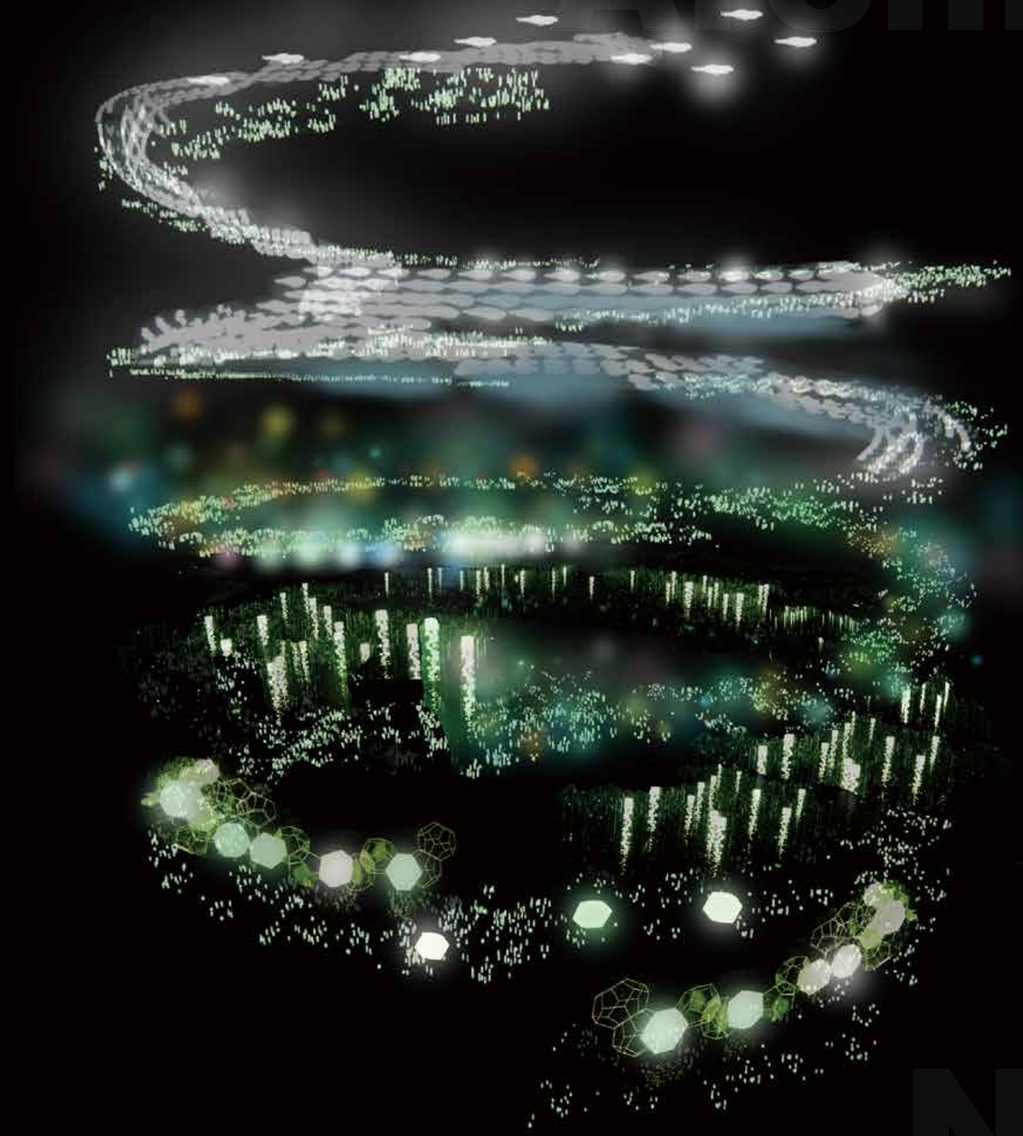
Digitalized Architecture



Nature

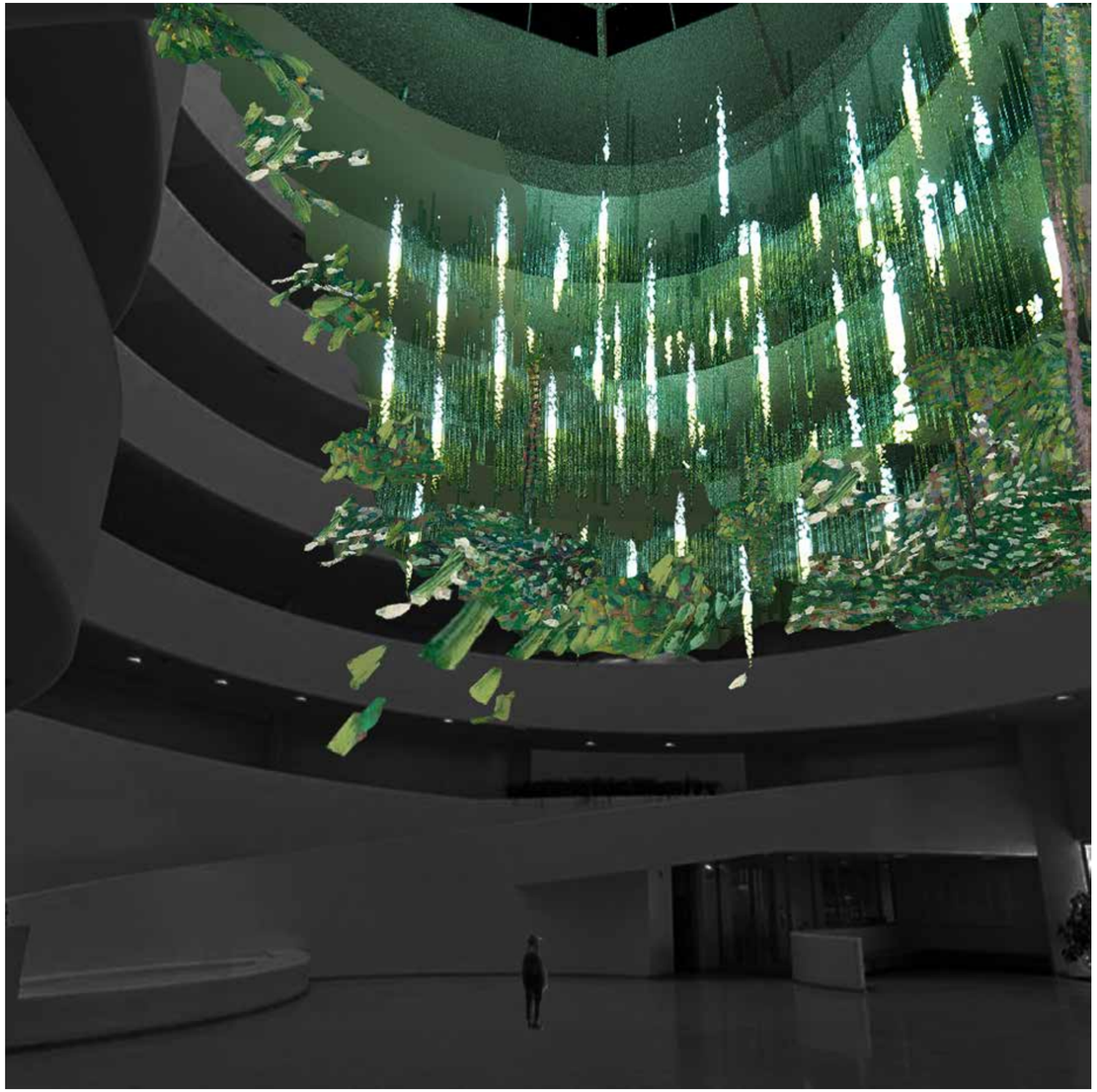
XIANGGE LIU

INT 402 DESIGN VI: THESIS

INSTRUCTOR: KARIN TEHVE

CONTENTS

The project interrogates the perceived boundaries between nature and the built environment using Mixed Reality. The project translates the visual therapeutic qualities of natural phenomena into digital projections, using techniques borrowed from fine art. The test site is the Guggenheim Museum in New York City, but similar strategies could be applied to any urban environment, anywhere an immersion into nature is not possible.



FORM OF SPACE: MIXED REALITY

What is Mixed Reality?

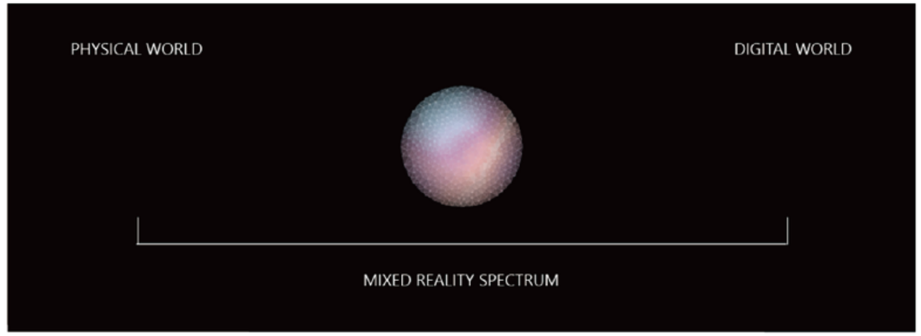


Image: Mixed Reality is the result of blending the physical world with the digital world.

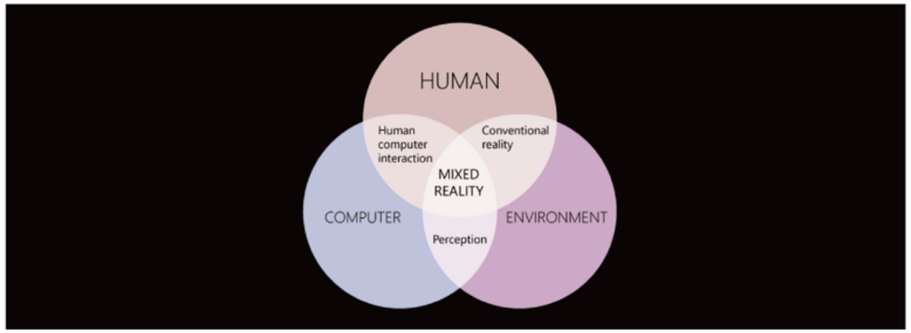


Image: The interactions between computers, humans, and environments.

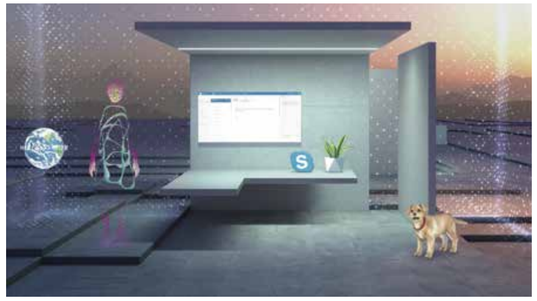
Mixed Reality is a blend of physical and digital worlds, unlocking the links between human, computer, and environment interaction. This new reality is based on advancements in computer vision, graphical processing power, display technology, and input systems.

DEVICE & EXAMPLES OF MIXED REALITY:

Physical world

Starting with the physical world, placing a digital object, such as a hologram, as if it was there.

