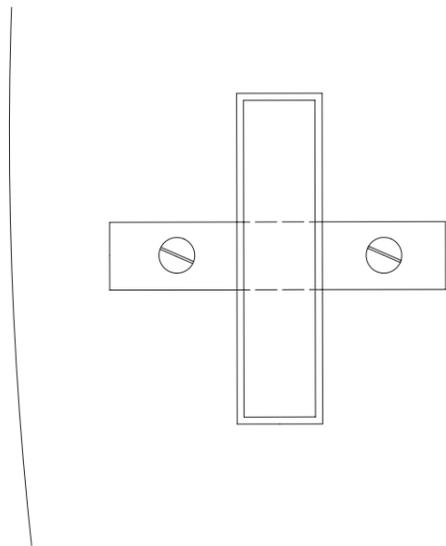
When deciding on a way to join the flooring and the bamboo shell element together, I decided to take advantage of the fact that the bamboo strips are flexible strips that want to push back to their flat shape.

I did this by cutting out grooves where each strip meets the base bamboo base. The strips then slot into the corresponding grooves, as seen in my CAD drawing beside.

CAD drawing showing slot mechanism:



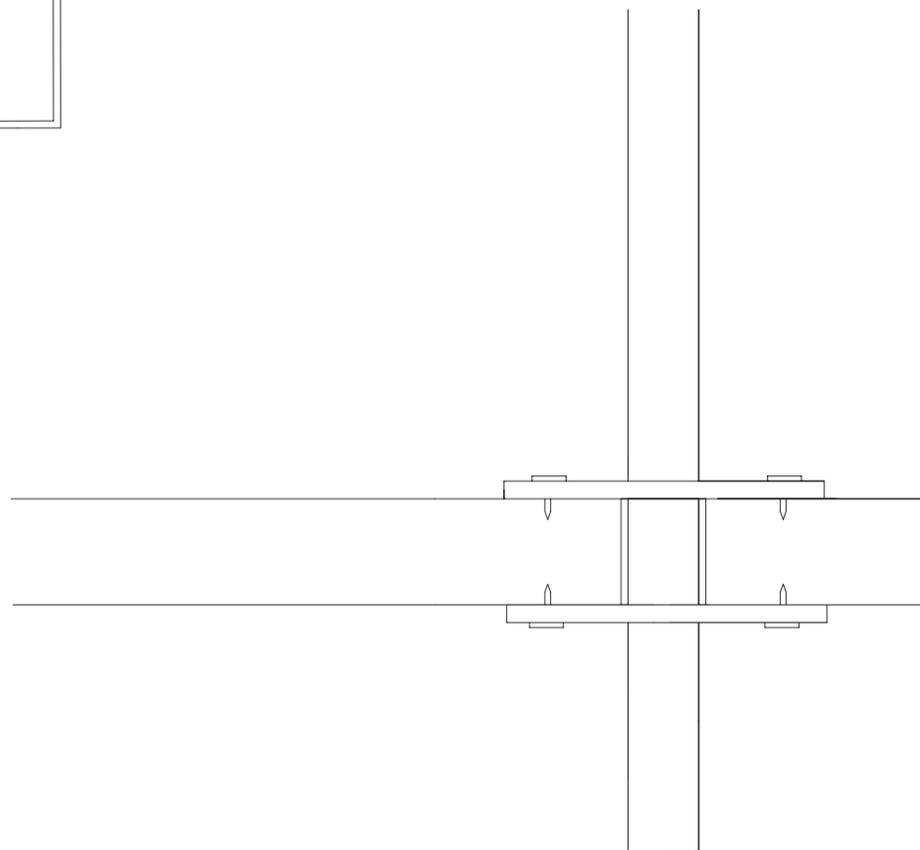
Plan View of a Single Joint :



To secure the strips in place once through the groove, I will cut two rectangular holes through the strips, one sitting just above the base, and one just below the base.

