CONVERSATIONS REFLECTIONS IDEAS

SINGAPORE ISSUES

NEO KAI XIANG

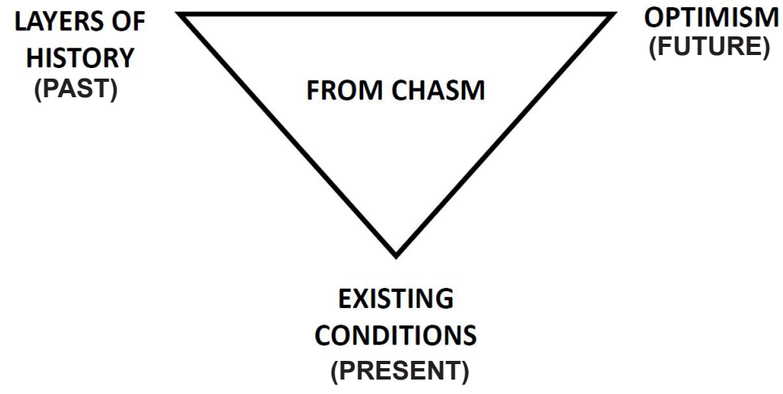
CONVERSATIONS
REFLECTIONS
IDEAS

SINGAPORE ISSUES

NEO KAI XIANG

FROM CHASM: SEARCHING FOR SINGAPORE'S FOUNDING MOMENT

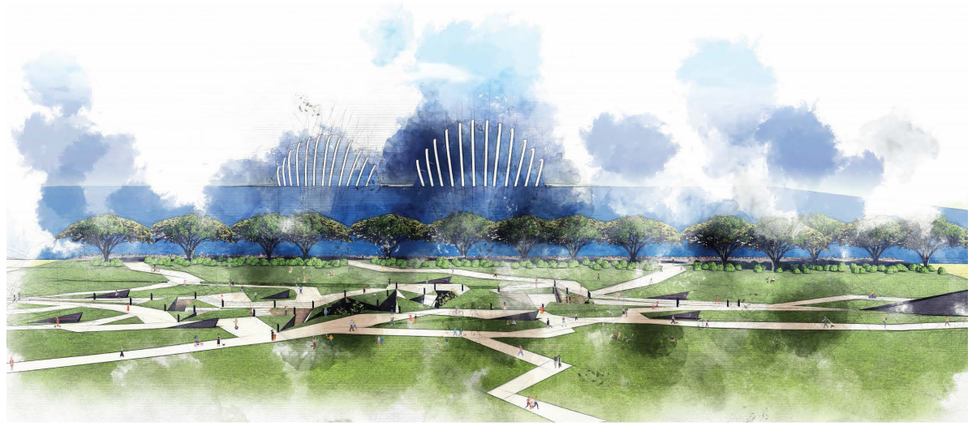
From Chasm offers an alternative perspective and commemorates the founding moment of Singapore with its dire context. The determined government and its people had to transform the nation to survive against all the odds. In the project, a brutal and alien force is exerted on the land from the north, resulting in cracks and faultlines running deep into the ground. Although a crack is visible on the surface, underneath it breeds new potential and a sense of hope for the future.



Key Ideas as a Approach

On 9th August 1965, Singapore declared Independence and the realities of the separation from the Malaysia Federation cemented. The twist was that Singapore did not want this independence; she longed for a merger with the northern hinterland and to reunite the people beyond the political boundaries as demarcated from Colonial and Japanese Occupation periods.

Singapore was in its infancy as a nation at the time of separation and was left vulnerable on almost every field. Much of the population had also migrated in recent times and only viewed Singapore as a temporary place of opportunity. Its people had identified more as Malayan on the broader geographical context; the Singapore national identity had not gained its consciousness.



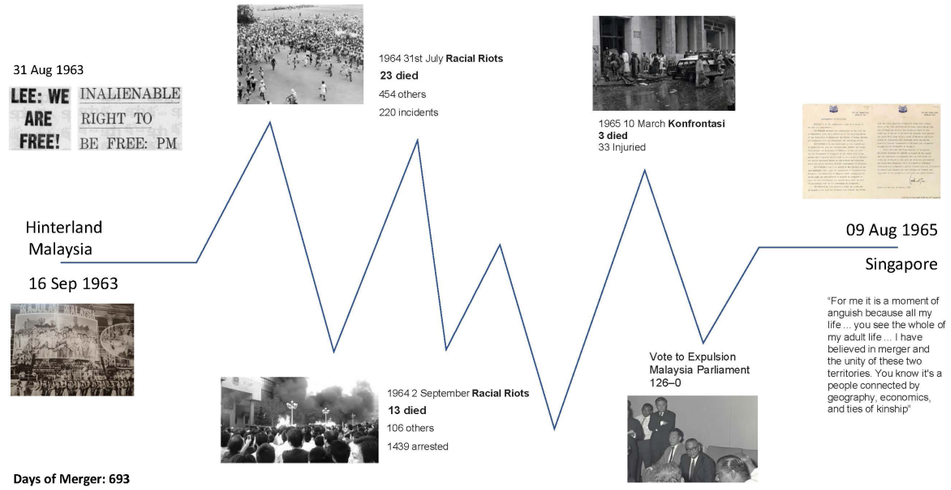
Key Ideas as a Approach

Historically, Singapore had been ruled by external forces, like the British during the colonial times, and Japanese during World War II. So when the British were back after the war, Singapore's strategy was to merge with Malaysia to gain freedom from their rule.

On 31 August 1963, then PM Lee Kuan Yew had declared de facto independence with the Merger being official on 16 September 1963. However, it was short lived and fraught with racial and political tensions — lives which were lost on multiple riots and also the Konfrontasi bombing in 1965. The total number of deaths is 39, and these are all ordinary Singaporeans, not military or revolutionaries. Towards the end, there was voting by Malaysia parliament without Singapore's presence of 126-0 to expel Singapore. So under these circumstances, Singapore gained independence on 9 August 1965.

These past deaths and incidents have a significant impact on the social fabric of today's Singapore, resulting in the nation having multiculturalism, multiracialism and non-discriminatory policies.

For Singapore, the scarcity of land is always a critical agenda for the government, as more new land means the security of future National Development. So since the 1960s, Singapore had undergone major reclamation projects with the land area increasing by 25% since the 1800s. However, now there is a new direction to explore underground as a new land as new challenges of sand supply, rising sea level, ecological are on the rise.

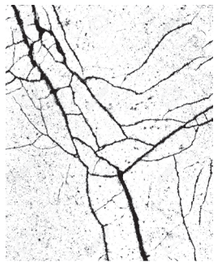


Events of Merger Days

FROM CHASM
meanings

FROM-: Originate, Source

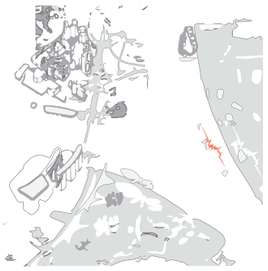
CHASM-: Crack or deep fissure
Profound difference between people, viewpoints or feelings



Chasms are natural phenomenon happening the weak points when a large force interacts. Crack lines are formed which are divergent in nature.

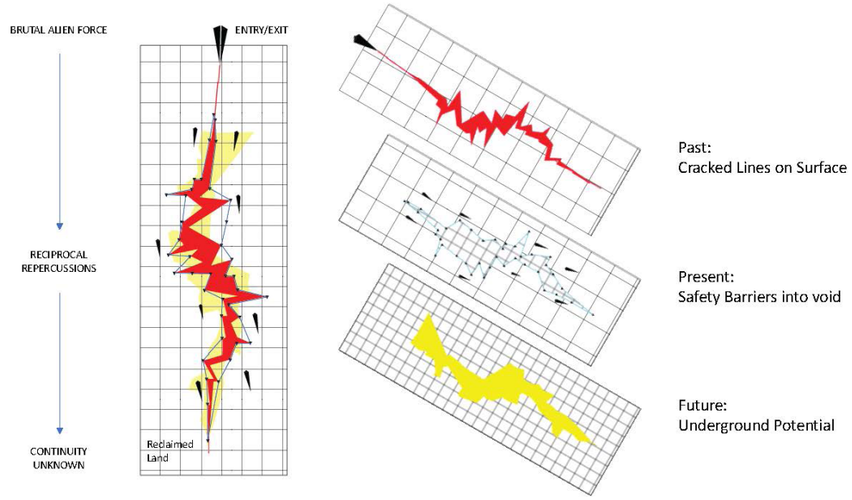
The roads and circulations of a city looks strikingly similar to a crack, almost a like in features. The lines form a negative void in the volumious land.

Simulation of a chasm is such that the surface crack line does not neccessary inform on the resulting void or negative space in the object.



Chasm as a urban object or graphic on the site context. Deviates in the form generation as something more provacative.

Conceptually, the project exists on reclaimed land at the gardens by the bay east. In a way, the land at the marina was gifted by the pioneering generations. The narrative is such that from the North, comes a brutal alien force, represented by a sharp black object. This impacts on the ground violently and creating a chasm, and scarring the surface. As a result, a series of voids or negative space are formed in the grid. However, the surface crack lines do not necessary correlates with the formed underground spaces. So there are three layers of thought, the crack on the surface represents the past, whereas the underground lies the potential and future. In between these two is the present, in the form of a thin barrier line as a safety boundary separating surface and void, past and future.



Conceptual Scheme

Brutal Alien Force

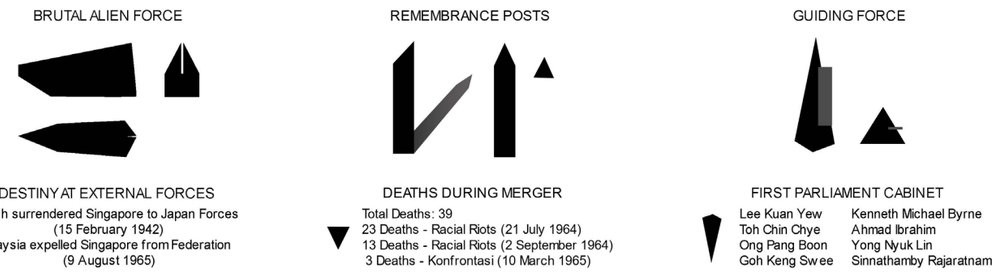
Since colonised in 1819 to the World War Two, Singapore was under rule of a foreign force who did not have primary interest in Singapore, evident when both British and Malaysia choose to abandone Singapore when the situation is bleak. A sharp object descends from the North and creates a crack on the ground. The black device is a brutal force as seen on the surface and extending into the underground.

Rememberance Posts

Singapore's multiculturalism and multiracialism and non discriminatory policies was borned out of reflectance on the Racial Riots in 1964. This continues to be a pillar of todays'society. The deaths which occured during merger are now stark reminders of a history of Singapore. 39 south-oriented Posts are errected to act as safety barriers to the cracks. Each one is inscriped with the names of death victims during the merger.