Starting with the physical world, a digital representation of another person--an avatar--shows the location where they were standing when leaving notes. In other words, experiences that represent asynchronous collaboration at different points in time.



Starting with a digital world, physical boundaries from the physical world like walls and furniture appear digitally within the experience to help users avoid physical objects.

PROGRAM:

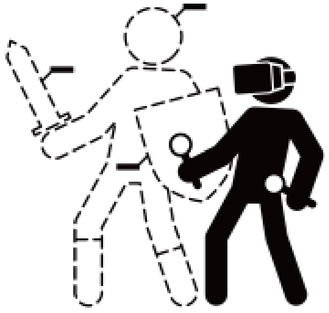
The program of the project is walking meditation in mixed reality format. Users will put on MR glasses and immerse themselves into the dynamic mixed reality environment that exists in interior condition and healed by therapeutic qualities of natural phenomena happening in forest, mountain and meadow, for instance. The project also made some references to forest bathing.

USER GROUP:

People with too much stress

People lives in urban environment
that do not have chance immerse into nature

People who likes hiking/walking in nature



People who enthusiastic about games/mixed reality

SITE & CONTEXT:

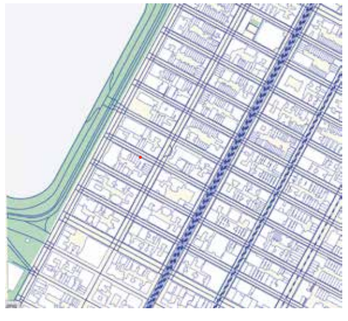
"Digital Projection" by obscura

Wu Tsang "sonic space"

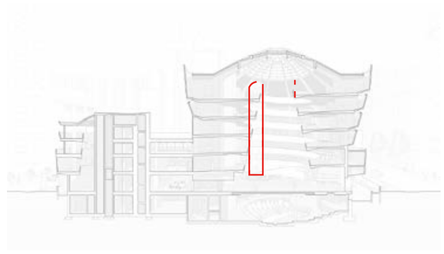
Reasons for testing in museum of Guggenheim New York:

- The prgram will be hold during the night time, after the museum's regular opening hour in order to avoid conflict with existing program.
- MR represents new layers of information that will blend the physical and virtual worlds and rewrite the experience of monumental site without deconstruct it.
- Mixed reality will bring natural elements into this "concealed" space during the night in a dynamic form so that people can experience the beauty of nature and healed by it in an innovative way.

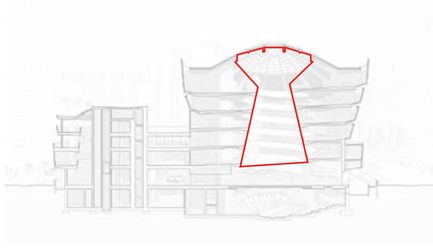
Site model & plan:



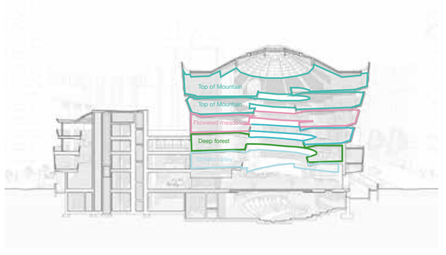
PROGRAM & SECTION & ANALYSIS:



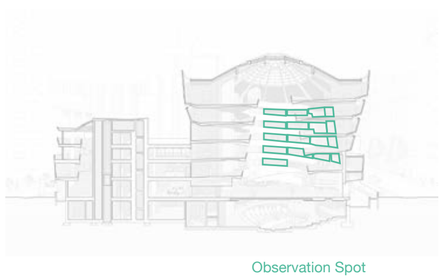
Elevator



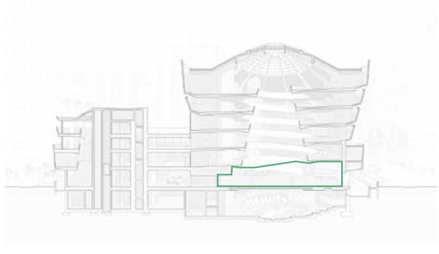
MR art works space



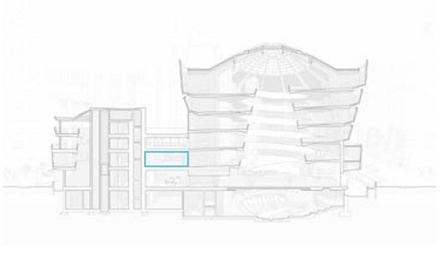
Walking Path



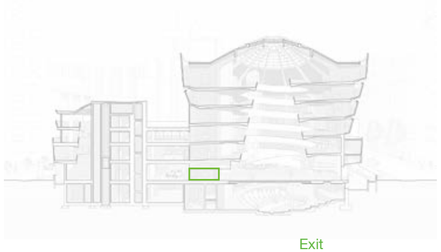
Observation Spot



Waiting Lounge



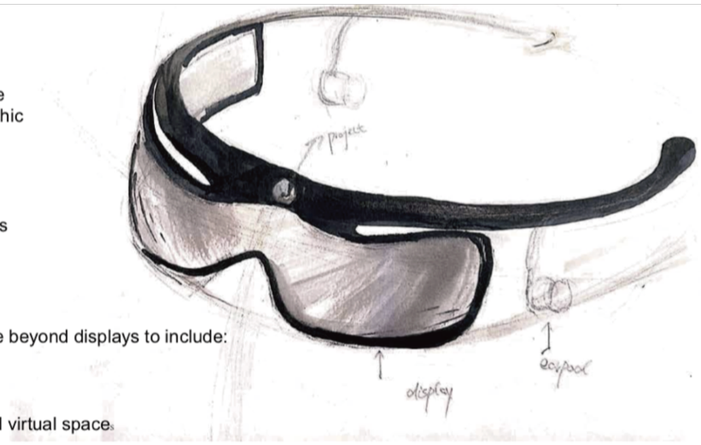
Dinning Hall



Exit

OBJECT STUDY : MR GLASSES

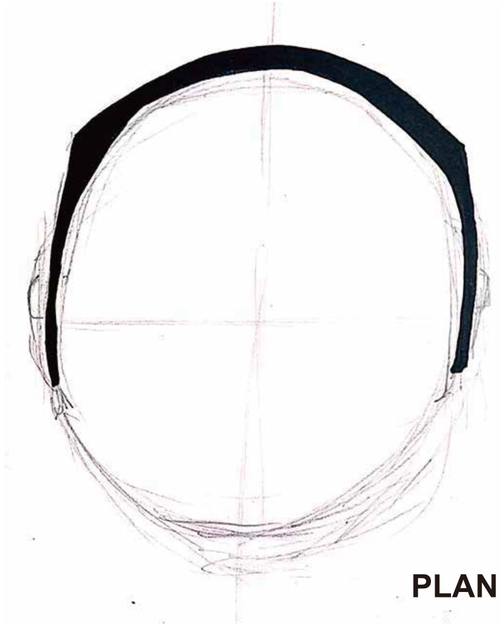
MR glasses are relatively easy to carry and more light. The MR glasses have a physical display that cover most of the user's field of vision. The front end of the MR glasses is equipped with a holographic device.The MR glasses have two ear-phones on either side for the user to listen to the sound. Users can use it to observe the virtual environment around them, as well as view physical conditions and meditation information.



the application of Mixed Reality has gone beyond displays to include:

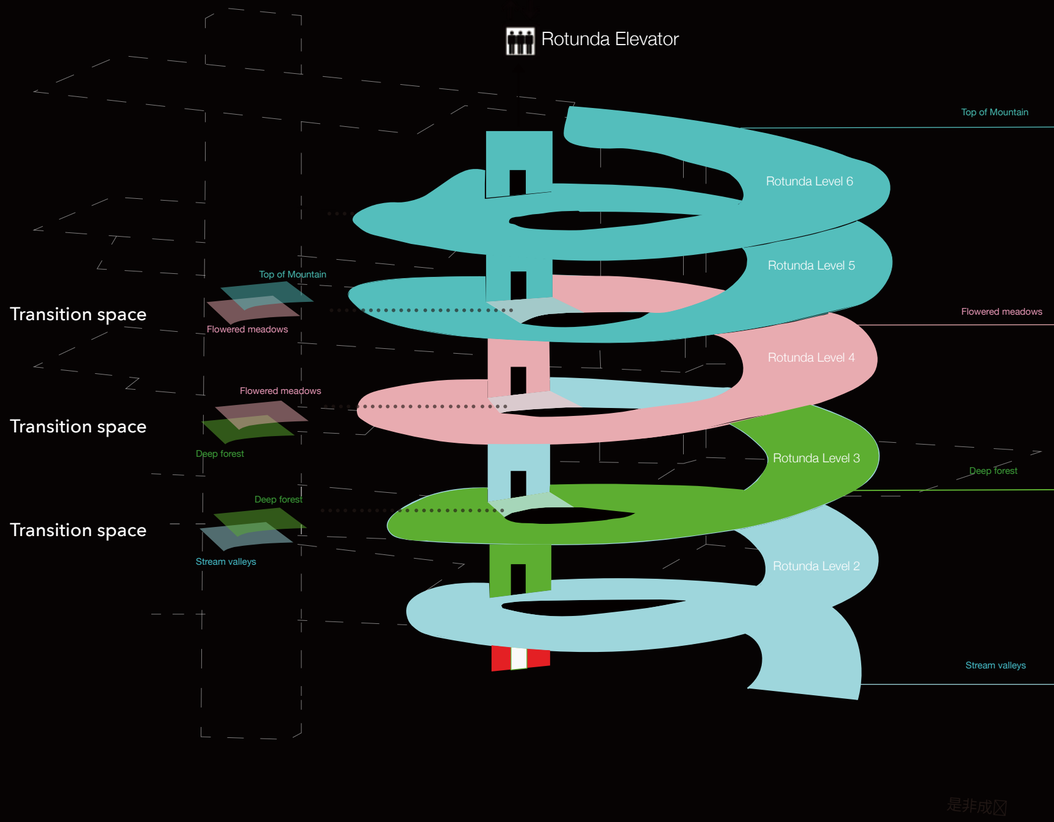
Environmental input
Spatial sound
Locations and positioning in both real and virtual space.