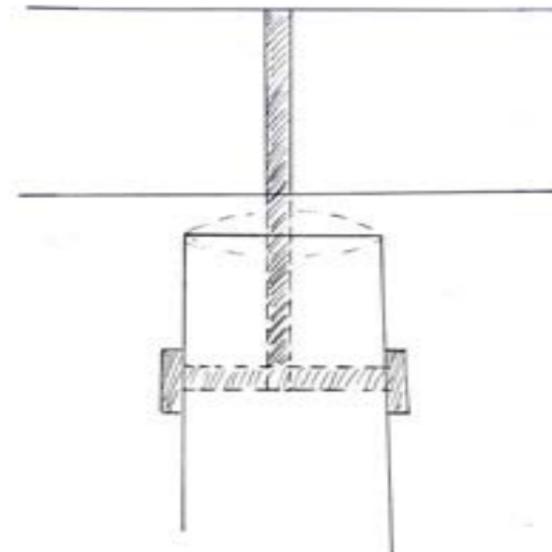
I will then feed a steel strip through each of these holes and secure them both in place with two screws each.

Section of a Single Joint :

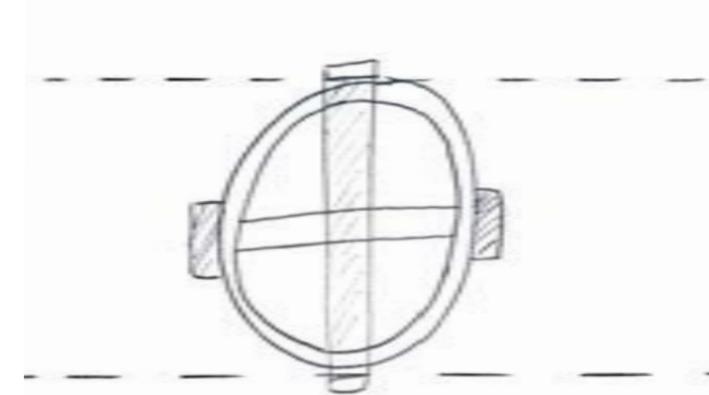


TOP OF POLES TO GRID FLOOR CONNECTION

Sectional Sketch Of Grasp Connection:



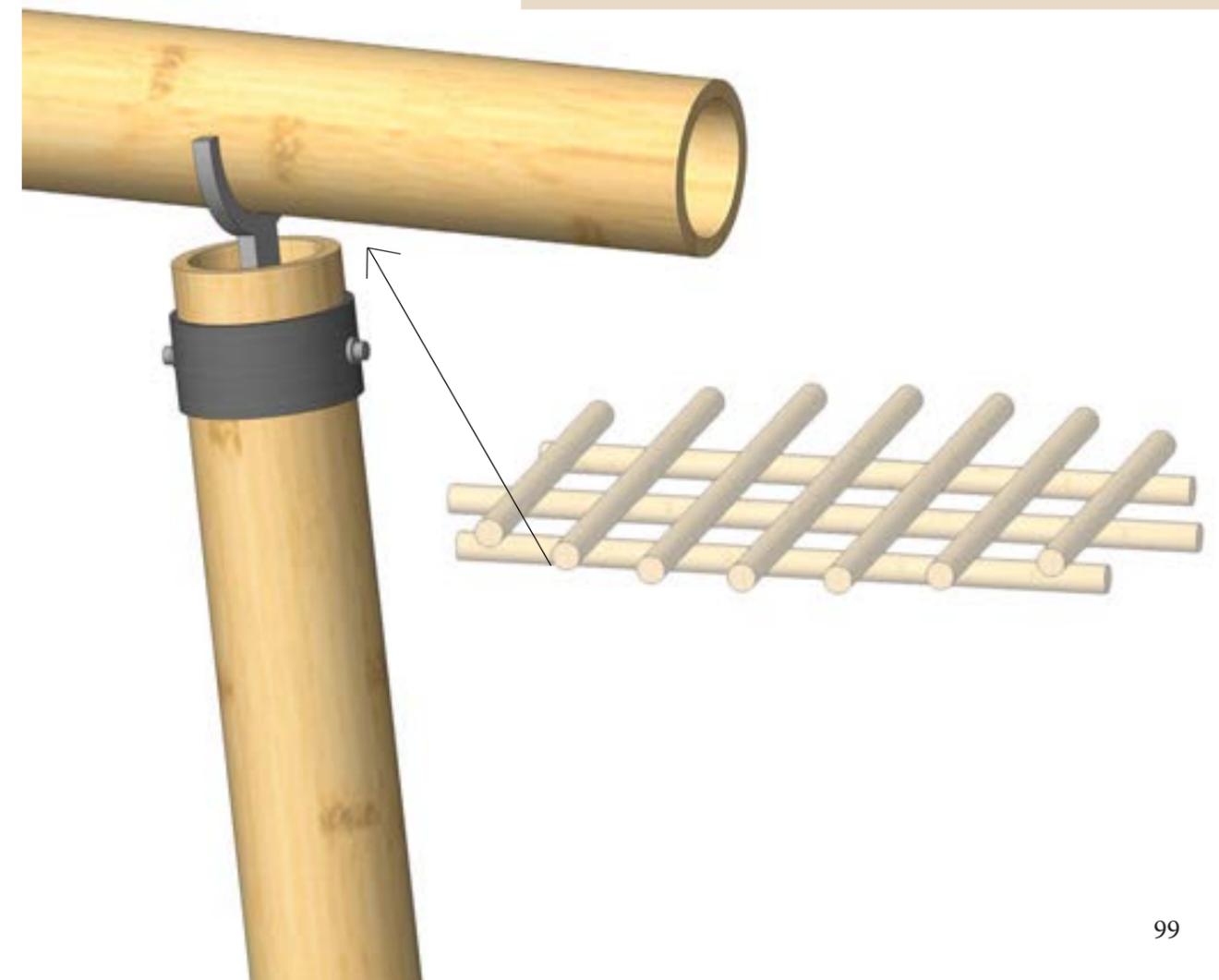
Plan Sketch Of Grasp Connection:



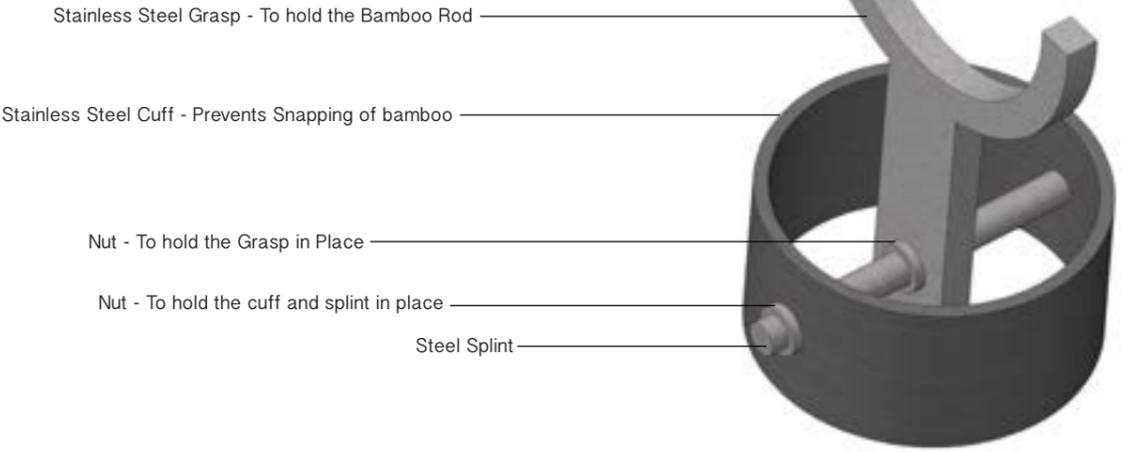
The design of my pod so far is very transparent in the way that each connection is very visible to the human eye, I have not tried to cover up the joints, but instead made them as part of the design. I wanted to do this for the pole to floor connection too.

I have decided to use cuffs that secure around each pole with a pin slotting through the centre of the hollow bamboo rod. Within this rod is a U shaped grasp that will hold the adjacent flooring / grid pole. This will give the illusion of the floor floating above the vertical poles.