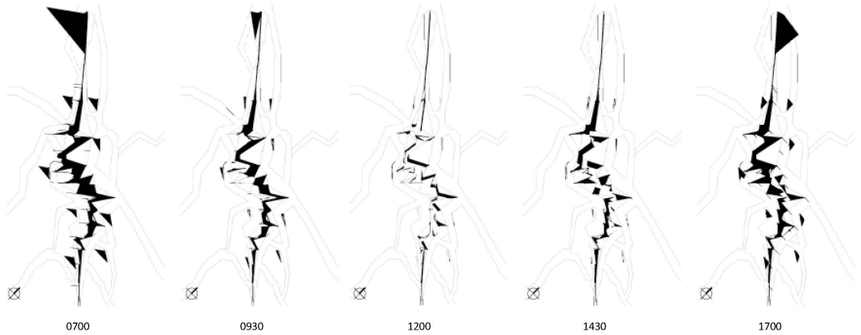
Guiding Force

Eight Benches would be commissioned to commemorate the contributions of the the first parliament cabinet of Singapore admist very trying times. One can take a rest on the bench and ponders about the context and decisions made by the pioneer leaders to move Singapore forward. There will be inscription of the 8 ministers' names and information on their works.



Key Design Narrative Elements

All design elements are placed in the same direction of, coming from the north, and pointed towards the south. The scheme has a flat topography so that these objects will stand out. In the passing of the day, there is a coordinated shadow casting as seen on the diagram.



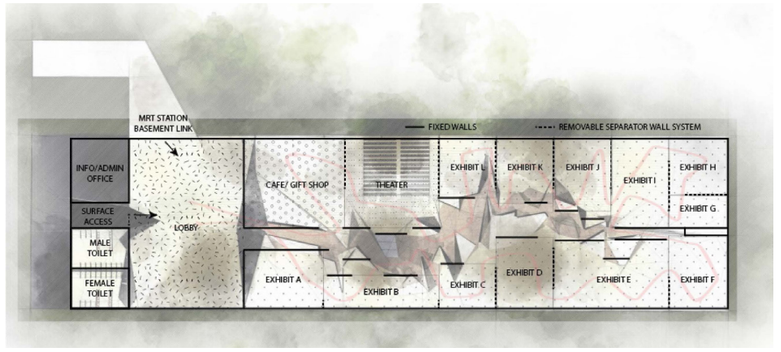
From North to South-ward Orientation

Daylight Shadow Casting

This is a proposed circulation of the basement areas. The layout is that of a series of box-like grid, with the chasm going through them. The chasm acts as the main circulation spine, and visitors will be fading in and out of the chasm into the underground exhibit areas. The circulation can be changed depending on the exhibit design.

For the space programming, where the access is on the left, coming from the surface or the underground link of the new MRT station. The services and lobby are on the left area. Visitors will start their experience at exhibit A, going a full round to Exhibit L, there is also a theatre for events or conferences, before ending with a gift shop and a café. The dotted lines are removable separator walls, where space can collapse into a single huge one, or be closed up, to the delianate or separate different themed exhibit and this changes the circulation accordingly.

Circulation Experience

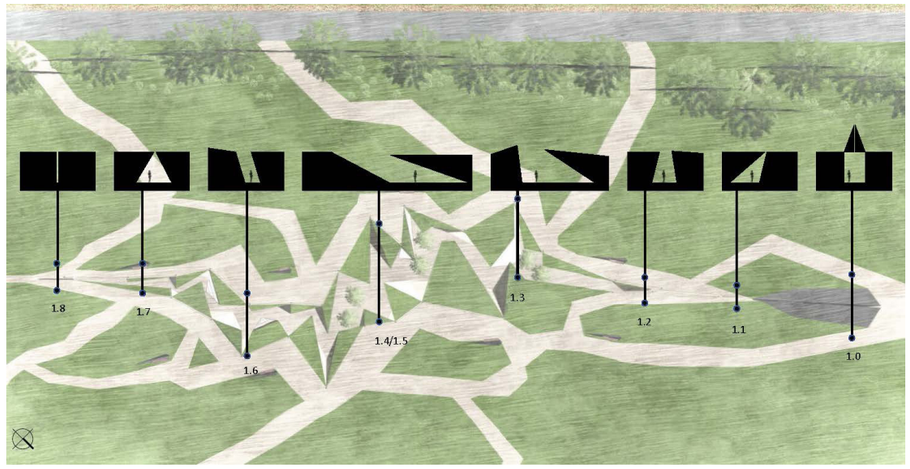


Space Programming

Visitors would be struck by the expansive surface view of the Memorial. This is keeping with the spirit of the Marina greening areas of allowing public to enjoy the open greenery. The majority of the scheme is lawn area, with haphazard “cracked lines” as circulation paths.

The main features is a brutal and sharp black piece pointing from the north, this edge seemingly violently creating a series of chasms in the ground. Although the surface is scarred, new potential underground is opened up, revealing a sense of adventure as one explores the underground caverns.

Unconsciouly, one wonders about the future, staring at the unnatural cropped view of the sky, seeming distorted and fragmented.



Section Profiles

The section profiles shows throughout the site, starting from the right to the left, we can see how the surface and underground space is somewhat disengaged, resulting in distorted or dynamic spaces.

The experience from the surface and underground, visitors can have a feeling of the contrast in space and also perceive the edge of the surface modifying the underground.

So at the start, visitors will enter through the one side of the sharp black piece, with a feeling of obscurity. When they reach the underground, a line of light caused by the crack will lead and guide them towards the exhibit area entrance.

As they progress, even if the surface edge gap is narrow, but there is still sufficient space to feel unoppressed underground. Some of the underground walls have been turned into the glass as a transparent element to see through.

On the surface, one can see these series of remembrance posts across the site. From afar, the remembrance posts seem like a shadow of the human figure standing at the edge of the chasm, but they are in fact, safety barrier to visitors. The underground space expands and becomes wide towards the center region of the site. So from the surface, it looks like the ground is cracked, but in the underground, it will look you are looking at a cropped, fragmented or cracked sky.

And now its approaching the end of the chasm, where both the surface edge comes closer, and in the underground, the walls seem to fall on you and become more narrow.

In the underground, the chasm ends with a narrow gap of space, where a person cannot enter and tries to see beyond the darkness, but it cannot be seen where the chasm ends. On the surface, the chasm ends with an arrow pointed to the south, to continue southward down the path.

HETEROTOPIA IN A DIGITAL FUTURE: THREATS AND OPPORTUNITIES

This is an accidental inquiry into understanding the realities of the human world which is primitively governed by visual information through our eyes. There is much reliable evidence to show what we see is usually not the entire truth. After all, our eyes are only able to process the light that is bouncing the surface of a particular material; the rest is a matter of guessing by our mind as to the insufficient information. Thus the amount of information that we can gather regarding light is rather small and even at times deceiving. For example, the stars which we see in the clear night sky are probably demised, just that the light is still travelling over the vast distance to reach our eyes.

This paper is about the thinking about the idea of hijacking our vision into different realities by use of technology and seeing the possibilities in which our spatial environment can be modified in such a situation.

Humans are highly visual beings, depending on their eyes to navigate the environments, these constant streams of visual information provide them with an anchor which they can position themselves in the real world. A somewhat similar analogy is that of a whale or bat making use of echolocation to judge its relative position to its food prey and surroundings. However, when there are noisy ocean activities like container ships cruising, or sea oil exploration ships blasting sound to detect oil on the seabed, it leads to a severe noise pollution issue, affecting entire schools of whales, resulting in them being lost or even beaching. They become blind at sea, unable to navigate their world.

Just like how whales use sound as a medium to hear where they are, humans have our eyes to see where we are. When forcibly taking our vision away, we are often left feeling distraught, becoming utterly lost in the physical world. This scenario goes to show how reliant we are on our sight to look at the world.

This proposition that our sight sensory entraps the human perception and understanding of physical reality is fascinating. In the same fashion, the way the brains of human have evolved so spectacularly that based on just visual information we can recreate in our mind spatially what is around us. When in fact we are only discerning a very superficial layer of information, of light bouncing off surfaces and then in our mind, reimagining and deciphering it to make an educated guess as to how the environment could be.

However, this strength could also be our bane when so often we can be easily fooled into a false belief of our reality by illusionary crafts of magicians or more recently, coaster rides with virtual reality experience. Our visual-spatial processing ability is highly developed such that physiologically our body will believe what we see and react accordingly to our genetics programming even if beforehand, we have the information that the experience or what we see is not real.
In the distant future, through technological advancement, when we have a highly individualised reality through customised Mixed-Reality experience, even when coexisting in a single space, everyone can be experiencing multiple varying realities depending on the content of his or her visual information. Would the meaning of real physical space and spatial design be diluted when entire streets, cities or even worlds are created in the virtual reality and overlaid onto the physical environment?

In an inquiry into this phenomenon, if we can permanently alter or even hijack the vision of humans of tomorrow, what ramifications would there be for the physicality of our world? When our most trusted sensory tool of sight can be so easily changed, would we start having doubts in what we see? Would the common saying of “Seeing is believing” lose all of its meaning finally?

This research paper proposes to explore the concepts of spatial realities through principles of Michel Foucault’s Heterotopias and attempts to gain an understanding of how our physical environment can morph or deform as our primary sensory for perceiving our world evolve through technology advancement, potentially leading to a drastic change in human behaviours in societies of the future.

This research thesis is guided by the term, “Heterotopia”, which was first coined by the French Philosopher, Michel Foucault, outlined through a few occasions during 1966-1967 to a group of architects, linking the concept to socio-cultural spaces and architectural grounds. There are six principles laid out by Foucault’s paper, Heterotopias and Utopias: Of Other Spaces, which explains the phenomenon of highly common but distinctive spaces that exist in the city but also contribute to its workings by functioning uncommonly.

Understanding Space with Heterotopias

To understand heterotopia, we would need first to grasp the meaning of utopia. Essentially, utopia is an ideal or perfected world which is placeless. These take many forms in the fiction of our imagination, and they are not found on any specific point on our physical reality. For Heterotopia, it too operates with a set of ideas; the difference is that it does exist in reality, conceptually intertwined in our society.

Heterotopias function like mirrored worlds, in which through the device of a mirror, a reflected world exists to the observer. The reflected images seem real to the observer, but is not real, remaining as its existence of a mere reflection in the mirror.

The following is a list of the six principles of Foucault's Heterotopia:

1. Norm behaviours are suspended.
In our society, their times where we might display behaviours which are out of the usual, for example when we are sick or injured. During these temporary phases, these behaviours would be accepted in heterotopias of crisis and cared for such as in the case of a hospital. However, there is another type of Heterotopia of Deviation, which these behaviours are forcibly removed from society and separated in a different environment, such as a prison or equivalent.

2. Precise function reflection of society in which they exist.
Based on the different times and the era of the city, there would be a culture or values projected. Based upon these factors, it would have produced a heterotopia unique to its situation and accepted in its contextual reality. For example, a cemetery is often built in the inner city as death was a common sight, and the theme is not feared or shunned. However, nowadays cemetery is located in city fringes, maintaining a level of importance and link with the city dwellers through the families whom have passed away and are rested there.

3. Juxtapose several spaces simultaneously
Many different spaces can be formed in a single space at the same time even temporarily or permanent such as the case of a theatre or a stage, where during a performance, various spaces and parts of the city can be simulated all on the stage.

4. Linked to slices of time (accumulate time/transitory)
The city has a routine in which it follows repetitively and strictly. However, there are spaces which function in the city but outside of the time progression of the city, for it, time would come to an almost standstill. These spaces could accumulate time and knowledge in this way such as libraries and museum. It could also be that it could escape the time continuum and transform a place temporarily like a festival or a fair. These spaces would be having a transitory time.