ELEVATION



PLAN

Museum of Guggenheim
(Before MR Transition)



Natural Phenomena

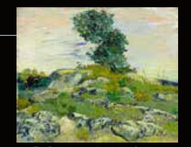
Natural Phenomena in paintings

Paintings by Vincent Van Gogh

The Starry Night, 1889, Vincent Van Gogh

Poppy Field, 1890, Vincent Van Gogh

Trees and undergrowth, 1887, Vincent Van Gogh



The Rocks, 1888, Vincent Van Gogh

Spatial Translation/Painting Techniques :

"Sous-bois" : *19th-century rural painters climbed forested areas for a close view of wooded scenes. Evoking the trees and grassy undergrowth, were often made vertically on canvas, as opposed to horizontal views of sweeping landscapes. In a sous-bois genre, the sky is barely visible, just a glimpse of sky sometimes penetrating the branches.*

Trees and undergrowth, 1887, Vincent Van Gogh

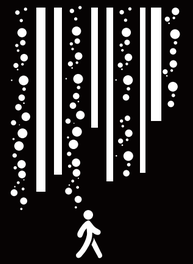
Visible shapes of the tree trunk refers to the vertical composition on canvas from "Sous-bois" genre

Simplify the shape of tree trunks. Our attention goes upon our eye level in forest

Trunk shapes dropping above eye level

Pointillist stippling painting techniques

Simplify into illuminating dots



Translating trunks into illuminating dots as well

Spatial Translation/Painting Techniques :

"Colour contrasting" : *Van Gogh uses lots of contrasting colour to depicts the colour of flowers. Trying to render intense colour and not a grey harmony. "In colour seeking life the true drawing is modelling with colour."*

Poppy Field, 1890, Vincent Van Gogh

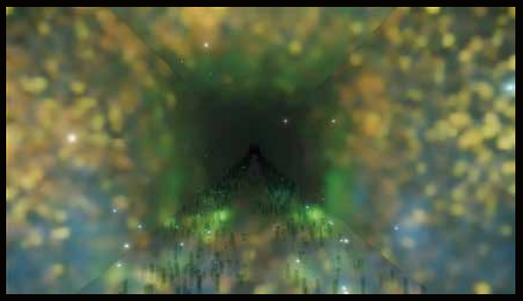
Strong contrast between colors, "Trying to render intense colour and not a grey harmony. "

grass

Simplify into illuminating dots with contrasting colors

Simplify the shape of grass. Our attention goes below our eye level in meadow

illuminating dots with simplified grass shape



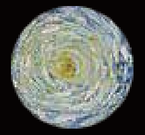
Spatial Translation/Painting Techniques :

"Impasto" : *Impasto is a painting technique where paint is laid on an area of the surface in very thick layers, it is usually thick enough that the brush or painting-knife strokes are visible and seems coming out of the canvas. Van Gogh used this techniques to paint the swirls in the sky.*

The Starry Night, 1889, Vincent Van Gogh

swirls in the sky refers to "Impasto"of layering surfaces.

+



illuminating lines

Simplify the swirls into short curves

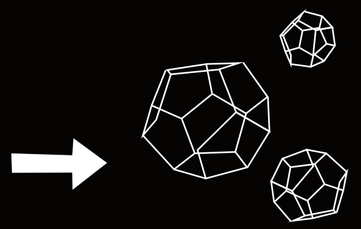
Combing short curves into large swrial shapes

Illuminating

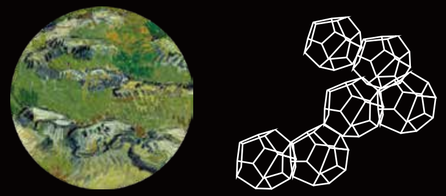
Spatial Translation/Painting Techniques :

"Linear quality" : *Van Gogh used wide different brushstrokes to create varying textures through the canvas, which is increasingly stylized with a linear quality that was offest throgh his continued exploration of the effects of colour.*

The Rocks, 1888, Vincent Van Gogh



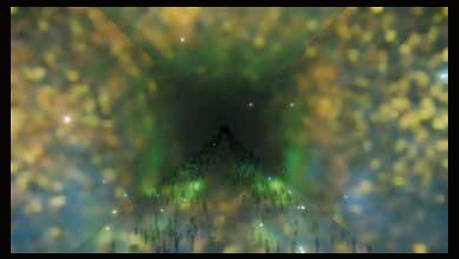
Simplify the shape of rock into linear geometry



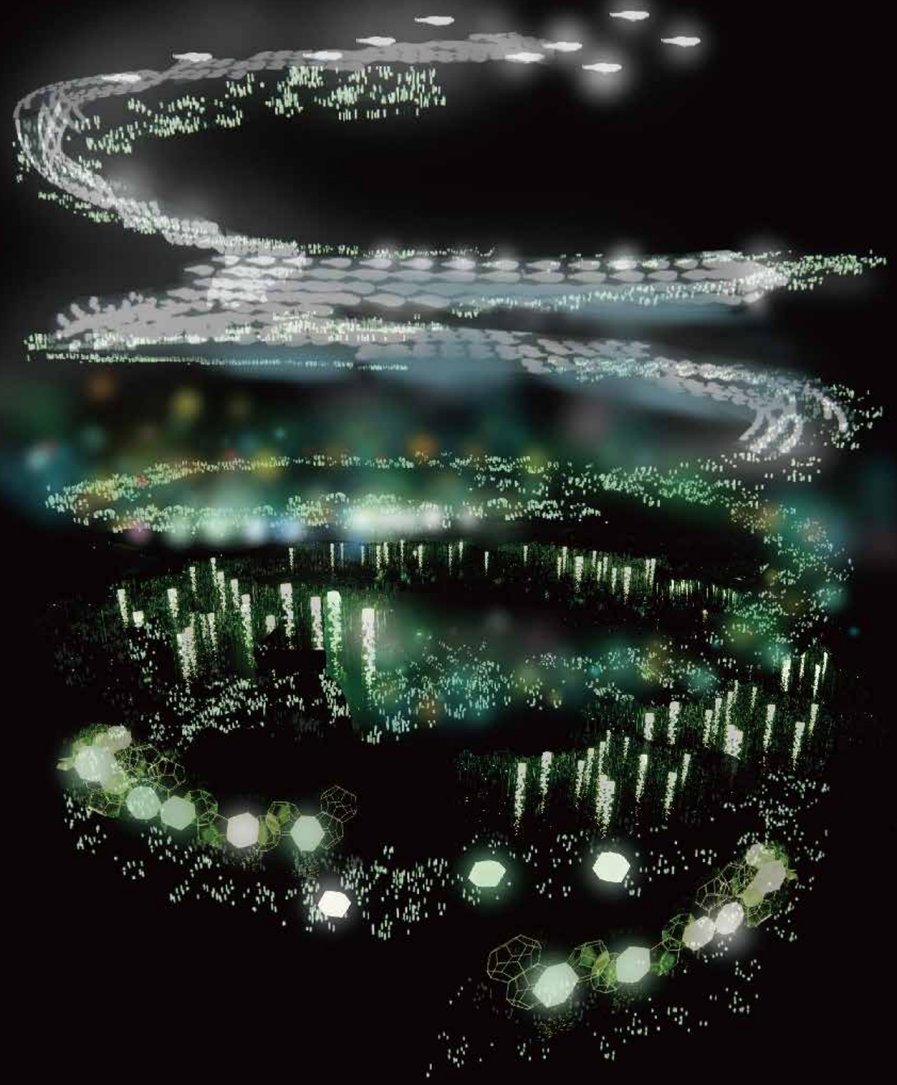
Combine the rocks into organic shape

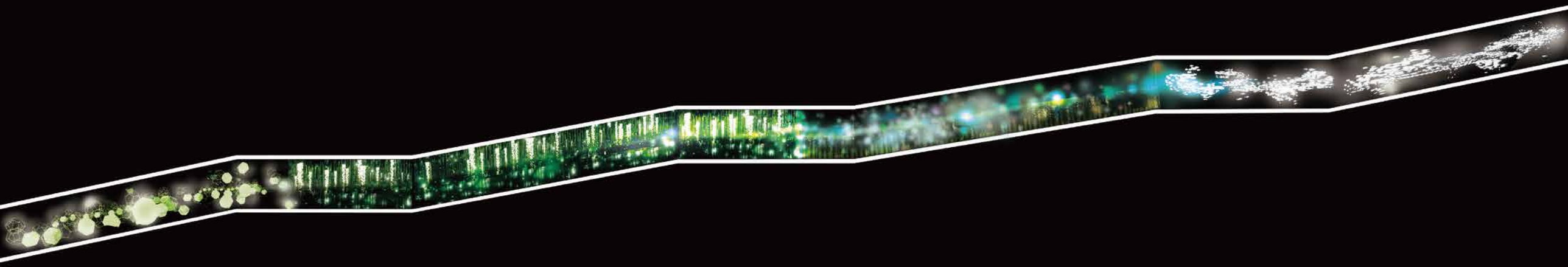
Combine the rocks into grass and add illumination

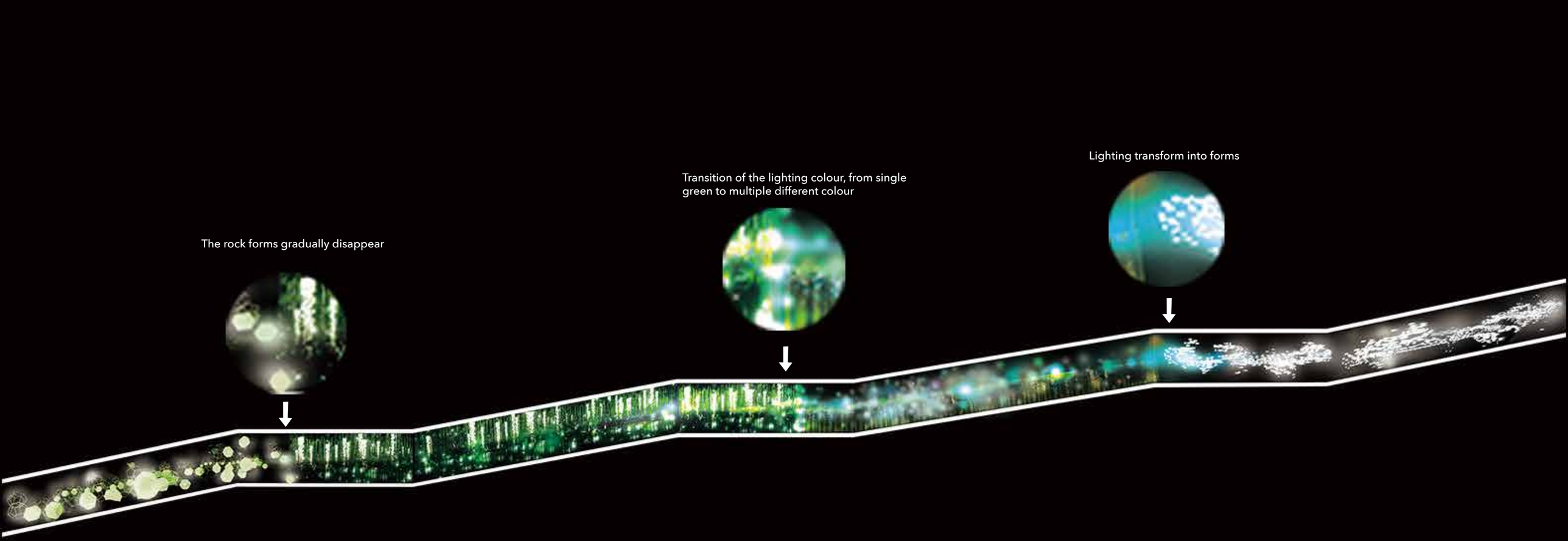
Spatial Translation



Museum of Guggenheim
(After MR Transition)






The rock forms gradually disappear
Transition of the lighting colour, from single green to multiple different colour
Lighting transform into forms