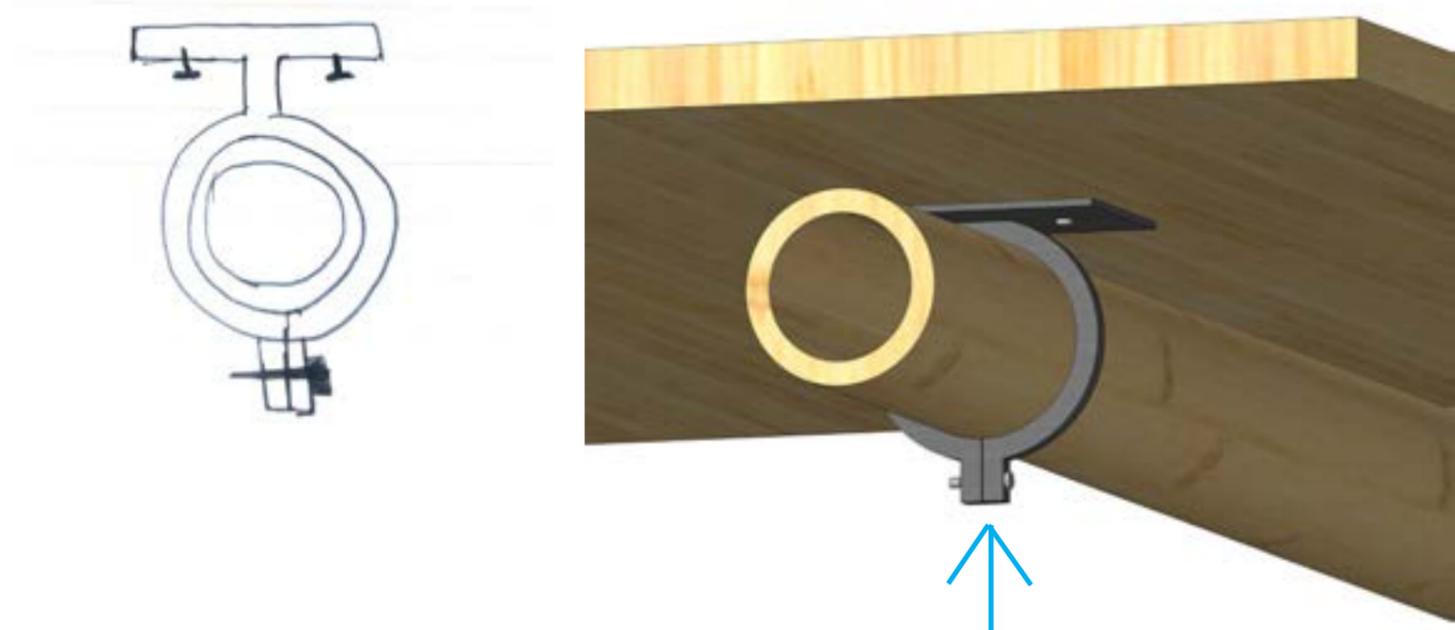
CAD drawing showing Grasp Mechanism holding poles:



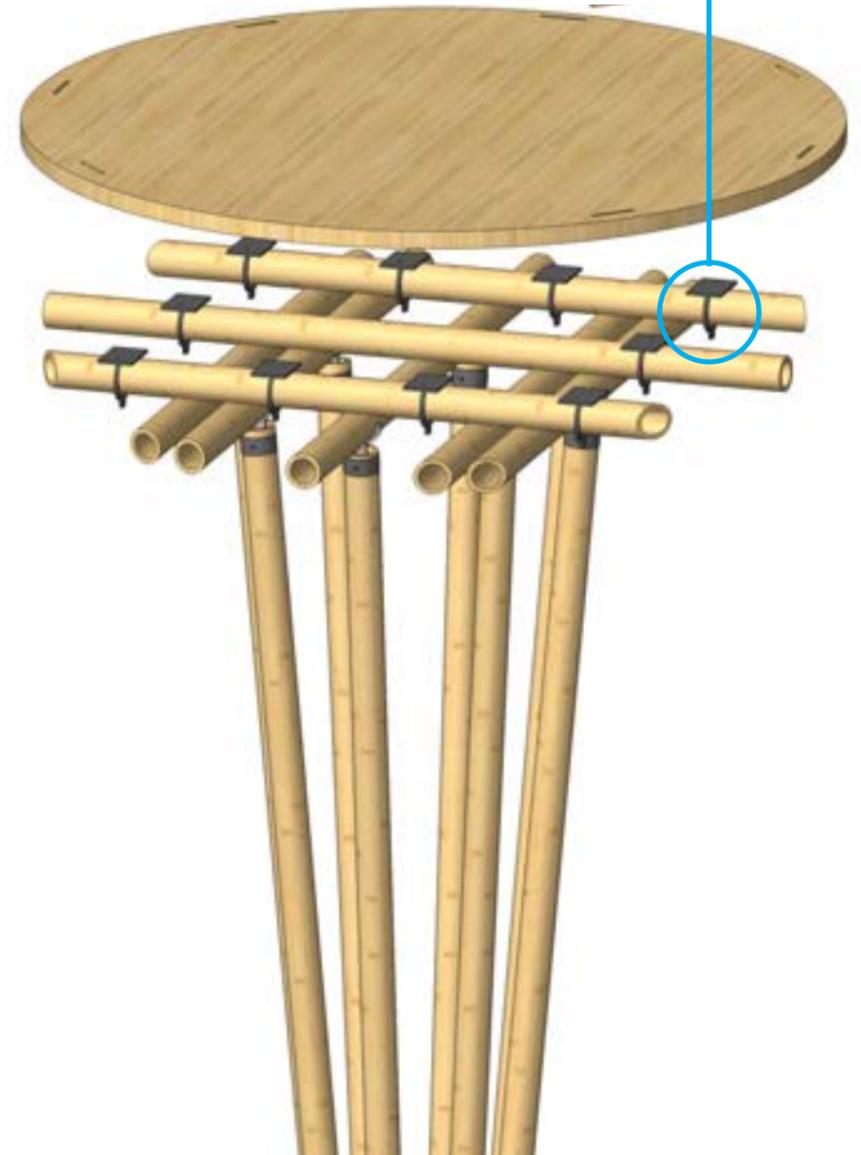
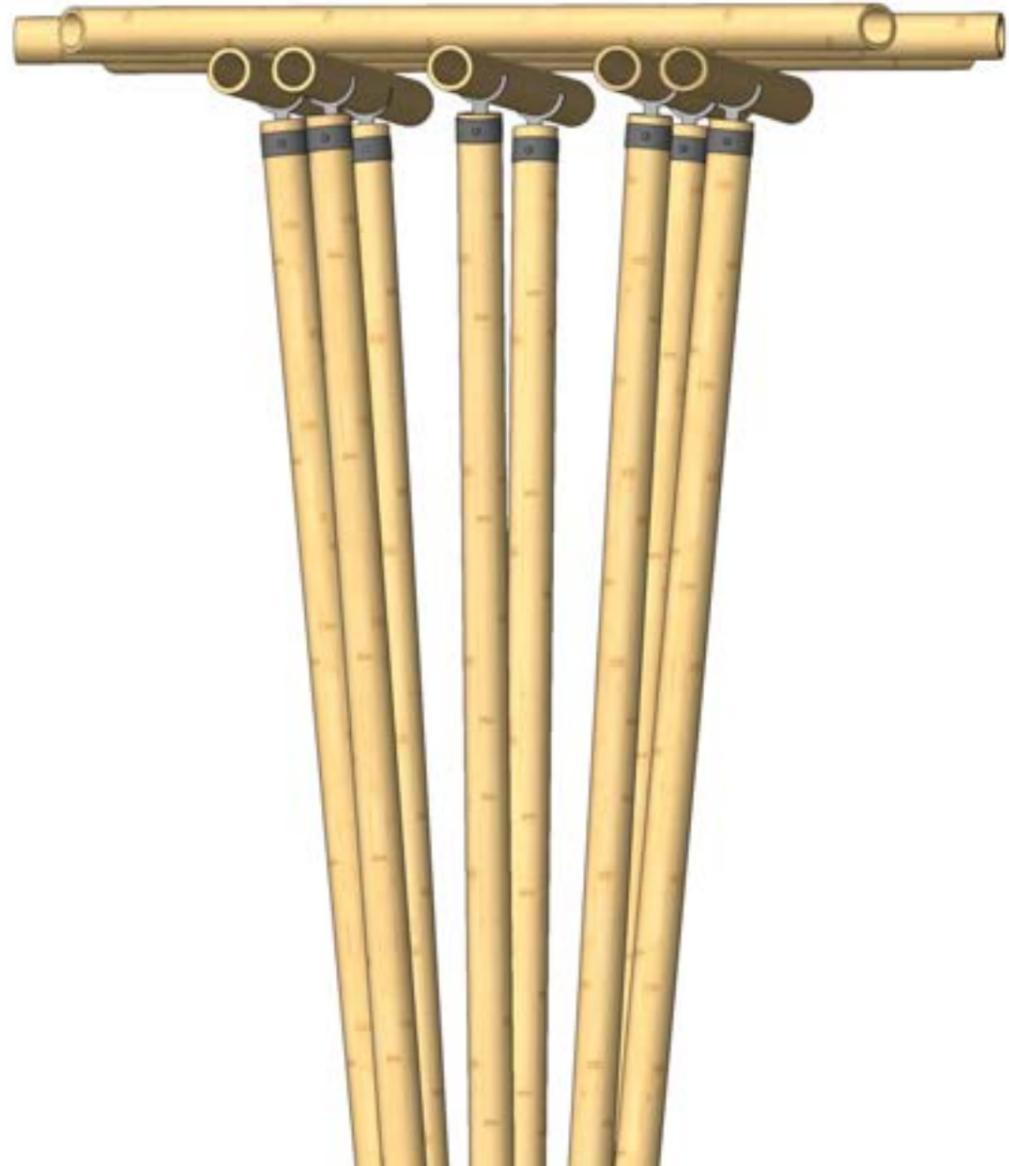
CAD Drawing Showing Grasp Mechanism in Detail:



POD FLOOR TO TOP OF BAMBOO GRID



Zoomed out CAD Drawing - Showing Whole flooring connection:

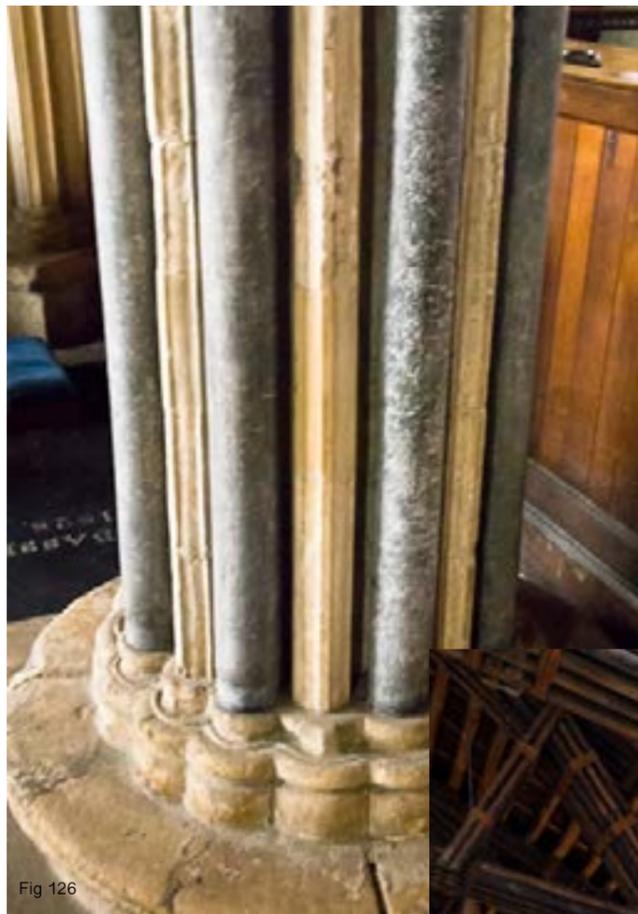


PART 5 - TYING MATERIALITY INTO REST OF SITE

The seating pods are a very loud focal point of my design as their structure and materiality stands out a lot. In order to create a language between these pods and the other elements within my design, I need to design aspects such as columns that are replicated multiple times throughout the safari, with a similar style to these bamboo pods.