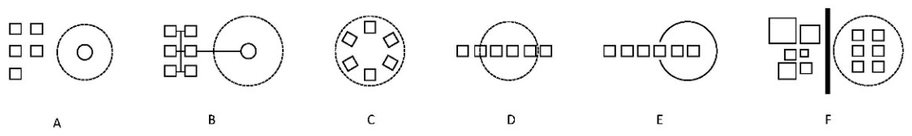
5. Not freely accessible
There are spaces which are also not freely accessible to outsiders. To enter these spaces, usually, there would be a specific gate that needs to pass, like in the case of entering prison. In another form, this restriction can be upheld in the form of rituals, where religious grounds or sanctuaries can only be entered by members who have passed a conversion ritual.

6. Function in relationship to spaces which exist (illusion/compensation)
There are also spaces which exist like a typical environment, but due to its special activities or programs, it could create a space of illusion for the visitors. When we recreate a particular combination of functions of a city or spaces in an arranged and controlled manner, this could be known as spaces of compensation. This could happen when colonial masters of the past tried to replicate their home cities on the new colonies far away.

So we know, Heterotopias, like utopias, is the work of the human's imagination but having it exist in a physical environment does not make it any easier to define or categorise them. We often see a disconnect in the relationship of heterotopia and physicality. Over time, heterotopias can easily evolve and seize a place, and yet just as quickly, abandon it later. At our current understanding, the vagueness of Foucault's six principles only adds to the trouble, as even drastically altering program use and contextual reality being, the new implementation will still fit the description of a heterotopia, albeit, a variant type. Therein comes the nudging question of when is space not heterotopian then? Failing to clarify this would undermine the usefulness of such a term in deciphering the city.

If a heterotopian existence is independent of the physicality of a place, the crux of what makes a place heterotopian must be on the design of its program and usage. Then would a new program which deviates more radically from its supposed use makes the new implementation more heterotopian in nature, resulting in a greater otherworldliness?

As we delve deeper into the making of Heterotopia: Of Other Spaces, specific programs would become more familiar, as they would consistently be classified as so. As these heterotopias programs become common, do they start to lose their status of heterotopia, otherwise running contradictory to its initial definition. It is crucial to discover the subtlety of heterotopia not as a single isolated physical space, but a significant reaction to socio-cultural-political conditions in the society. Thus, for Heterotopia, we can only understand it when viewed in perspective by establishing a relation to its contextual reality.



Description of Spaces with Six Principles of Foucault's Heterotopia

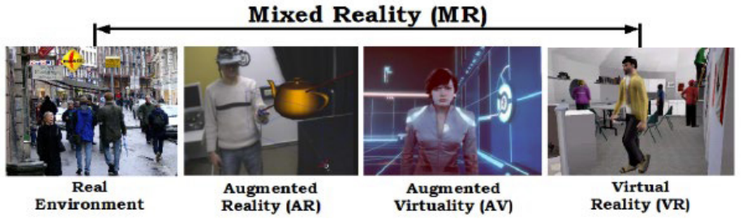
A: Norms Behaviours Suspended
B: Precise Function of Society
C: Juxtapose Real Spaces
D: Transitory Slides of Time
E: Not Freely Accessible
F: Relationship to other Spaces

Navigating a World with Mixed Reality

In recent years, a breakthrough in visualisation technology has pushed the boundaries of how we can define our presence both in the virtual world and also the physical world. The collision of both worlds of virtual and physical have resulted in a mixed reality where the perception and interactions merge into a single reality. When there is widespread adoption of the mixed reality technology in society, this relationship and overlaying of the digital fabric on the real environment would inevitably become permanent, and one would seemingly cease to exist without the other.

As humans, we are strong visual reliant living beings, such that about 75 per cent of the information we learn of our environment we receive it visually through our eyes. Thus, it would very much make sense that if we can modify or distort the visual information which we receive, the question of how accurate of a reality we can perceive, and can we differentiate the virtual world from the real environment becomes very real.

That futuristic image of individuals confusing between the different realities as depicted in many sci-fi films are already existing around us today, through VR thrill rides in a shopping mall, or even gathering in the street late at night for a virtual event. As such, with a little imagination and a strong enough immersive visual experience, it is possible to deceive the senses of an individual to be in a different or any forms of reality.



Forms of digital and real reality

New Realities, New Heterotopias

The advent of mixed reality technology would enhance the real environment by stacking multiple virtual environments and realities in a single physical location. The technology would introduce significantly the programmatic possibilities of spaces, where previously constraints of the physical space have limited on the uses. As the digital visual information is decentralised, popular mixed realities settings would take over as establishing the new real environment. Geolocation would also depend on the mixed realities with the highest number of users to still maintain a point of commonality to meet or interact. Overall, the existence of an actual real environment stripped of any digital fabric starts fading from the memories of people.

Mixed realities can be a highly collective and social experience; however, as individuals are connected to the world through their personalised digital vision, everyone can generate his or her realities. The experience of heterotopia could thus be lost in the physical space, but still be readily available in the digital world. New forms and meaning of heterotopias may emerge, without being anchored to a specific location, they could be time or event specific, or be floating and mobile in the worlds.Museums,

Frontier of Digital Heterotopias

Museums are unique places of a city where it constantly takes on numerous roles and strives to maintain a meaningful existence as part of the city. They function as heterotopias as described by Michel Foucault as the classic example of heterotopia which links to slices of time of accumulation. Essentially, the museum has its collection of artifices of time and history of the past and presents them in the current time to continue a conversation.

Museums usually find themselves at the forefront of technology, as they seek new ways and presentation possibilities to create an attractive experience to add value to a person's visit. Instead of shying away from these visualisation technologies like augmented reality or mixed reality, they embrace them in the hopes of conjuring a new form of experiencing history and time.

Often, due to their nature, they are at the crossroad of different industries, and many opportunities present itself to cross pollinate and develop to a platform for new ideas, collaborations, processes and outcomes. Thus, becoming one of the key proponents and also consumer of the mixed reality technology.

Today's museum would function in a traditional heterotopia, but it will eventually be morphed to become a frontier for digital heterotopias. Individuals would then seek out the museums for the otherworldliness experience, not found anywhere else in the city.

Heterotopia in Bras Basah Arts Precinct

The Bras Basah Arts Precinct has the largest gathering of museums, arts institutions, arts stakeholders, arts organiser, arts schools in singapore. There are both government arts institutions and private hobbyist or associations co-existing in the area. As a result, it is also one of the common areas where many events which test the boundaries of visualisation technology using arts as a medium are held, such as the annual Singapore Night Festival in August. This would be one of the key area to study on the topic of heterotopia and digital heterotopia.

Figure is a graphical summary of the existing layers of conditions in the Bras Basah Arts Precinct which presents a rich and complex urban environment. There are both above ground, on ground and underground spaces in the area, each of the museum and arts institions have a wide variety of spatial quality. Many are using colonial buildings which could have been a reflection on the past state of authority, and how these colonial government buildings are turned into public spaces through a museum and arts program.

It also brings in the conversation of Architect Bernard Tshumi of architecture as an idea, and how this could be an approach to thinking about the built environment from the perspective of its creator. The museums are centered around the two major arts government agency of National Museum of Singapore and the Singapore Arts Museum, both facing each other, seemingly having a conversation.

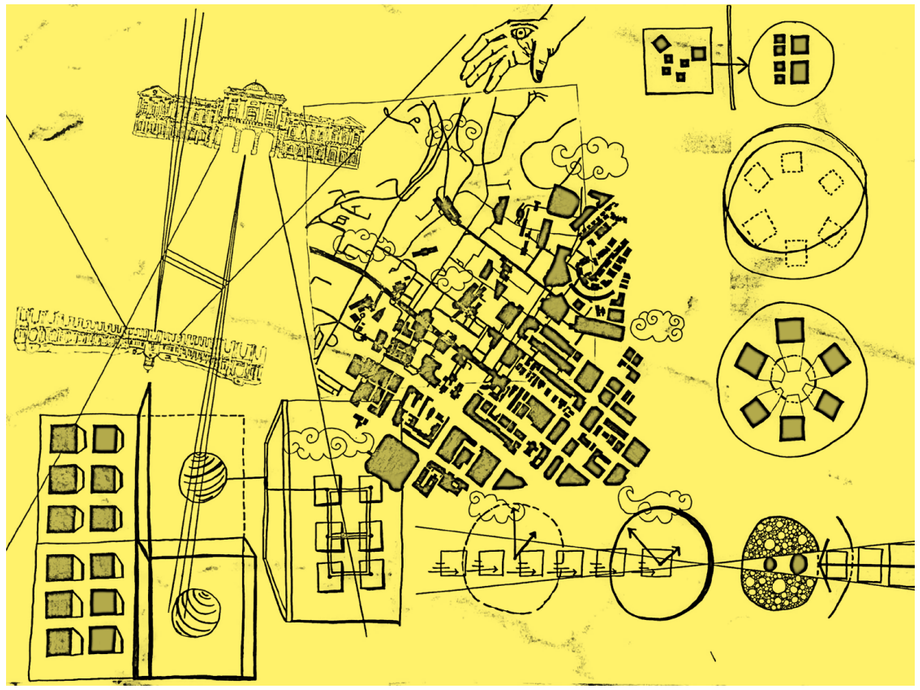
Heterotopias Around Us

Design Intervention

From understanding, we can attempt to apply the different conditions to the Bras Basah Arts Precint and extrapolate some patterns through understanding current trends and making a prediction on a future where a possible reality can exist. This could be useful in understanding the repercussion and ramification of the impact of such a convergence of phenomenon, and at the same time have a glimpse of a parallel reality of a possible future.

By methods of forecasting from current technological and socio-cultural trends, we can start to think about future possible outcome. However, the norms would change as with times and society, so issues would only become more apparent when things go wrong. And here we can say that the biggest assumption is of the technical and security aspect of the visualisation technology of the mixed reality. Thus, in the future, if this invisible layer of digital fabric could be dislodged from future contextual reality and gains its own apparent form, it would probably cause a period of mayhem and confusion. On this ground, we launch an inquiry to understand what happens when things go wrong when there is a slight possibility.

Figure is a graphical overlay of the theoretical conditions as layed out from the six principles of heterotopia and the intervention of mixed reality to see the possible relationship they could have. On the surface, the result is seemingly of a period of confusion, but also lies some opportunities on a deeper level. Following text would investigate these details. There are many outcomes of which three are most apparent to me and relate more with the spatial quality and analysis of the trends.