RESEARCH/DEVELOPMENT/SKETCHES : Deep Forest

nature phenomena

painting

Trees and undergrowth, 1887, Vincent Van Gogh

Key words

trunks
pointillism
limitless
repetition
distance
inensity

Muqarana Mutation
Michael Hansmeyer

Hope Tree
Client: Design Association
NPO + Dezeen

Singing Tree
Es Devlin

Treebank
Katie Paterson
Zeller & Moye

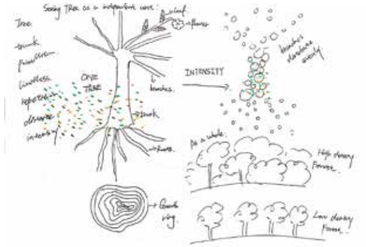
Trabsarquitetonica
Henrique Oliveira

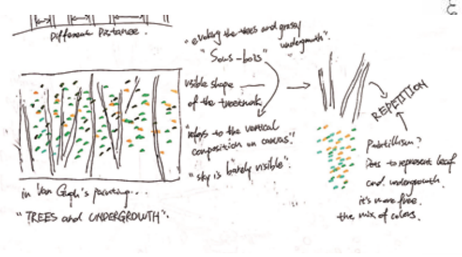
Baitogogo
Henrique Oliveira

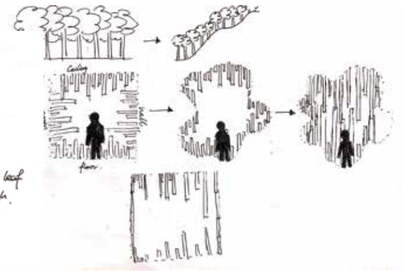
Plastic Tree installation
Pascale Marthine Tayou

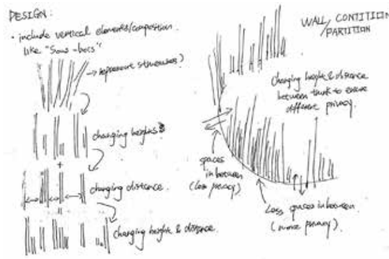
Luminous Tree
Tom Price

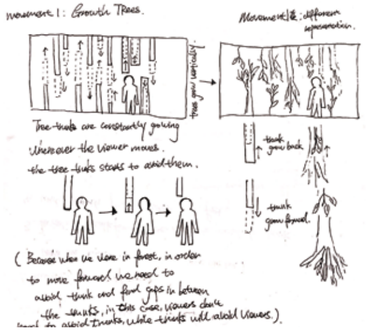
Vana
Orproject

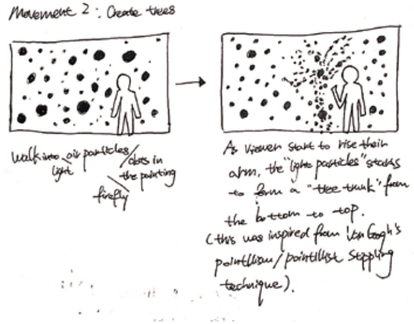


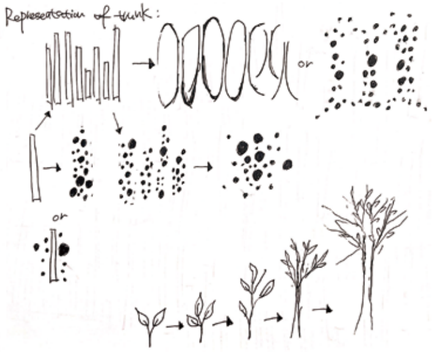


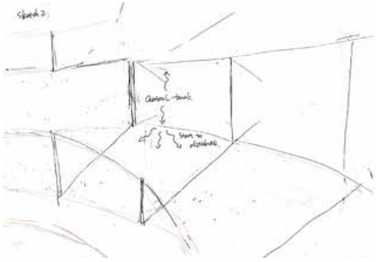




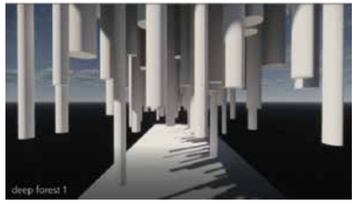








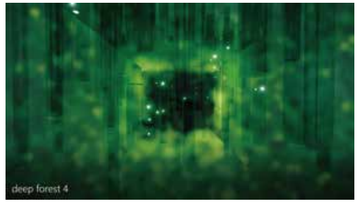
DIGITAL MODEL DEVELOPMENT:



Extrude trunk shapes (cylinder) from ceiling that above eye level

Change the material into transparent glass

Switch the time to night
Change some of the cylinder into illuminating cylinder



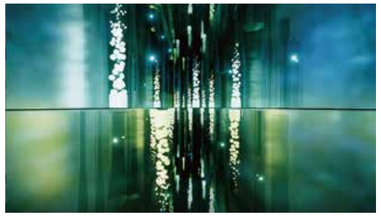
Adding illuminating dots (inspired from pointillism & firefly)

Translating some trunks into illuminating dots as well

Changing the surrounding environment

Changing the surrounding environment's material into mirror to create immersive effect

Adding another level above the existing level, trunk cylider extrude from the floor of upper level and dropping from the ceiling of lower level



APPLY INTO SITE:

Test of Ceiling & Floor conditions

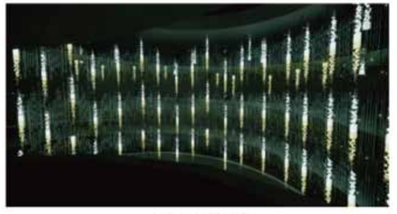
Adding topography

Changing the surrounding environment's material into mirror to create immersive effect

Extrude short cylinders and creating light particles to represent "undergrowth" in painting

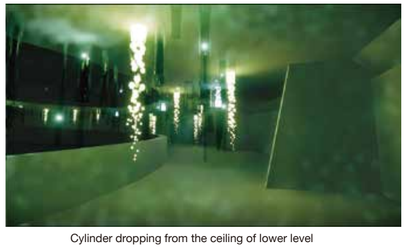
Test in Site

Changing the surrounding environment's material into mirror to create immersive effect

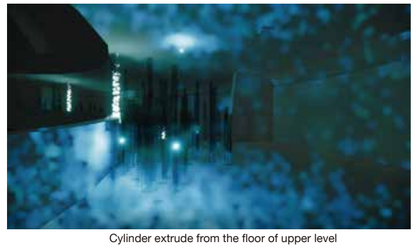


View from far away

Test in Site



Cylinder dropping from the ceiling of lower level



Cylinder extrude from the floor of upper level

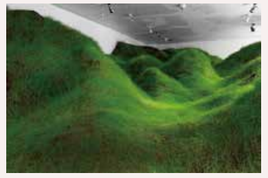
View from far away

RESEARCH/DEVELOPMENT/SKETCHES : Flowered Meadow

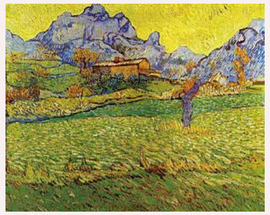
nature phenomena

painting

The Poppy Field near Argenteuil, 1873 by Claude Monet

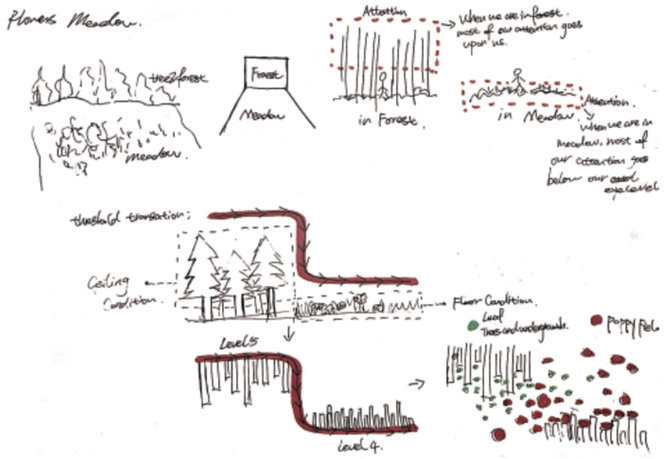


Poppy Field, 1890 by Vincent Van Gogh

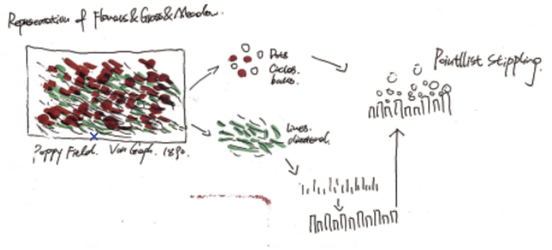


\ Meadow in the Mountains: Le Mas de Saint-Paul by Vincent Van Gogh

threshold study :



Poppy Field, 1890 by Vincent Van Gogh



RESEARCH/DEVELOPMENT/PROCESS: Top of Mountain

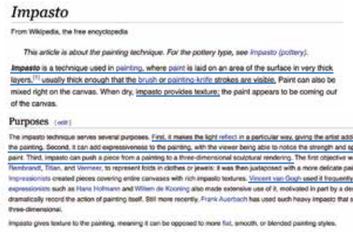
DESIGN METHOD:

natural phenomena

painting

The Starry Night, 1889, Vincent Vogh

painting technique



Impasto

From Wikipedia, the free encyclopedia

This article is about the painting technique. For the pottery type, see Impasto (pottery).

Impasto is a technique used in painting, where paint is laid on an area of the surface in very thick layers,[1] usually thick enough that the brush or painting knife strokes are visible. Paint can also be mixed right on the canvas. When dry, impasto provides texture; the paint appears to be coming out of the canvas.

Purposes [edit]

The impasto technique serves several purposes. First, it makes the light reflect in a particular way, giving the artist additional control over the play of light in the painting. Second, it can add expressiveness to the painting, with the viewer being able to notice the strength and speed by which the artist applied the paint. Third, impasto can push a piece from a painting to a three-dimensional sculptural rendering. The first objective was originally sought by masters such as Rembrandt, Titian, and Vermeer, to represent knots in clothes or jewels: it was then juxtaposed with a more delicate painting style. Much later, the French Impressionists created pieces covering entire canvases with rich impasto textures. Vincent van Gogh used it frequently for aesthetics and expression. Abstract expressionists such as Hans Hofmann and Willem de Kooning also made extensive use of it, motivated in part by a desire to create paintings which dramatically record the action of painting itself. Still more recently, Frank Auerbach has used such heavy impasto that some of his paintings become nearly three-dimensional.

Impasto gives texture to the painting, meaning it can be opposed to more flat, smooth, or blended painting styles.

Starry Night by van Gogh (1889). The impasto technique and line structure gives his viewers the feeling that the sky is moving.[3]

Starry Night

Description and Technique Used

Van Gogh preferred to layer his paint thickly on the canvas in a method called impasto. Starry Night is an oil painting impasto on canvas, done during the post-impressionist period (Artble 2014). It is 73.7 by 92.1 centimeters.