COMPOUND / CLUSTER COLUMNS

Steel & Concrete Compound Column:



Cluster or compound columns are a number of single, slender columns that are connected together to form one single unit. These columns can be made from a variety of materials. The most common materials are concrete and steel, as seen in the image beside from inside a monastery.

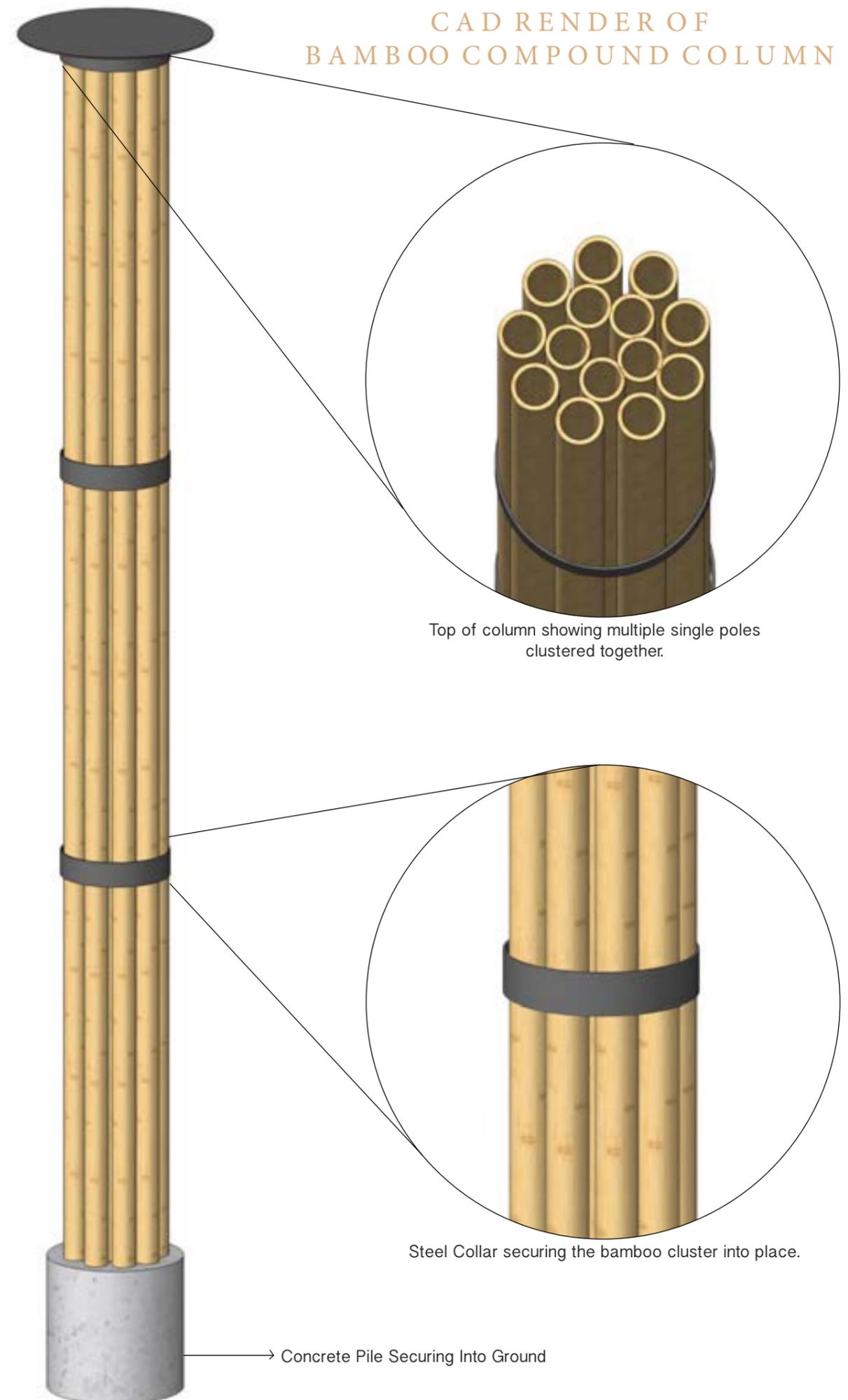
The image below is using multiple single bamboo rods and attaching them together with a belt to create a much stronger, weight bearing column. These are secured deep into the ground in a concrete pile, which in this case has been hidden from the naked eye.