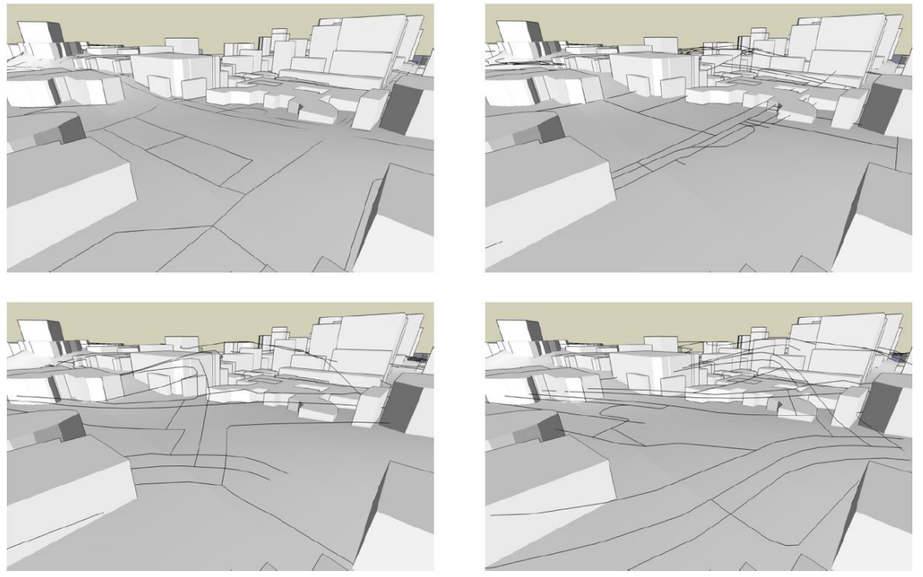


Heterotopia in a Digital Future

A. New Paths leading to No Where

As mixed reality progresses, some of the infrastructure of path finding could be uploaded on to the digital platform, resulting in an efficient navigation of the city. The information would be available real-time to let us travel without needing to plan our routes. This is as the technology already take into account several alternative options. However, when the technology fails such that the routes of travel are dislodged from the real environment, what we end up could be meaningless lines expressed graphically around us. Physical signages on the streets and buildings are missing and many routes now lead into the air or even buildings.

Figure shows how each change in the path would run into different parts of other buildings, while there are some path which are new and one wonders where would they lead to.

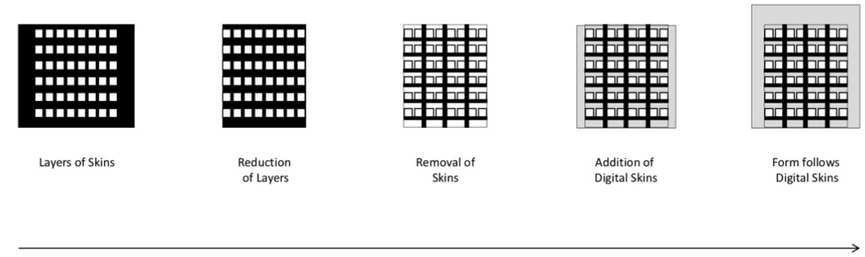


Offset Mixed Reality Routes

B. Landmarks are unrecognisable

As mixed reality progresses, we will come to a cross road, where we have to decide, how much of an aesthetic visual information should the technology take on.

However, for architecture, there would be a trend of reductionism in façade and skins of buildings. This would ultimately reduce cost on the construction and still maintain a high level of visual aesthetics. Eventually, it could also have an influence on day to day smaller objects. Figure Shows the progression in which the skins of architecture could be remove over time, and once the building is ready digital skins can be applied. Eventually the digital skins would take precedents and even influence the design of the structure. Figure shows the after effect of removal of skins, before additional of any digital skins, the result is a city of homogeneity which could look be hard to guess its location when the façade and city iconic visual reference and information is missing.



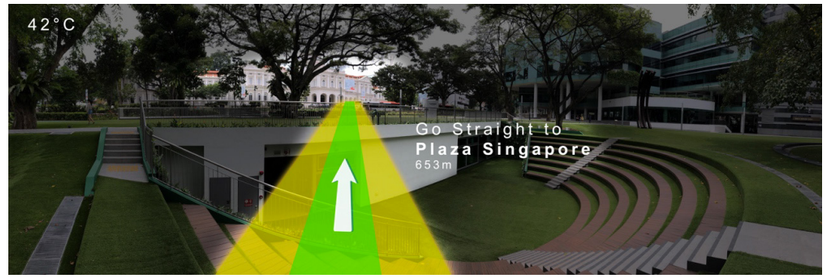
Process of the Digital Recladding of Architectural Skins

Before and After of Architectural Skin Removal

C. Buildings are inaccessible

As we come to rely fully on mixed reality on path finding and navigation, we find that the usual methods of navigating the real path and circulation need not apply. As the city develops without the need to be anchored in the real world, with consideration of the streets, and elements of visual familiarity, we will find the model of architectural outcome seems more alien. They would still be accessible due to the path finding information using mixed reality. However, once this visualisation system goes off, the entries to a building would no longer be as straightforward.

Real reality environment without digital fabric



Erroneous pathfinding mixed reality information

Expected vs Unexpected Outcomes

Even if there is a significant change in our environment, but if the change happens subtly over a long time, we usually do not take note it. This is due to the strong adaptability of humans to many different situations and environment. Thus, when the scenerios of Chapter 2 comes into play, definitely there would be a feeling of lost in the transition phase, as we come to terms with our new environment.

A. City is Lost

Countries and cities usually have a strong cultural identity, and these qualities are reflected in some of the city architectural features, and expressed in some form of shape, colours, materials and so on. However, when the skin of buildings are removed, it is similar to skinning the city. What we are left with is a homogenous blank canvas throughout the different cities all over the world. This means the unique elements that makes up the city environment has been stripped bare, and it would result in each city being unfamiliar to its residents.

By using of mixed reality technology, skins could be overlayed again, the question of locality would also come into play, as a city can replace part of its sections with another by simply modifying the mixed reality and visual information.

However, many parts of the cities all over have become derelict over time due to high maintainence cost, changing a bad façade design is also almost impossible since the building is already operable. However, with digital skins, changing a façade, or the look and feel of a skyscraper could now be as easy as changing the desktop screensaver.

B. Architecture is Lost

Architectures are usually designed and constructed over a layer of contextual reality, which can include circulation information, neighbouring buildings properties, and so on. However, in an environment when these contextual realities are not constant, but changing so rapidly over time, it would not be viable to consider them seriously while conceiving the project. This results in Architectures being lost and unsure of how to react to one another.

Where the role of the architects might be reduced or eventually be demised, there will be a new group of designers skilled in both spatial arts and also with crafting the mixed reality experience. It will be up to these group of new profession to curate our environment and experience, as the industry moves towards a more efficient medium to build, in the digital world.

C. People are Lost

For the people, the transition would be quite uncomfortable as changing the city environment would have a very drastic impact on people's memories. When the visual of how the cityline is or streetscape changes, it would be negotiating with the mind and attempt to relate to something familiar to make sense and understand the environment. However, making the city homogenous would directly mean destroying people's memories. Even more so, as people are social being, they form collective memories in the public spaces. Altering these spaces in a significant way would invoke a feeling of invasiveness in their mind.

However, all is not lost, as the phase is only transitory, and after mixed reality is in play, people can adapt to the new reality again. Collective memories are also hard to destroy, but they could easily be created in the digital world for people to reminisce. However, the platform of collective memories would change from an emphasis of remembering of a physical real space at a point of time, to remembering a moment in time with its visual experience and stimulations.

WEARABLE TECHNOLOGY HAS REACHED ITS APEX, COUPLED WITH AUGMENTED AND VIRTUAL REALITY, HOW WE VIEW THE WORLD IS THROUGH A LAYER OF DIGITAL FABRIC CRYSTALLIZING INTO A FUTURE OFMIXED REALITY. OUR NEW GAINED VISION WOULD FUNDAMENTALLY ALTER HOW WE VIEW AND NAVIGATE OUR CITIES, WITH REALTIME INFORMATION ACCESS, COMMUNICATION AND PATH FINDING. THIS EVENTUALLY SEEPS INTO THE PHYSICALITY OF OUR ENVIRONMENT, WHEN ALL MANNERS OF VISUAL AESTHETICS CAN BE DIGITALLY PROJECTED THROUGH OUR MR LENS. THIS WOULD HAVE A PROFOUND EFFECT ON GENERATION OF ART, PRODUCT, FURNITURE AND EVENTUALLY EVEN ARCHITECTURE, UNABLE TO ESCAPE AND EXPERIENCE THIS CHANGE AS WELL. ARCHITECTURES, BUILDINGS AND SPACES WOULD THEN BE FORCIBLY STRIPED OF ITS SKINS, FACADES, INTERIOR WALL COVERINGS AND SO FORTH. THIS VISUAL INFORMATION DOES NOT DISAPPEAR, BUT IS UPLOADED TO THE INTERNET AND PERCEIVED THROUGH A DIGITALLY LAYERING AN AESTHETIC SURFACE TO PHYSICALITY. HOWEVER, TO THE NAKED EYE, ALL THAT IS LEFT IS THE BONES AND SKELETON OF THINGS AND ARCHITECTURES. A NEW DIGITAL WORKFORCE WOULD HAVE EMERGED TO CREATE AND MANIPULATE

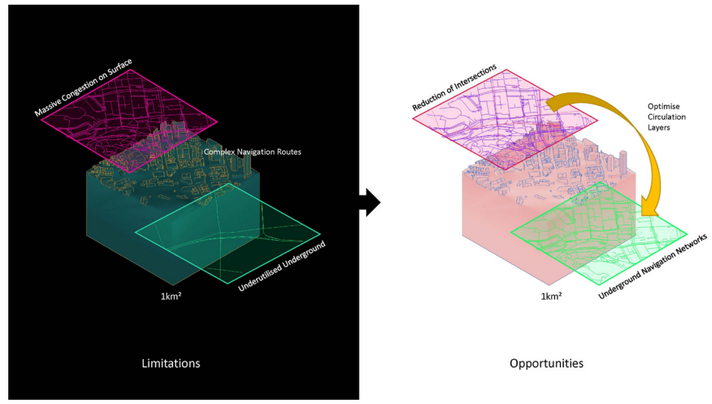
OUR ENVIRONMENT THROUGH OUR MIXED REALITY. HOWEVER, THERE IS NO ARCHITECTURAL CONCEPTION COORDINATE THIS TREND, TO THE EXPOSING OF ITS INNARDS, AS IT EVOLVES TO A PHENOMENON OF HAPHAZARD EXPOSURE. DESIGNERS OFTEN QUESTION THEIR PURPOSE AND FIND THEMSELVES OBSOLETE IN THE NEW WORLD OF ENGINEERS. EXPOSING THE SKELETON OF BUILDINGS IN ITS MOST PURE FORM. CITIES WOULD START MOVING UNDERGROUND NOT DUE TO THE LACK OF SURFACE LAND BUT SIMPLY BECAUSE IT IS MORE EFFICIENT TO TRAVEL IN. WHAT WE ARE LEFT COULD BE A CITY OF RAWNESS, AS VISUAL SKINS ARE SEPARATED FROM THINGS. IN THIS FUTURE, THEMUSEUMS OF THE FUTURE ARE VICTIMS OF THIS PHENOMENON AS THEY STRUGGLES TO REDEFINE THEMSELVES AND ALSO MAINTAINING A RELEVANCE IN SOCIETY. ARE THEY SIMPLY A TECHNOLOGICAL CENTRE FOR OTHER WORLDLINESS EXPERIENCES FOR THE PUBLIC? HOW WOULD THEY BE ABLE SURVIVE THE FUTURE AND CONTINUE THE CONVERSATION? WE CAN NOW NOT HAVE TO BE PHYSICALLY PRESENT TO EXPERIENCE THINGS, HOWEVER SOMETIMES WHEN WE ARE PHYSICALLY PRESENT, OUR EYES AND MIND MIGHT BE EXPERIENCING SOMETHING ELSE. WHAT IS REALITY THEN?