Within the painting, Van Gogh uses a contrast in lines to show depth, as he painted the city with calm straight lines and the sky in chaotic swirls. In addition, the town's solid linear lines are meant to show that it is quiet and without movement. It is asleep. While on the other side of the spectrum is the sky full of languid lines that swirl because the painter wants the viewer to feel how alive the sky is. He wrote his brother Theo, "The starry night is more alive and more richly colored than the day" (Varriedoe), which has been thought to mean that Van Gogh was more invested in the stars than he was the city below them. The underlying landscape is uniform other than the cypresses in the foreground. It is separate from the city and contains moving lines that create an almost flame-like shape. It is the only object in the painting that is more a part of the night sky than the background of the city. The combination of the impasto technique and the varying line structure gives viewers the impression that the painting is moving, thus capturing the life Van Gogh sees in the night sky.

http://vangogh nsstarrynigntananaiysis.weebly.com/descnp-tion-and-technique-used-in-starry-night.html#:~:text=Van%20Gogh's

stars

layering

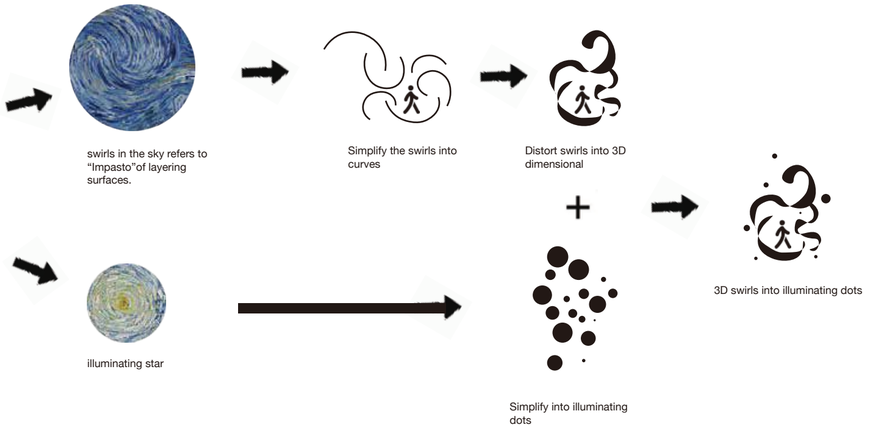
dynamic

curve

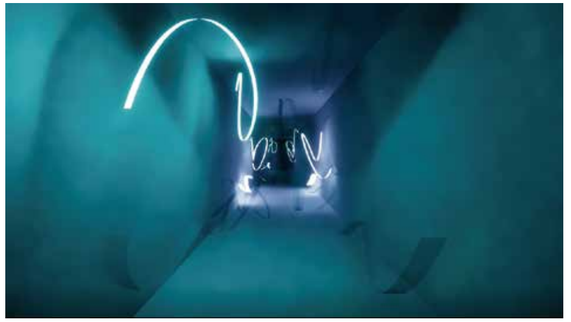
illuminating

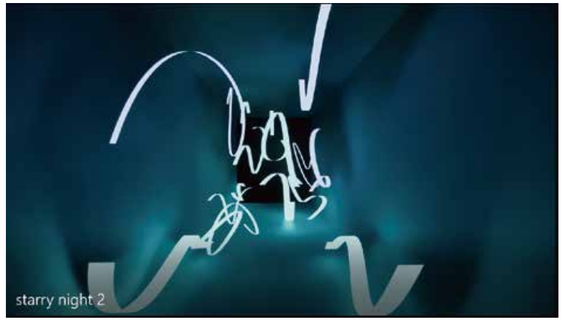
mix

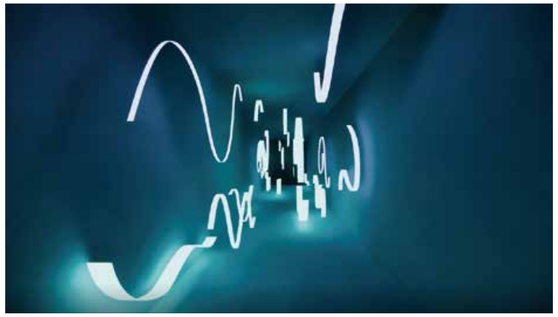
The Starry Night, 1889, Vincent Vogh

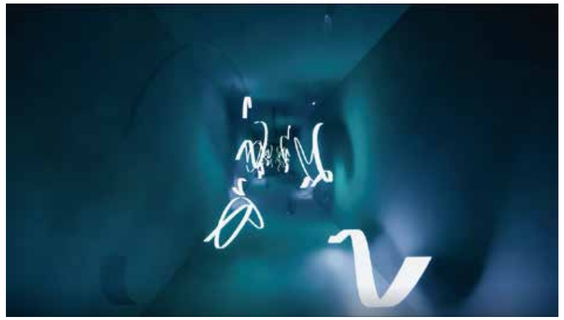


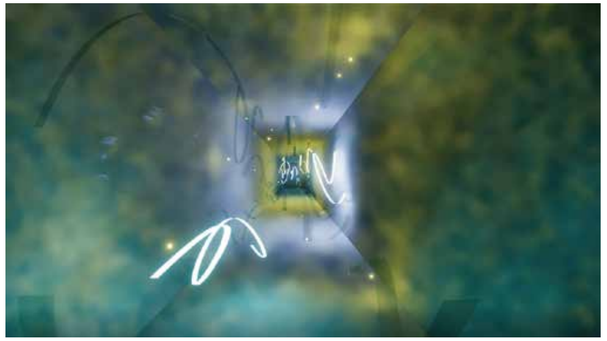
DIGITAL MODEL DEVELOPMENT:

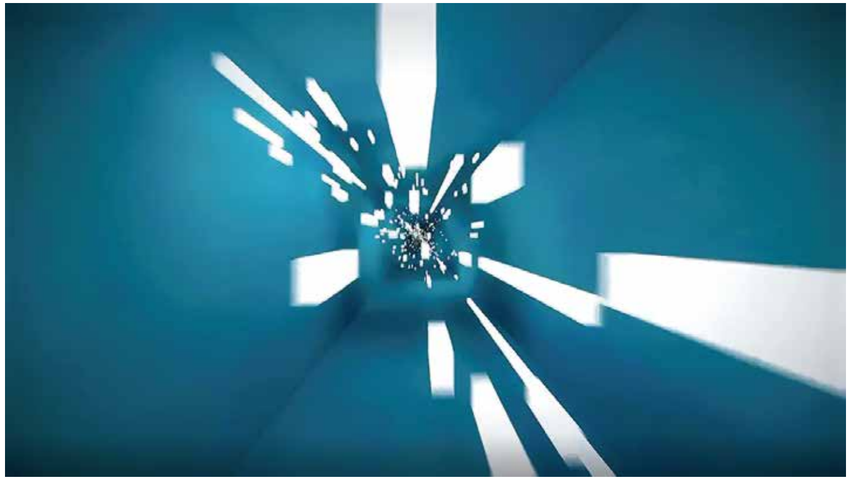




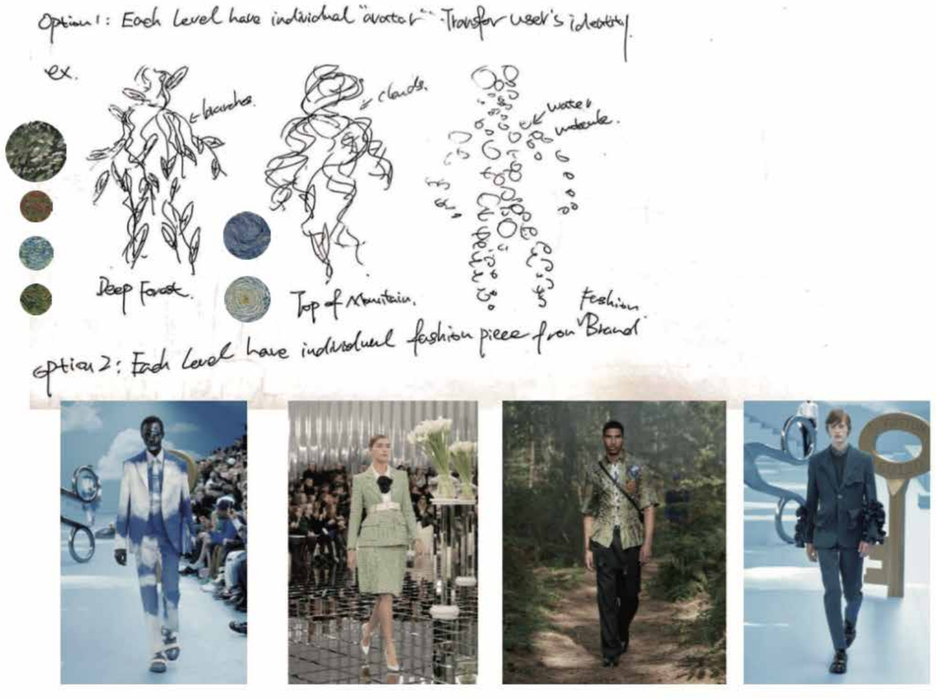








USER STUDY:


Option 1: Each level have individual "avatar" - Transfer user's identity.
ex.
Deep Forest.
Top of Mountain.
option 2: Each level have individual fashion piece from "Brand".


option 3: Design One costume/suit for whole meditation.
meditation "suit".
option 4: Design different suits for different levels

SEQUENCE DRAWING:

01

Let's go to Guggenheim !

02

Walk into front gate

03

Security check

04

Buy ticket first

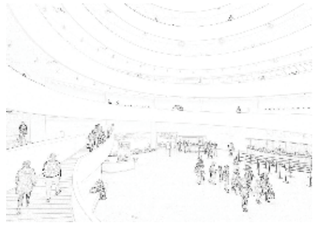
05

Got my MR glass!!!

06

Deposit my jacket

07



walk into Lobby

08

Read instructions

09

Found Elevator!

10

walk into elevator

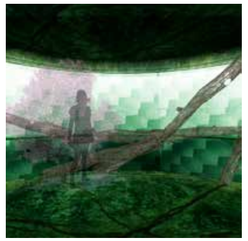
11

Take on my MR glass

12

Elevator menu

13



Wow~the elevator changes!!!

14

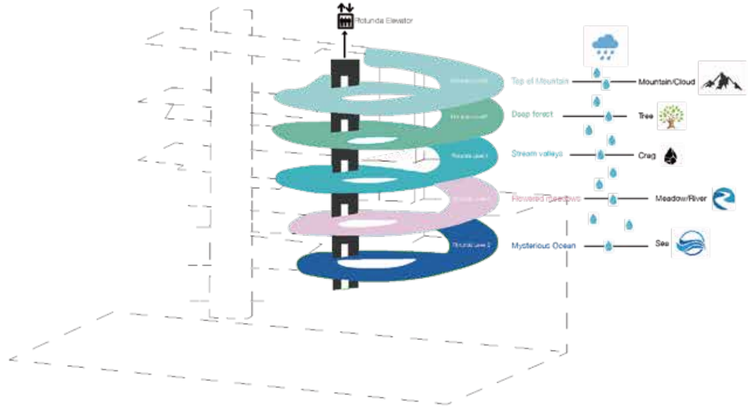
Wow~it changes again!