Bamboo Compound Columns:



Fig 126

CAD RENDER OF BAMBOO COMPOUND COLUMN

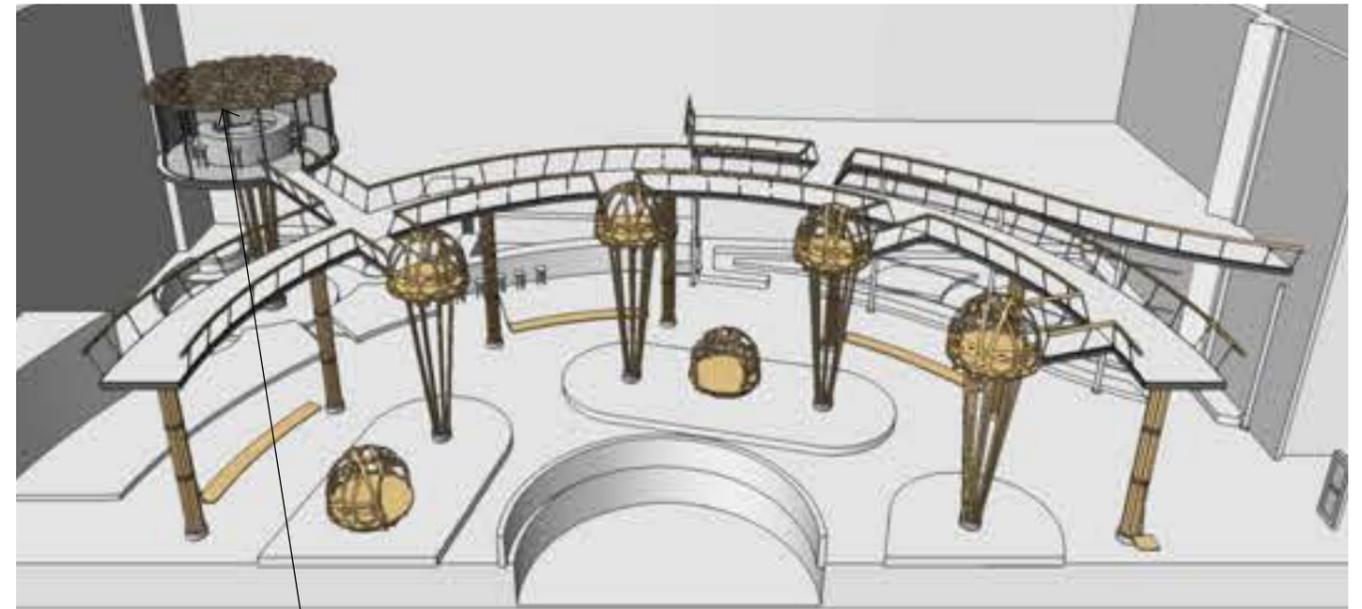


Top of column showing multiple single poles clustered together.

Steel Collar securing the bamboo cluster into place.

→ Concrete Pile Securing Into Ground

3D CAD MODEL OF BAMBOO THROUGHOUT DESIGN



Gin Tasting Room

To incorporate the bamboo into the gin tasting room, I have created a woven roof out of bamboo that living plants can be hung off of. I have also held the structure up using the same mechanisms as the Pods.

Banister Railings

The banister railings are a combination of bamboo rods and glass panels. I chose bamboo because it can be formed into the curved shape of the walkway easily and fits in well with the design. I have also designed the banister to lean out at an angle to allow for better interaction with the wildlife below.

Museum Shelving Units

The Museum Shelving units are now suspended between two of the cluster columns that are holding up the centre walkway, rather than being a separate element.

Compound Columns

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