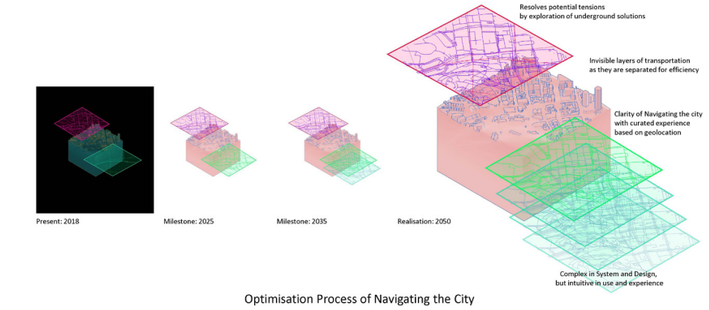
How do we make art? How would we experience art? Do artist envision art spaces before proceeding to ponder about their art making?

In singapore, the typology of art exhibiting spaces has always been the pristine white box; each one carefully curated to have similar time period or to fit a certain narrative. Some arranged in strict manner of boxes within a box, while others, follow the caverns like rigid layout of colonial buildings structures. However, have we come to question if the kind of art we make are somewhat limited due to the lack of diverse and open-ended art exhibiting spaces?

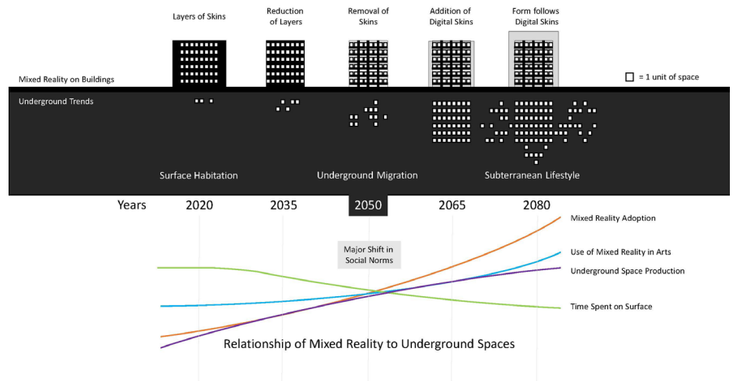
Art avenue is the outcome of a question of what lies outside boundaries of Colonial architectures for art exhibition spaces. In the bras basah art precinct, within a kilometre of radius, most of the major arts institutions are housed in Colonial era architectures where only specific arts of commercial value are targeted. Thus, leaving no suitable spaces for experimentation of arts, arts for public or a platform for the art professionals to get in touch w ith the non-art general public.

The art avenue connects the two major art institutions of National Museum of Singapore and Singapore Arts Museum through an underground tunnel, intercepting with the bras basah mrt station. At the same time, arts related programmatic spaces are attached to this main axis and integrates with the existing underground pedestrian network of the singapore management university. This will act as a Catalyst to the synthesis of the arts communities, business managers, and general public.

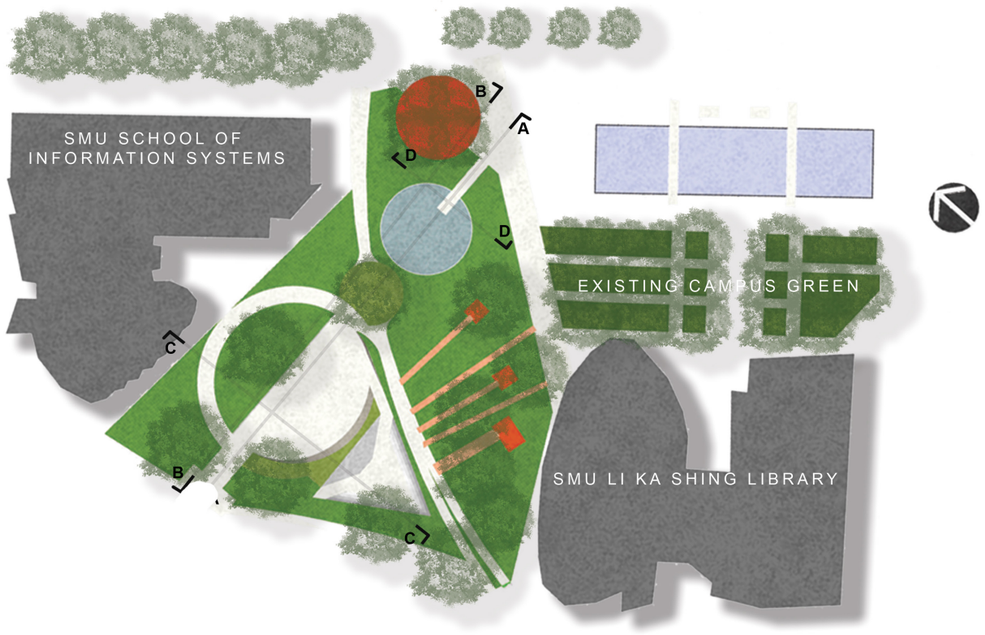




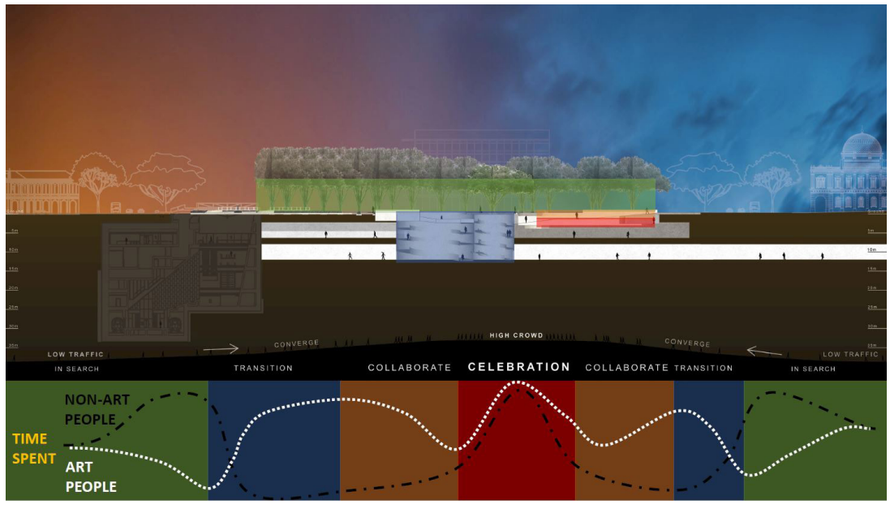
Optimisation Process of Navigating the City



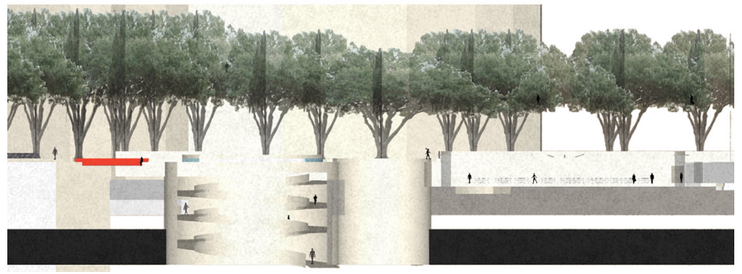
Relationship of Mixed Reality to Underground Spaces



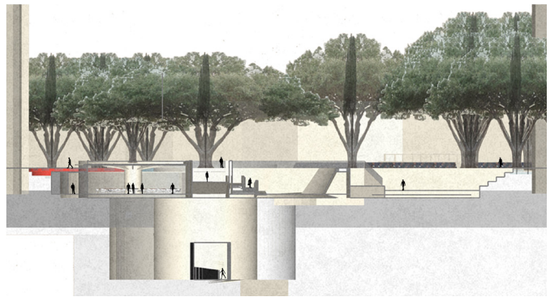
Overall Proposal of Art Avenue
Art + Infrastructure



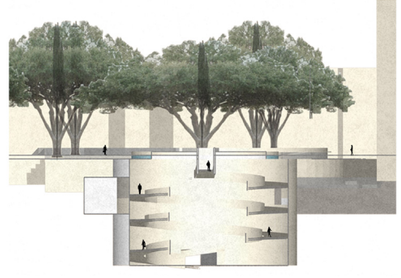
Section A: Spatial Narration to Influence Circulation



Section B-B’



Section C-C’



Section D-D’

Mixed Reality could be seen as the ultimate heterotopian concept, with a single being existing in two worlds at any point of time. Every individual could also decide to choose which to escape to, or simply allow both realities to merge. This is an environment that would be extremely complex to mange and navigate in, especially in an age of real-time information access and artificial intelligence.

Another way to think about it could be that the mixed reality world could be a spatial build up of the internet information. When we have reached that point in time, we would seemingly have telepathic abilities through communicating with embed technology in our body, and constantly connected to the internet.

Until that time, humans would continue to learn and adapt to its fast changing environment, and if the going gets tough, there is always a heterotopia to escape to just round the corner

RE-HUTAN PARK: AN UN-MANICURED GARDEN IN A CITY

Upon searching for a direction for a project, I came about an article on how a two football size forest would be cleared in Pasir Ris, Singapore to make way for development of an international school. I was disturbed by the fact that on one end we celebrate the birth of mega green project like the Gardens by the Bay, but we are clearing small patches of forest to make way for development which could be a haven for a small diversity of flora and fauna regardless.

The fact that garden parks not sustainable ecosystems lead one to think they contribute to the nature being of Singapore besides aesthetics. Just like zoos which removed animals from their natural habitats and enclosed them, gardens might be like “plant zoos” which function the same and provide a less of a self-sustaining system.

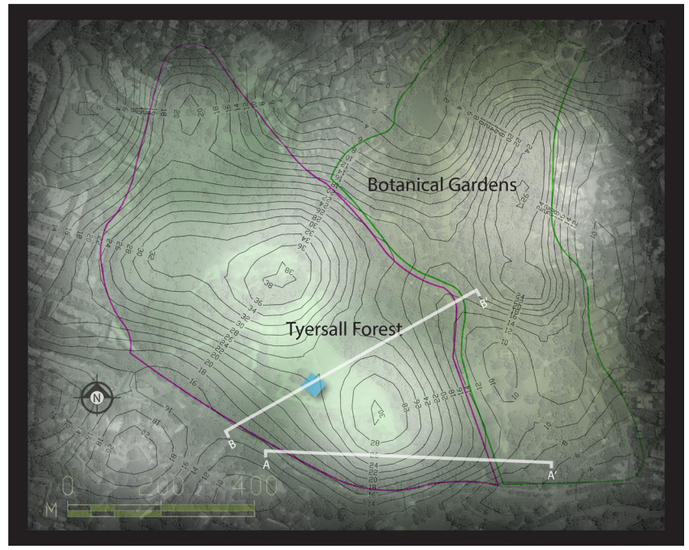
For the sake of our future generations, I question the rational of garden parks as oppose to forest park, focusing on building proper environment for nature to flourish as they do in forests.

The greenery landscape of Singapore has certainly evolved tremendously through the years. From the inception of 'Garden City' by Minister Mentor Lee Kuan Yew's vision in the 1960s, followed by the launch of the tree-planting campaign in 1963s and then Model Green City in 1968. In more recent years, we have come to achieve almost 50% of the city covered in greenery and come to realising the new goal of Singapore being "City in a garden".