DESIGN STRATEGIES RESEARCH/PROCESS:

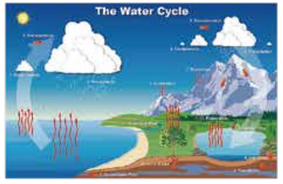
Design Strategies:

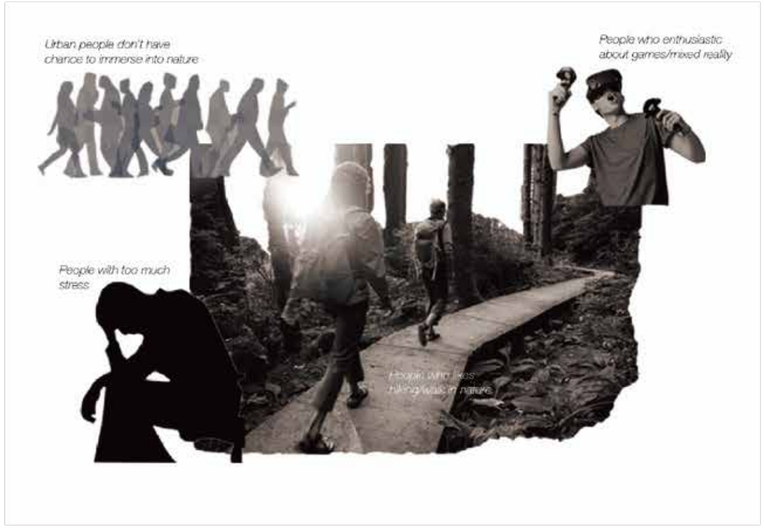
The most important design strategies is use biophilic design to recreate the perception of nature phenomena, a naturally inspired mixed reality environment, Biophilia in nature is not about bring moss or flowers, painting the walls with blue white represent sky. Start to include elements of nature, wind, water, fire and then being able to bring something enthusing.

Strategies 1: appropriate levles at natural sequence and the hydraulic cycle

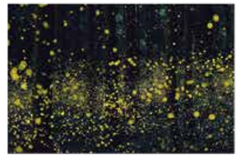


Imagine the water from the sky clouds that turning into rain, rain drop into mountain, to the forest, forest flow to the crag, crag goes to the river, river meets the sea, that is a natural water cycle.





Strategies 2&3&4: Mimicking from nature phenomena/ learning from painting/ precedents

nature phenomena	painting	Key words	artworks
 firefly	 rembrandt - Landscape with the rest on the flight to egypt 1647	Light blinks disappear moments contrast between light and dark warmth infinity movements distance	 Infinity mirrors Yayoikasuma
 forest	 Trees and Undergrowth (1887) by Vincent Van Gogh rembrandt - Landscape with the rest on the flight to egypt 1647	trunks pointillism limitless repetition distance inensity	 Muqarana Mutation Michael Hansmeyer
 raining	 Paris The Place De L Europe on a Rainy Day 1887 by Gustave Caillebotte	movement dropping disappear speed inensity reflection	 Rain Room rAndom international at the Barbican
 snowing			

What if using Mixed Reality as media to healing people through bioluminescens in monumental site at night in complex urban environment?

Possible outcome of Program: Healing urban people from stress.

Location: New York

User: Urban people who works everyday that have too much stress
People who loves museum/biomimicry
People who enthusiastic about games/Mixed reality
People who wish to healing by nature
People who likes going to central park

How people normally dealing with stress?
1.Going to central parks at day time doing forest meditation or just simply walk and relax over there
2. Going to gym
3. Going to spa
4. Play Games
5. Going to Museum
6.Go shopping/ eating
7. Work in office and do not have time to dealing with stress during day time in the week.
8. Going to bar & club at night after their work
9.Going to sleep

Biomimicry

Bioluminescence

Bioluminescence examples:

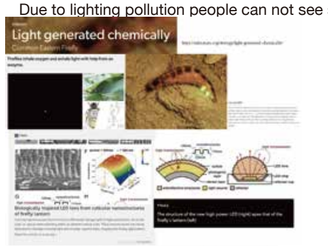
Northern Lights, Iceland 

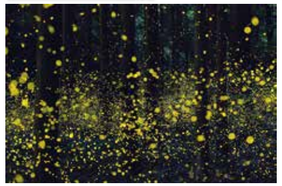
Lightning storm, Venezuela 

Moonbow, Zimbabwe 

A different kind of rhythm and blues 

1.Firefly lives in forest
Due to lighting pollution people can not see stars in NY





2. glowing tiny organisms lives in ocean

3. Aequorea Victoria lives in ocean

Night

What if people going to forest like central park at night?
However there is no light in the park
Central park is closed at night
It is dangerous over there

What if people going to museum at night?
Most museums are closed at night.

What if new yorker going to somewhere is quiet and peaceful to release their from stress rather than going to club & bar thats so loud? Can people going to museum and central park to relese their stress?

What if Guggenheim opens at night, and people going there can also enjoy the quality of the forest from central park at night during regular working days after their work.

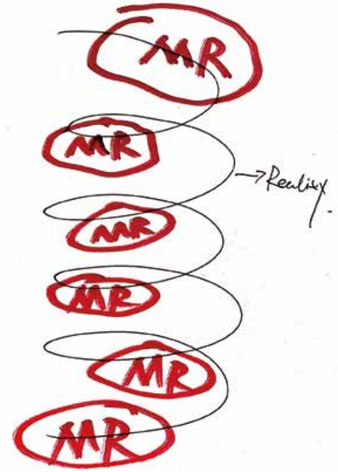
Guggenheim is already a very concealed place, the only place where most of the natural light comes in is from the big window at the top. What about the night when there is no natural light comes in?

The healing power of light

Media- the mix between virtual reality & reality

The moment when people put on the head-set they already entered a mixed reality environment.

What if designing chambers for Guggenheim?
Each chamber is where virtual elements happens.



Feedbacks from 2nd Midterm Review

1. What is the end?
2. Not clear about the material strategy of the design.
3. Bioluminescence of firefly seems not related with the painting.
4. It does not has to be that specific painting, explain why use that painting more specifically. What is the position of art in your case.
5. Explain the program more clearly ex. An exhibition of healing after regular hour
6. How do you want audience engage with the space? How audiences interact with the hologram projections? Ex. Touch the guardrail and feel hot or cold? → How users healed by nature
7. Draw a diagram to show the circulations in Reality and one diagram to show the circulations in Mixed reality. Compare what are the differences. (Making Connections between Reality and Mixed Reality) → Integrate nature into architecture
8. How spatially (spatial context)understand Guggenheim? Take advantages of the site?
9.
10. Explain more about what Mixed Reality doing in your case.
11. Not clear behind what is that spectacle ownership of mixed reality. Explain more.
12. Explain the lens design.

When users touch the dropping columns, the color of the columns will change in respond to user's emotion ex. green represent peace, red is anxious

How: The mixed reality goggles could test brainwaves, heart-rate variability, and galvanic skin response.

The design can translate user's emotions into visual and acoustic

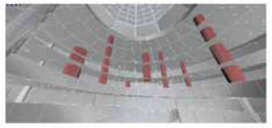
What to heal ?Healing mental state, which is emotion

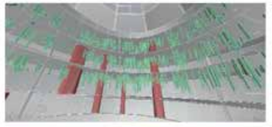
Interactions that can healing people. "healing interactions"

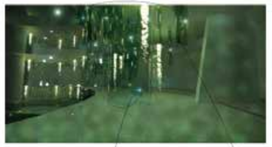
Creating this experience that immerse people in projected natural phenomena that inspired from art.

Creating this experience that immerse people in projected natural phenomena that inspired from art which can interact with users.

Design :







Users stand in the middle of the "trunk", and the color of the "trunk" change respond to user's emotion

Once the "trunk" changes color respond to user's emotion, the surrounding zone of small "trunks" dropping from ceiling will also changes color

Research :

Tips:
1.Too many things going on, list of criteria, what is upfront thing to my project should emphasize more and first.
2.Don't try to explain it, using visual graphic to explain sequence and narrative
3. What the most important things I want to achieve and what the less important things.

Thesis questions & answers :

1. What is the most important thing from this experience? What the experience really is? Convince me I want to go through it not for the sake just someone did it. What makes people want to go back there?

The project aims to heal people from the power of nature, allowing people to see some incredible natural wonders and feel the beauty of nature without having to travel far away. Instead of the traditional approach of integrating natural landscape into architecture, the project will use mixed reality as a medium to allow people to feel the presence of nature around them at any moment. People will be immersed in this virtual and real combination of the environment to carry out walking meditation, the dynamic virtual natural landscape will bring people unprecedented shock experience, which is an innovative means to heal the mind with nature.

2. Why you need to do this in Guggenheim? Why need the site contribute to your thesis, does it need to be a museum? Why need the site, it could be anywhere. Take advantage of the museum.

1. MR represents new layers of information that will blend the physical and virtual worlds and rewrite the experience of monumental site without deconstruct it.
2. Mixed reality will bring natural elements into this closed inorganic space in a dynamic form so that people can experience the beauty of nature and healed by it in an innovative way.
3. The site has different layers composed in a continuous way, each layer could represent one natural phenomenon and the continuity qualities blur the boundary of each nature phenomena.

4.The site has the quality of hydraulic cycle.

3. What experience behind the glass do, make it clear, what people see behind glass?

Behind the mixed reality glasses, people can see the physical world overlay with digital objects such as hologram. Everything in the physical world are possibly transfer into digital world, the physical boundaries from the physical world like walls and furniture will appear digitally within the experience to help users avoid physical objects.

4.Why use mixed reality? Why do we need a mixed reality glass? Why it is so important? Is it a program? Do you want to visualize it randomly or programed? Address the advantages of mixed reality!!!

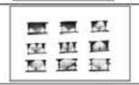
Mixed Reality is a blend of physical and digital worlds, unlocking the links between human, computer, and environment interaction. In Mixed Reality environment, people will not be bound by time, distance, geography, location and other realistic factors. Virtual objects can not conform to physical laws in front of people, they will be presented in the form of dynamic changes in front of people. People will get some unprecedented experience, people can experience the instantaneous transformation of the surrounding environment, such as in a dark and lifeless space to experience the vitality of nature.

4. What are your design strategies?

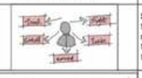
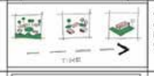
1.The most important design strategies is use biophilic design to recreate the perception of nature phenomena, a naturally inspired environment.

Research : Can Biomimicry/Nature Affect Human Psychology?

ENVIRONMENTAL FEATURES

Sr. No	ATTRIBUTES	INTERPRETATION	ARCHITECTURAL APPLICATION	GENERATED EFFECT
1	Color		Humans are always more attracted to the natural colors. Like the colors of the sky, the color of sea and the yellow of the sun. That is why it has more affinity towards it.	Sooth Relaxation Calm
2	Water		Water is an essential need that we all share. It resembles abundance and wellness. Which is why it is a effective element of landscape as it shows close affinity to nature.	Relax Peaceful
3	Air		Just like the other essential elements of nature. Air is one of that element that decides the well being of the user as well as the functionality of building. Air is something we are used to and gives us a nature based feeling.	Calm Peacful
4	Sunlight		Light has been a essential element and it can develop our health well being and feelings. We are diurnal and we always depended on sight for food to security. Hence light gives us power and is our intellectual need.	Joyful Energetic Happy
5	Plants		Plants, shrubs, trees, creepers. Any form of vegetation is a natural indicator of prospect. A place on which we depend and rely. As it is our most comfortable environment that acts as luxury.	Comfortable Happy Relaxed
6	☆ Natural materials		The texture and patterns of such natural materials are the indicators of safe environment. Which makes us feel at ease and in nature. Sensation that the patterns evoke is only possible through these patterns.	Feeling of Belonging

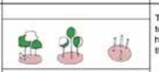
NATURAL PATTERNS AND PROCESS

Sr. No	ATTRIBUTES	INTERPRETATION	ARCHITECTURAL APPLICATION	GENERATED EFFECT
1	☆ Sensory Variability		Senses are the strongest components that when simulated can help create a natural environment. Which can help the user have a total experience with the use of all the senses.	Joy Care Excitement
2	☆ Time		Changing with time is another attribute of nature. Thus the building should be built with the thought of the 10 - 15 years in future.	Curiosity Happiness Longitivity
3	☆ Growth		Growth is a undeniable truth of nature. And structures should be able to withstand the growth that might happen with time. Thus making way to incremental housing.	Joy Excitement
4	Focal point		A focal point of the landscape and design helps in bringing together various factors together in coherence. Just the way it is in nature.	Excitement Curiosity Balance
5	Bounded space		Humans like other mammals are highly territorial. Hence even in coherence we want to have a boundary for ourselves.	Security Care Belonging
6	☆ Transitional space		Humans like other mammals are highly territorial. Hence even in coherence we want to have a boundary for ourselves.	Joy Curiosity Excitement
7	☆ Linked series		In nature everything is different but still is connected. The link that connects them all into a whole. Making them a whole.	Sense of belonging Connection
8	Fractals		In every natural things we see. There are fractals present in them. Which follow a pattern throughout. Thus these fractals's can simulate a natural feeling.	Belonging Balance Harmony

EVOLVED HUMAN NATURE RELATIONSHIPS

Sr. No	ATTRIBUTES	INTERPRETATION	ARCHITECTURAL APPLICATION	GENERATED EFFECT
1	Prospect and refuge		A prospect is something which our ancestors considered as an opportunity to hunt and gather food and materials. As refuge is considered to be the cave. Thus, the feeling of belonging and opportunity resides together in nature.	Curiosity Happiness Longitivity Belonging
2	Order and Complexity		Even though nature follows patterns it creates a certain disturbance. Which creates a variety in the structure and placement.	Balance Coherence
3	☆ Curiosity and enticement		The routes are kept meandering and twisted and they create a sense of curiosity and enticement. Which is generally observed in nature.	Curiosity Connection Excitement

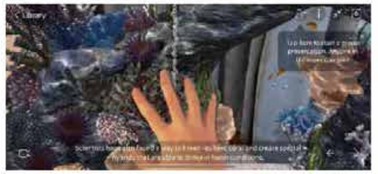
NATURAL SHAPES AND FORMS

Sr. No	ATTRIBUTES	INTERPRETATION	ARCHITECTURAL APPLICATION	GENERATED EFFECT
1	Botanical motifs		These simulate the plants and other natural vegetation forms. Which create a sense of belonging and prospect.	Belonging Secure
2	Trees and supports		Trees have been a essential factor in terms of food, shelter and comfort. So having them in the structure makes the space a simulator as a forest.	Belonging Refuge Peace
3	☆ Shells and spirals		These spirals and shell forms are another detail representation of natural world. Which can simulate the natural setting of sea side and forest areas.	Sense of belonging
4	☆ Resisting straight lines		In nature generally there is no rigid geometry like right angles or straight lines. The natural shapes are more curve and free. Thus avoiding them helps making the environment more familiar.	Symbiotic with nature
5	☆ Eggs/oval shapes		The egg shaped and oval shapes are generally preferred as they are more flexible to the eye and can be found in many elements of nature.	Sense of belonging is simulated
6	☆ Golden ratio		Starting from the bee wing to the honey comb. Each of the element comprises of the golden ratio. Which can be found in different natural elements.	Belonging Affection

AR experiments








Digital Naturalness is

an inquiry space, a practice ask, a design concept, a rules for digital products, and a community for collective innovation.

Our mission is

to integrate deep, health-inducing patterns of nature into digital technology to generate greater wellness, beauty, and aliveness for humanity and establish a mutually beneficial relationship between nature and technology.

Biomimicry

There is a rich history of design inspired by nature. One of the earliest examples is the artificial neural network developed by Warren McCulloch and Walter Pitts in 1943 to imitate neuronal behavior (McCulloch and Pitts., 1943). In the late 1950's, Otto Schmitt coined the term "biomimetics" and focused his research on mimicking the electrical activity of a nerve (Harkness, 2002). The term "bionics" was coined by Jack Steele in 1960 to describe a way of solving engineering problems using biology ("Bionics"). In 1997, Janine Benyus coined the term "biomimicry" to describe "innovation inspired by nature" in a book that brought biomimicry to the forefront of green design (Benyus, 1997).

Biomimetic TRIZ

TRIZ is a compilation of principles used to solve problems and resolve contradictions across multiple disciplines ("TRIZ Methodology, Tools, Articles and Case Studies"). TRIZ was originally developed to solve problems in physics and chemistry, recent efforts are being made to apply it to information technology and software development (Bockmann, 2015). Biomimetic TRIZ is a recent development of the program which incorporates biological solutions to problems in its database. It is not clear whether the Biomimetic TRIZ database has yet been applied to digital technology.

Technobiophilia

Biophilia is a term coined by E.O. Wilson as "the innate attraction to life and lifelike processes" (Kellert and Wilson, 1993). Biophilic design is intended to replicate human experiences in nature and to create spaces that reinforce that connection. It is a way to improve health and wellness. For example plants and photos of natural scenes are used in interior design, courtyards, natural lighting, and water elements are implemented in architectural design, and parks and greenways connect humans to nature in urban design. Technobiophilia is the "innate attraction to life and lifelike processes as they appear in technology" as coined by Sue Thomas (Thomas, 2013). Technology developed with technobiophilia in mind helps increase our connection with nature while online.

We have asked two questions:

1. How can digital technology be built with the patterns of nature in mind to improve humans' aliveness, wellbeing, and the beauty of our lives?
2. What digital technologies could contribute to nature being sustained and made ever healthier, directly and/or by improving humans' ability to sense, appreciate, and positively participate with nature?

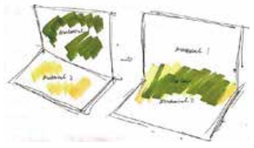
ROOM STUDY:

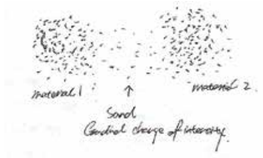
Thesis Statement

I want to create a meditation space that make people feel relax, one of the space will be inspired by the theme of forest . It will be an AR virtual space, but it will look similar to the reality, the choose of the materials, design of the space, lighting, quality of the room will be created based on the theme of the forest. But there are many dynamic and virtual elements, such as virtual waterfall and trees , weather- will be engaged.

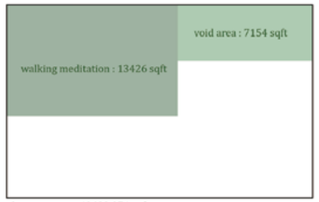
M

Joints





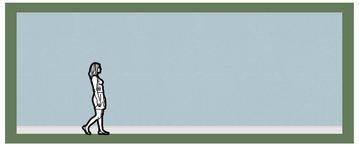
Program Area Diagram



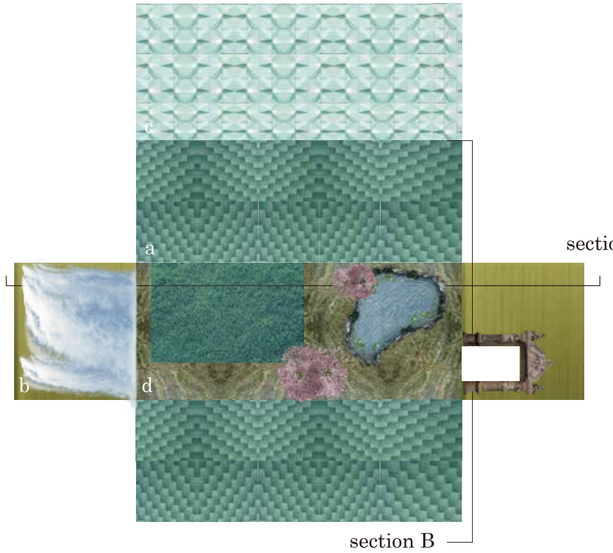
physical condition

a wall condition 1 : wallpaper
b flooring condition : wood floor
c ceiling condition : gypsum

physical condition section B



physical condition section A



after MR effect

a wall condition 1 : Valchromat
b wall condition 2 : pallas upholstery fabric
c ceiling condition : crystal foldscapes ceiling tiles
d flooring condition : rainforest green marble

after MR effect section B

physical condition section A

NETWORK STUDY:

Interior Forest bathing/Meditation Instruction

Preparation

1.Prepare for this therapeutic exercise include time/setting in waiting room.
2.Read the instruction of forest bathing carefully, and important matters in waiting room.
3.Take health measurements like stress level in waiting room.
4.Remain restful and peaceful in the forest setting in waiting room.

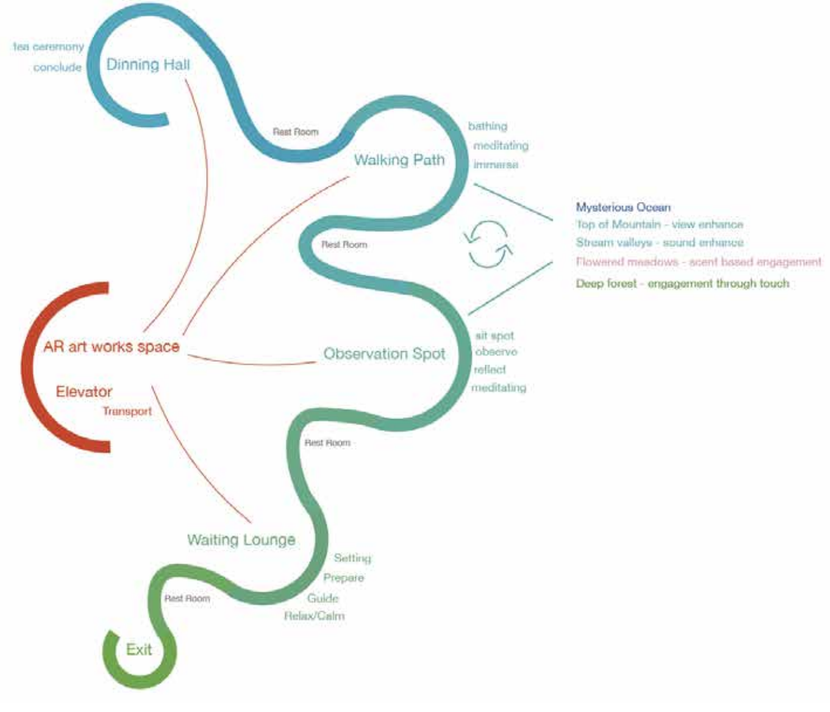
Meditation/bathing

5.Find a suitable location in nature/levels, by taking elevator to different levels/environments.
6.Enter the level that you chosed, stand still, and recognize your body in space.
7.Proceed with the bath by walking forward mindfully
9.Reflect on yourself/immerse yourself
10.Find a observation spot and sit in one location for a minimum of 20 minutes to observe and meditate yourself
11.Return to mindful walking and continue with the meditation/bathing session

Conclusion

12.Conclude your session with tea ceremont, but do not make an immediate return to everyday life.