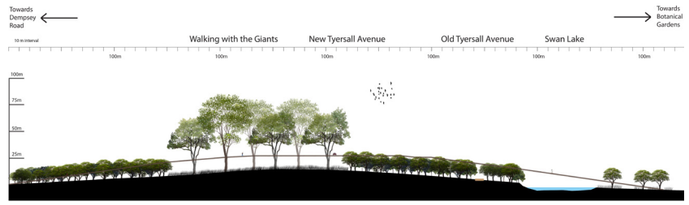
The initial impetus of the Garden City was primarily economic, to attract foreign investors to the young nation and now that Singapore has become an affluent society it is timely for us to endeavor towards not just building new parks or gardens but also to relook at the existing greenery and making it socially and culturally relevant in our society.

Birds biodiversity is one way of measuring the success of the different strategies of green policies. Through a study, it is discovered although birds tend to thrive in both a forest nature and garden settings, the biodiversity of birds in gardens tend to decrease while the former increases. Existing greenery and forest tend to support a eco-system including birds and removal could lead to drastic consequences for the environment. Thus, preservation of forested area are important for ecology but in this land scarce city-state, these have to be developed innovatively to achieve a balance.

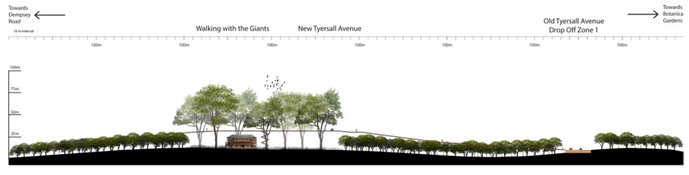
The site chosen (Tyersall Forest) is one previously owned by the Sultan of Johor, but in 2005 sold back to the Singapore Government. Due to foreign ownership of land, it has been left desolated and left to grow unattended for almost a century since the early 1900s when there were a series of fire that broke out at Istana Woodneuk. And now a pristine piece of green land presents itself, we have to question ourselves what to do with the land if anything is to be done.



Contours of Tyersall Forest



Section A-A'



Section B-B'

As Singapore progress, we have to at times pause and observe our surrounding if we are making a good impact or negative one. A plot of land returned from Sultan of Johor remains a good opportunity to experiment and stretch the possibilities after a century of desolation.

There is ever increasing need of public space in Singapore as the island nation population steadily rises partly due to influx of foreign labours. The stress and the pace of life is felt in many places as places becomes congested people. With the development of the Park Connector Network, NParks has successfully added more green area and created a biophilia city where patches of green are joined together and people can enjoy them by cycling on it.

The potential of the project is further showed by recent proposal by NParks to build a forest extension of Botanical Gardens on the site but less than half of proposed size. In which this case, public space can be created for the relaxation and enjoyment of people but since it is in a forest there is added benefit of regenerating forest for future generations.

Half of the site is still currently owned by the eldest son of the current Sultan of Johor, Tunku Ismail Idris. He is serving as an officer of the Indian Army. The other half of the site has been bought by Singapore and is now under NParks care. This two parties would be the main client of the project.

It could also be said to be a third client, which is our responsibility to Earth itself and the design and thought processes would relate to our observation of it. A regeneration project should at times provoke questions about what Nature might really want.

The main objective of the design of the forest park is to regenerate a desolate plot of forested land to create a greater biodiversity for the region in the vicinity of the Botanical Gardens. At the same time, visitors can experience and relax in an authentic natural environment near the city center. The user experience would be one of contrast to the botanical garden, being of a more wild spirit in a forest setting and elevated trails with views. This can be achieved by the choice of material, varying proximity to nature, etc.

There are two groups of people who would visit the park, frequent visitor and the occasional visitor. Park experience would be suitable for all age group with universal design at its core.

Frequent visitor include joggers or residents who live in the immediate vicinity, or nature study professionals like biologists. Avid bird watchers would often visit the park too.

Occasional visitors include urban dwellers who might be stress and need a breath of fresh air so they might visit the park for some peace and serenity. It could also be an alternate family gathering place, attracting families from all over the country. Park also serves as outdoor classroom to impart knowledge about nature to the next generation.

The main objective of the design of the forest park is to regenerate a desolate plot of forested land to create a greater biodiversity for the region in the vicinity of the Botanical Gardens. At the same time, visitors can experience and relax in an authentic natural environment near the city center. The user experience would be one of contrast to the botanical garden, being of a more wild spirit in a forest setting and elevated trails with views.

This can be achieved by the choice of material, varying proximity to nature, etc.

There are two groups of people who would visit the park, frequent visitor and the occasional visitor. Park experience would be suitable for all age group with universal design at its core.

Frequent visitor include joggers or residents who live in the immediate vicinity, or nature study professionals like biologists. Avid bird watchers would often visit the park too.

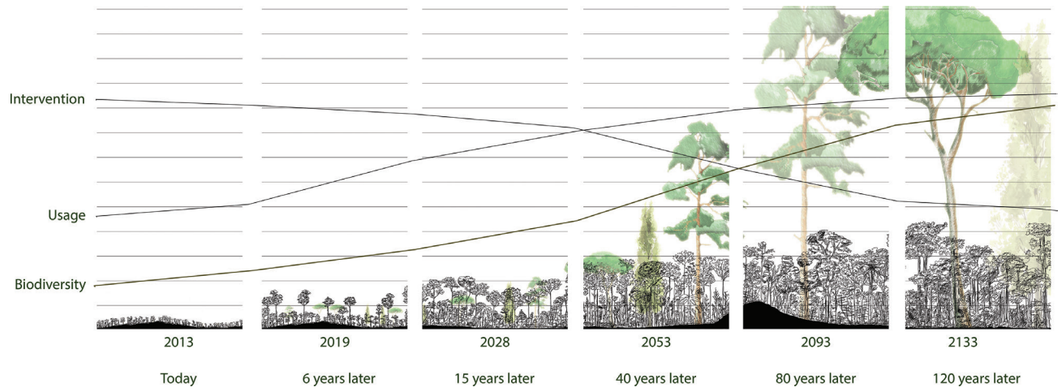
Occasional visitors include urban dwellers who might be stress and need a breath of fresh air so they might visit the park for some peace and serenity. It could also be an alternate family gathering place, attracting families from all over the country. Park also serves as outdoor classroom to impart knowledge about nature to the next generation.

Satelite Image of Site outlined in red

The design of the park looks specifically at regeneration of forest and the park experience of visitors. One focus would be the view looking at bird nest or the birds in flight. I am also looking at the interaction between bicycle and pedestrian with nature. Particularly important would be how design can be evolving with nature as it grows over long span of time.

The design of some elements of the trails and elevated walkway is derived from the study of bird flight paths. For example, one of ways large birds like eagles fly is to ride on the rising warm air and spirals upwards before gliding down. This is used as a design cue for a view tower.

Height places a significant role in the design of the forest park as it changes ones experience in the forest. The elevated walks of the trails would be at several heights averaging at 10-15m. The highest point of the park would be the top of the viewing tower where one could see the entirety of the park and more. Ideally it should be near the peak height of the giant trees which is 60-80m. The Park would be 0.24 km2 which is about 35 football field. This area would be big enough for regeneration.

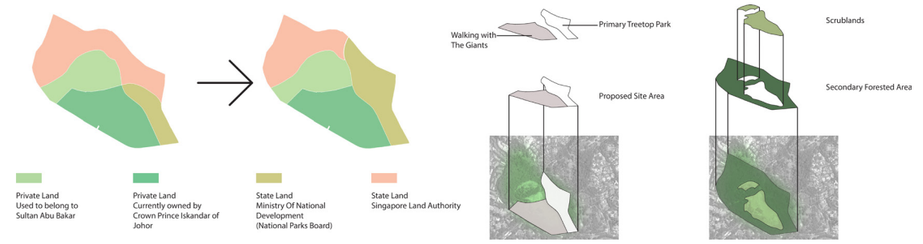


Management of Forest Parks

Tyersall Forest is a site which is rich in history spanning a century old since 1900s. It was initially home to Sultan Abu Bakar. He passed away before the turn of the century and the Istana Tyersall and Woodneuk built were given to his wives. Over the next few decades, several fires burned the Istana Tyersall down, and subsequently Istana Woodneuk too was ravaged by fire. Since the 1950s, the site has not been cared for and left to nature. This is also due to the fact the Singapore Government has no ownership of the land. In 2005, a strip of land adjacent to the botanical Gardens was acquired and is currently developed into an extension of the Botanical Gardens.

This chapter discusses the site analysis of the site, which is relative large. It is important to grasp some understanding of the site to be able to be sensitive to nature but also to serve the visitors.

The site chosen is located adjacent to the Singapore Botanical Gardens. There is more existing secondary forest to the north. Primarily the buildings in the vicinity are short bungalows and terrace houses. There is also the Park Connector Network which runs at Harding Road and Minden Road.



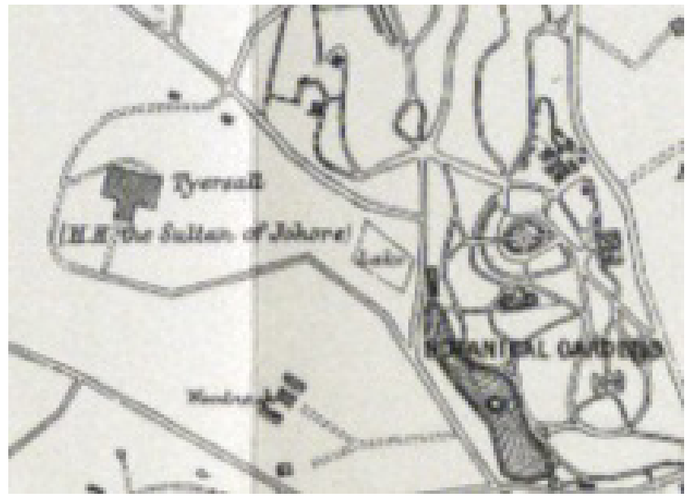
Land Ownership

During World War Two, Istana Woodneuk was in fact being used as a millitary hospital. The two Istanas were distinguished by their coloured ceramic tiled roof, the Istana Tyersall had a red roof while Istana Wooneuk has a blue one.

Before the war, the site had belonged to Sultan Abu Bakar of Johor. He used the place to relax but also to maintain a presence in Singapore. At some point of time, he was considering of residing permanently in Singapore. Having built Istana Tyersall for himself, the second Istana was dedicated to his forth wife, Sultanah Khadijah. Istana Tyersall was burnt down during a fire in 1905.

Over the years, patches of the Tyersall Forest are being cleared for development. In 2008, work started for clearing of forest however, for unknown reasons, activities were halted in 2009. After just two years, nature has already reclaimed the land with shrubs reaching heights of 1.2m to 2m covering the landscape.

Old Photo of Istana Woodneuk



Old Map of Istana Woodneuk and Istana Tyersall

The center of the forest has been cleared of the secondary forest. After a two years abandonment, nature has claim it back swiftly in the form of scrublands.