Program Diagram



Thesis Statement

The network in my project consist of the prosdure of forest bathing (meditation) sequence. The program has been distributed into three different phase: Preparation, meditation and conclusion. The preparation stage happen at the waiting lounge, users will prepare time setting, reading construction, taking health measurements and stay calm. The second phase is meditation/bathing stage which happens at walking path and observation spots. At first users will find their suitable locations in nature/levels by taking elevator to different environments. Once they enter the level they chosed, users will stand still and recognize their body in the space, processed with the bath by walking forward mindfully and reflect themselfs. Users need find a observation spot in order to sit for minimum of 20 minutes to obseve and meditate themselves.At the conclusion stage users will conslude the session with tea ceremony in dinning hall to recover their body&mind energy. There are total five different environment levels provided for mdeitation, in the deep forst level there are more engagement through touch; flowered meadows focus on scent based engagement; stream valleys focus on sound enhance; top of mountain provide a more boardly visual relaxation, the las one is mysterious ocean. The elevator is a very important threshold in this project, it can transfer users to their individual preferred levels. The interior of the elevator will also changed with the destination level that user chosed.

Thresholds images from social media

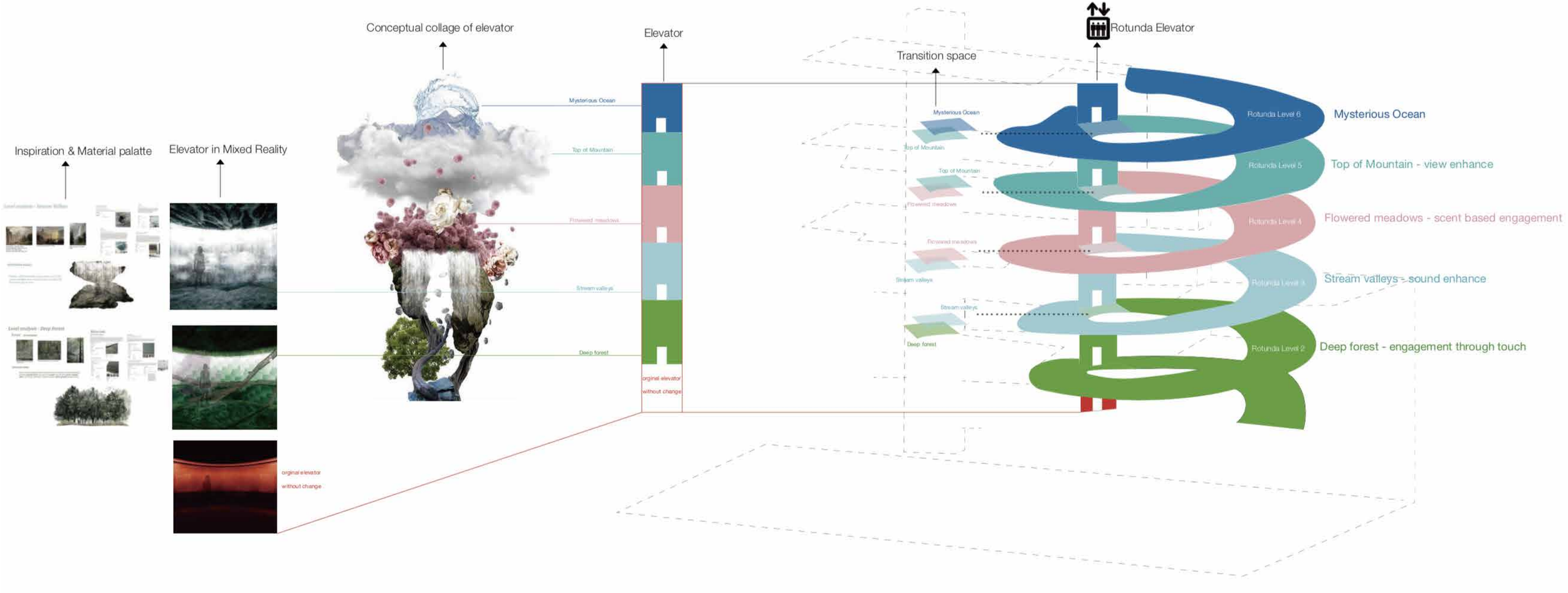




Threshold condition

Elevator to the "Deep Forest" floor

Elevator to the "Deep Forest" floor



Inspiration & Material palatte
Elevator in Mixed Reality
Conceptual collage of elevator
Elevator
Transition space
Rotunda Elevator
Mysterious Ocean
Top of Mountain
Flowered meadows
Stream valleys
Deep forest
orginal elevator
without change
Rotunda Level 6
Rotunda Level 5
Rotunda Level 4
Rotunda Level 3
Rotunda Level 2
Mysterious Ocean
Top of Mountain - view enhance
Flowered meadows - scent based engagement
Stream valleys - sound enhance
Deep forest - engagement through touch

OBJECT RESEARCH/SKETCHES :

Walking meditation- focuses

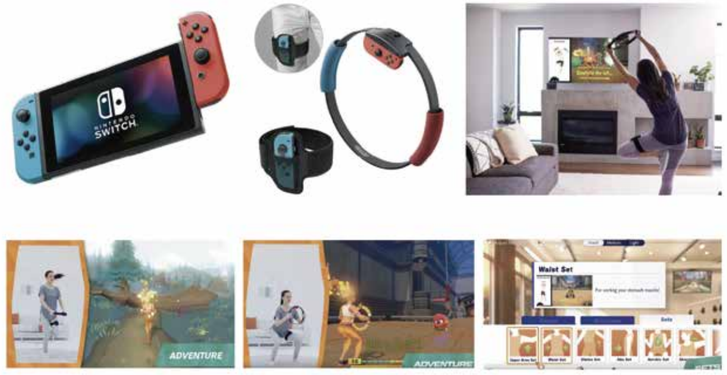
1.Stop wander&thinking while you are walking, activate your sensations rather than ideas. Observe everything around you like a camera,without any associations, thinking. Listen carefully to your surroundings.
Vision/Hearing - AR glasses

2.Pay attention to your path,the support of the ground to the foot. Feel the connection between your feet with the ground. Feel the temperature, hardness/softness,just feel it.
Touch - Body sensor on leg /AR glasses(can also conduct feels to user's brain)

3.Feel the coordination of your breath and steps.Take a step forward as I inhale, another step as I exhale, and find your own rhythm. Feel the movement of weight and attention between your legs and the muscles pulling in your legs and feet.
The coordination of Body sensor with AR glasses

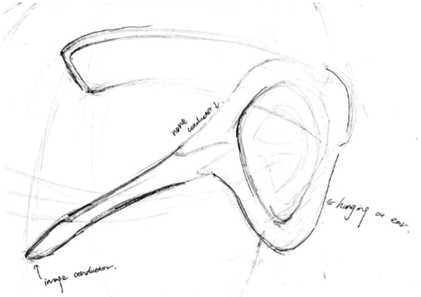
AR glasses precedent- Microsoft hololens 2

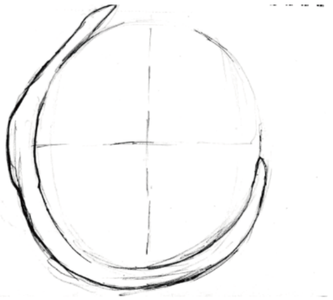
Body sensor precedent- Nintendo switch ring fit adventure



AR glasses

AR glasses are relatively easy to carry and more light. The AR glasses don't have a physical display. They can transmit virtual five senses directly to the human brain. Users can use it to observe the virtual environment around them, as well as view physical conditions and meditation information.





Body sensor

Users can attach body sensors to their legs, which will interact with the AR glasses. It will help users feel the temperature of the ground in the AR environment, the vibration of the ground, the movements that people need to move during meditation, and the power transfer between their legs.

KEY QUESTIONS :

1. What kind of impact (creative, intellectual, communal, civic, social, etc.) do you hope your project will have? What strategies will you employ to achieve the desired impact?
2. What are the main influences on your thesis work? These might be historical, social, political, and/or physical forces or phenomena. Use concrete examples: design precedent work, political movement, cultural occurrence, or work from outside the design field could all apply.
3. How might your proposed thesis act as a catalyst for your creative and professional growth? How might your thesis require changes to the way interior design is practiced professionally?
4. Who are the specific audiences/communities that you hope to engage through this exploration? How are you hoping to reach them?
5. Speculate: will your project take an original and imaginative approach to content and form?
6. How does your thesis take a responsible position in relation to the limited resources of the planet? What specific aspects of your project will implement this position?
7. Describe the processes and materials you would be using to realize your design as a built work. How do they represent an invention within the field of interior design?
8. How do your thesis ideas (or project) contribute to the wellbeing of your proposed users or inhabitants? Do they contribute to the wellbeing of the community?

ANSWERS :

1. I hope my project will have innovative impact to the society. The strategies that I used are using Mixed Reality as a media to translate natural phenomena into built environments by borrowing techniques from fine art. The similar strategy could be also used into any urban environment where an immersion into nature is not possible.
2. The main influences of my work are nature and art. I did research on different natural phenomena and did a study on each of them. I looked at how does painter Vincent Van Gogh depicts those phenomena in his works hundred years ago and spatial translated them into a new thing. I also did a research on how modern architect and digital artist integrates/translates nature into built environments.
3. My thesis helped me have a better understanding of analysis everything around us (spatial/materiality/phenomena/fields), and making better design decisions. Interior design may adapt into digital environments in the future, and have an innovative way to integrate nature into interior conditions.
4. Especially people are suffering from lack chance to engage with nature in urban environment or due to pandemic cannot go out. I hope my project will heal them.
5. Yes.
6. My thesis rarely used any materials except Mixed Reality goggles. Everything is digital, which means it won't be affected by time.
7. I think in my project there are not really "materials". Everything is from phenomena. A column looked transparent is because I wish to achieve tranquility effect to healing people rather than because it is a "glass". The project is pursing visual therapeutic effect of materials.
8. My project will letting the wellbeing community living in urban environment to healed by natural phenomena in any built environments where an immersion into nature is not possible at any time by taking on the mixed reality goggles.

Digitalized

Architecture

Nature