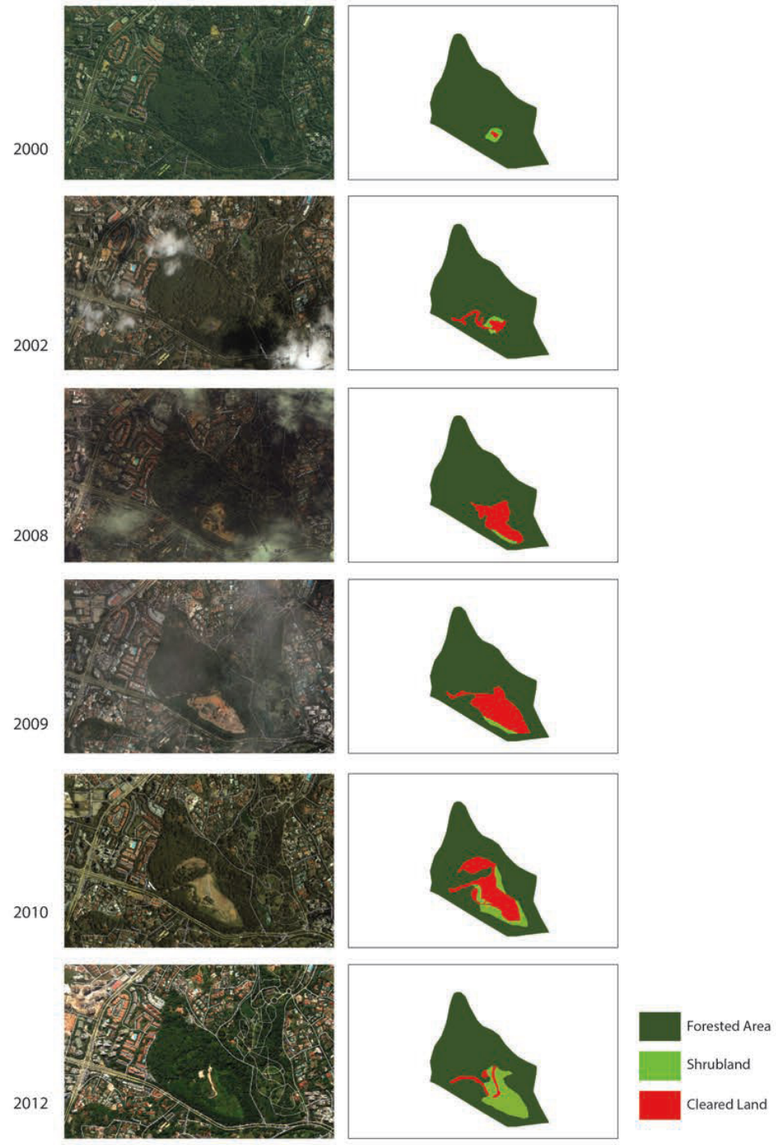
The existing Tyersall Avenue sees many heavy vehicles parking along it with signboards instructing them to off their engines. There are many cases of accidents of small animals and birds which died after being running over by vehicles when crossing this road.

Current state of the Istana Woodneuk is not livable having survived five fire incidents. The roof has collapsed in most parts on second level. From my research, the structure of the building might not be safe to stay in and need major works to renovate or to demolish it.

The original main gate leading to both Istana Tyersall and Istana Woodneuk. Now, the route is overgrown with vegetation and it is a uphill task to trek through it to reach Istana Woodneuk.

Shrubs and grass has been quick to reclaim the land, with a few trees about 5m popping up in the landscape. Although this shows the vitality of nature, only several species which are more dominating and adaptive are present. Thus it is poor biodiversity area supporting fewer types of species.

The site is located adjacent to the Singapore Botanical Gardens. There is 2 bus stop that can access the site from holland road. Currently the nearest MRT is Farrer Road MRT, but there would be a new MRT Station opening in 2019, which would greatly improve accessibility to Botanical Gardens but also the proposed park.



Deforestation Activities

The proximity of the site to the central of Singapore place it in a position as a potential avenue for relax in a authentic natural environment but in an highly urbanised location. There was also some spotlight on the plot of land when Singapore bought part of it from the Johor sultanate. Now there is a new plot of land available for development. it leaves one to ponder the potential of it, yet I fear the notion of insensitive developments such as highly residential properties. Thus I choose the site to dedicate it back to nature and also make an alternate public space.

There is already existing greenery there, they are majority secondary forest, thus these should be kept and leveraged and disturbance kept to a minimal. The site being adjacent to Botanical Gardens meant that there is already some form of ecosystem in placed. Having a forest would offer refuge from humans for fauna but also a haven for flora to flourish. Ultimately it would strengthen the forest presence.

The close proximity to city center meant that the park would be highly accessible to the working class after their work. They would be able to make use of the park as a public space to relax. The aim is not to attract hordes of people, but small groups of individuals. This would also keep disturbance to forest minimal as human footprint becomes lesser.

The core of the secondary forest has been removed and replaced with scrublands and grasslands. This has the potential to cause forest fires in dry seasons and may endanger the surrounding secondary forest. As the path into the core has been overgrown and is rather narrow, putting out the fire would be challenging.

There is an existing road (Tyersall Avenue) which divides Botanical Gardens and Tyersall Forest. There are already reports of small animals and birds being knocked over by vehicles passing. The 2-lane road is also oftenly used as a parking space for trucks and lorries, generating noises which disturbs the nature.

View of Scrublands

As the soil has been disturbed since 4 - 5 years ago, soil might need regrading and might not be the optimal condition to immediate start regenerating forest.

There are some restaurants to the south of the proposed site. This could mean that diners would have the possibility of going to botanical gardens through the forest park as a shorter route.

The Park Connector Network has a route through Hardings Road and Middens Road. This would mean that there might be some cyclist who might cross the road to access the forest park. The botanical gardens is not cycling friendly.

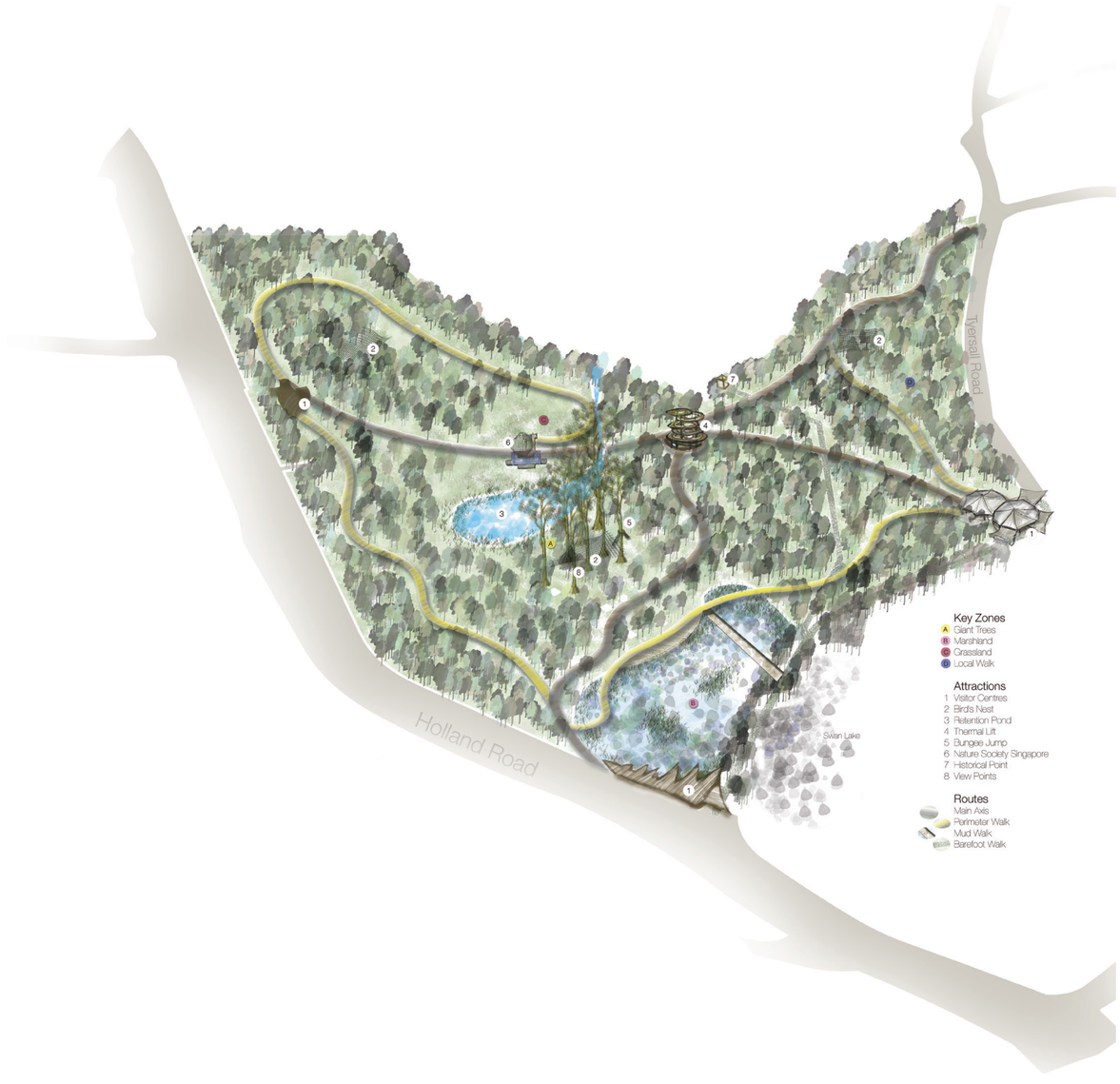
There is a historical Istana that is still standing. This has the potential to be a landmark but also since it is the only artificial structure visible, it could provide some point of interest.

Botanical gardens and Tyersall Forest has already a collection of many bird species, having a forest could further strengthen this, and with the proposed marshland could be a migrant bird resting point.

Some parts of the forest of lower contour might trap water which would be potential breeding ground for mosquitos and pose some dangers to visitors.

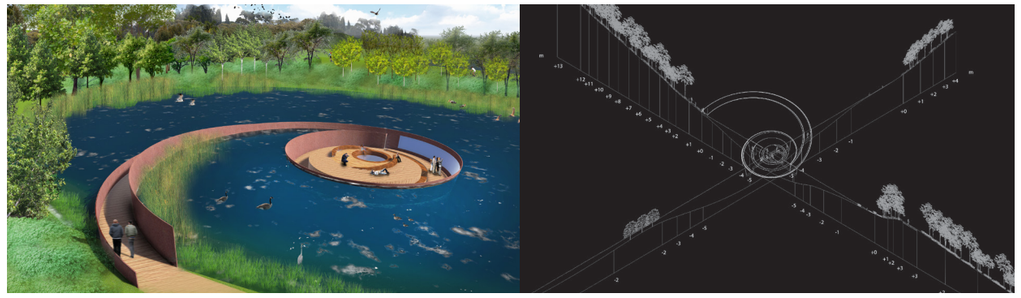
Any accident occurs might take some time evacuate as the forest can be quite deep. The current Istana Woodnuek is considered structurally unstable, it has a danger of collapsing any moment.

View of Grasslands

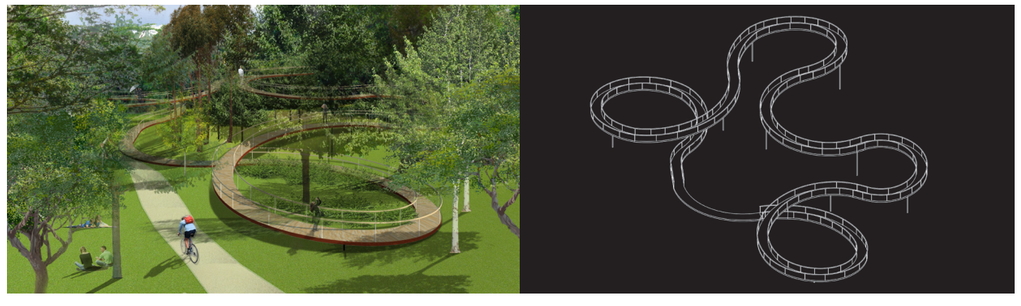


Overall Proposal of Re-Hutan Park

Thermal Lift



Marsh Vortex



Forest Escape

Mr Yeong Weng Fai was a pleasure to speak with. The disadvantage of interview would be that there would be a time limit placed and the opinions that he expressed are his alone and not representative. Nevertheless, as we discuss, the advantage is that it was more in depth and I can understand his train of thoughts. Compared with survey, it would be impossible.

Mr Yeong made many valid points through out the interview and many of them are very agreeable and good learning points. There are some specific responses which relates more directly to my project which I would highlight. His mention of dilemma of design in use of material in nature caused me to research several material for my decking and elevated walkway material. My conclusion was composite wood which although might be non recyclable, but uses wood scraps to manufacture and lasts at least three decades before needing major maintenance. I think in an environment with regenerate forest as

little disturbance as possible should be strived and kept to a minimal. There is also a realisation that it might be more helpful to regeneration efforts if there is little is little disturbance due to replacement of timber decking every couple of years.

He also suggested an idea to include evacuation routes from the key spots out to the road for emergency. I think it is essential, however, because it would not be used regularly, vehicular grade geocell could be used for the grounding to create a green path for visitors.

He suggested a few methods which I could plan the planting of the trees which I think could be considered. For example, planting to fully utilise the topography of the land to exaggerate the height of taller trees by planting on higher grounds, or planting trees which provide food or shelter for birds not deep in the forest but at certain vantage point where visitors can see.

Yeong Weng Fai,
Director of DP Green Pte Ltd

Face to Face Interview
Date: 27 February 2013
Time: 2.30pm to 4pm

There are two segments to the interview, one which is pertaining to more general issues while the second part would be more specific towards design.

Interview Transcript (General)

KAI XIANG : Is there any significant impact in how you would approach design seeing the shift from being a garden city to city in a garden?

WENG FAI: Not much difference in how I approach, I see it as almost the same thing, just a play of words. Singapore had the idea of garden city when Minister Mentor Lee visited many countries of which many are filled with road congestions and lacking of greenery, which is what inspires his vision. Ironically, Birds do not fly for long distances, but short distances, and trees allow them rest, and the rows of trees in Singapore provided just that.

KX: Developers in USA have to replace the equivalent of nature/ forest/marshlands in which they clear for development. Should Singapore implement such policies?

WF: There is green replacement policy in Singapore by URA. This idea is not a new one, in fact it could be started by Corbusier where in his house and design he compensate for lost green due to the construction of the house. His 5 elements of design is particularly good read.

KX: Do you think there are any social and economic benefits to regenerate forest in parts where no development plans yet exist for long period of time or when land is barren?

WF: Definitely there are benefits especially for urban parks where people can relax where pace of life is high. Economic benefits could be tourism. Parks essentially are not ecosystems, I agree with you that gardens could be "plant zoos". Gardens were started by British. Nowadays, if one wants to research about a plant, we can go online to do it, there is no need to go down to the garden any more. Also, people don't go just for birds spotting but also to enjoy birds flying and landing catching fishes etc, the elegance of birds.

Interview Transcript (Design Specific)

KX: What is your idea of wild (feeling of wilderness) – most essential or important factor? For myself its proximity to nature.

WF: Authenticity of experience.

KX: I recently went to admiralty park and it was getting late, and it started to feel uncomfortable like the wilderness might swallow me. Any advice to keep a balance and prevent too extreme an experience. Maybe an optimal distance to keep away from nature?

WF: It really depends, some people might like the raw and wild experience, however, you can use design elements which are artificial to remind them that they are still in touch with civilization etc using light, firefly walk. There is a project about a hotel, there are two entrances, a normal one and one that bypasses a forest, what they did was to play music from artificial speakers and also use lightings to keep the guest feeling comfortable.

KX: Is there a process in which to regenerate a forest or to design a forest (an approach).

WF: If you are proposing some giant tree species, you need approach an arborists. In fact, Singapore is being looked at and designed by arborists. In the early days of designing. Forest can be designed but it is too complex to replicate, there would always be some details we miss out, like some giant trees species which need certain environment to flourish, for example some might need to be squeezed by surrounding trees or some need certain ants. However they surely can be designed we just need to know how we want the experience, but this is outside of my scope. You can take a look at David Attenborough, life of plant, where a single tree can be struck by lightning then provide food nutrients for new sprouts. This ended up with trees growing in a straight line due to the felled tree. Nature grows in its own ways.

KX: There are some tree species which attracts birds by fruits/insects/ nest building spots, by planting them nearer to human activity zone/ walkway, is it advisable, to spread it throughout the area.

WF: There is no point if you plant it deep in the forest. you can put it where look out points will be or where people will gather or walk. If it is sensitive to humans, you can put it in the distance but create space to separate.

KX: How do you approach materiality for designing this sort of natural parks, natural like wood make it blend in or can it be contemporary with steel, or painted with bright colours to stand out.

WF: This is the dilemma of design, where we want create natural design to blend in, but at the same time we are cutting down trees to build the board ways so it's a little contradictory, steel or other materials would function well and at the same time, it depends on how you want to portray your ideas.

KX: Is retention pond low maintenance in that it would not present future problems when used for a long period of time?

WF: Yes, they are used for storing water which can then be used for irrigation and other users. This can be used in combination with bioswales to filter water, but bioswales need more maintenance and might clog overtime. Sometimes, I go cycling at bishan park and see these weeds growing on rocks which have kind of nice texture, but people will need to clear them off eventually.

Dr Nigel Taylor was very discerning in understanding my interview questions, and through his answers I gained new perspectives in what i was originally seeking. I only hope that I could have spoke with him in person since he is a busy man. The disadvantage of email interview is that lacking of a dialogue, less possibilities are formed in the session. However, the advantage would be that it is time efficient for reaching out several interviewees and they are able to respond in a coherent and thought-out manner.

My interview with Mr Nigel brought the reality of the complexity of regenerating forest and also developments of conservation efforts in Singapore to light. It is hard not to overly simplify the subject when conducting an email interview and at the same time to get relevant response to my questions. His reply is inline with some of my research where regeneration effort is focus on recreating the fragile symbiotic relationship of the trees, other floras and the faunas even the micro-organism, rather than reintroduction of few particular native species or maintaining a level of biodiversity. The level of study is beyond me for this project but the information is useful in educating me on the subject.

Dr. Nigel Taylor,
Director of Singapore Botanical Gardens

Email Interview
Date: 5 March 2013
Interview Transcript

KAI XIANG: Do you think we are moving in the right direction in that more parks are being built for enjoyment and at the same time, forest are being cleared for development.

NIGEL: I think your statement over-simplifies the situation and assumes incorrectly. The “forests” being cleared, such as that recently contested at Pasir Ris, are low grade secondary habitats that NParks has deemed to be of low priority for conservation purposes. The public may not see it that way of course. ‘Parks’ is also too generalised a term as used in Singapore, because a park like Hong Lim has little or no biodiversity, whereas some of the island’s Nature Parks and SBG are rather rich in biodiversity as well as being places for recreation for the public, hence the concept of biophilic cities. Yes, when understood in this way, we are going in the right direction, but clearly pressure on land will be relentless.

KX: Do you think that urban greening as a strategy limits directly the diversity of flora and in turns allowing only certain fauna to flourish?

NT: That is a big and complex question. Clearly, only certain kinds of plants are suitable for the urban environment, though the range is quite large even so, but this is better than no urban greening at all. The range of fauna attracted is likewise restricted and the choice of plants is made to encourage specific friendly or beneficial insects and birds. This is intentional and rightly so, since the public cannot be expected to fall in love with all kinds of fauna and if we introduce the wrong kinds they may argue for no greening at all. Thus, compromise is essential.

KX: Developers in USA have to replace the equivalent of nature/ forest/marshlands in which they clear for development. Should Singapore implement such policies?

NT: As a city-state it is difficult if not impossible for Singapore to expect like-for-like replacements, but here the compromise is that incentives are given to developers and to owners of existing buildings to create green roofs and walls wherever they can. This has considerable advantages for the physical environment, such as cooling streets, houses and insulating air-conditioned buildings.

KX: Could urban greening be comparable to maybe a secondary forest once it is in place long enough or becomes sizable (in terms of biodiversity)

NT: This would need a careful study. I cannot speculate, but clearly a secondary forest has less hostile breaks in its environment than an urban-scape.
KX: Do you think there are any social and economic benefits to regenerate forest in parts where no development plans yet exist for long period of time or when land is barren?

NT: Yes, and NParks is keen to do this and especially to help connect existing biodiverse areas through green corridors. The economic benefits will come from improved psychological and physical health of residents and greater appeal for tourists; the social benefits include more impetus for outdoor exercise, nature study etc.

KX: Do you think a desolate plot of land like the Tyersall forest could be a haven for biodiversity and birds since it remains untouched for a long period of time?

NT: I don’t need to think, because we know the Tyersall 10 ha is rich in both flora and fauna, if we consider just the part that has been given to SBG/NParks, which our staff have surveyed prior to considering how it is best developed as a public attraction. The part that remains in the ownership of the Sultan I cannot comment on but you can draw your own conclusions by looking on Google Earth.

KX: According to census, difference between nature park and garden park reserve for birds biodiversity, eg: comparing Bukit Timah Nature Park and the Botanical Gardens.

NT: Refer this question to Geoffrey Davison, NBC/NParks bird expert. All I know is that more than 140 bird species have been recorded in SBG.

KX: What is your idea of wild (feeling of wilderness) – most essential or important factor? For myself its proximity to nature.

NT: Wild and wilderness are words that may evoke different ideas in the same person.Wilderness suggests the virtual absence of man to me, whereas wild is more to do with a natural environment that is relatively undisturbed by man, though man may be present.

KX: Process in which to regenerate a forest or to design a forest (an approach) Key points to look out. Proposing some giant tree species.

NT: This is a good question, but one that does not have a very clear answer at present, especially in the highly complex ecosystems of the tropics. Design is perhaps the wrong word to use, because we just do not understand enough of the complex requirements if starting from scratch with bare earth. You can plant this up with a variety of trees that will survive and even prosper, but the fundamental question is whether such a planting will become self-sustaining in an ecological sense over long periods of time in the absence of interventions by man. Restoration of a damaged forest ecosystem, or regeneration if you like, is possible depending on how much loss of biodiversity has occurred. The micro-organisms and fungi, especially those involved in the symbiotic relationships with trees, are thought to be critical and without these success may be limited severely. Replacing a forest with grass may be almost as bad as replacing with concrete if the mycorrhizae fungi do not survive under a lawn, which seems to be the case in some temperate ecosystems – that’s why at SBG we rake the fallen leaves around our trees on the lawns, because we are sure that the fungi will be encouraged by the rotting leaves. These fungi are known to increase the uptake of moisture and nutrients by the tree up to 10 times (temperate region studies).

I had known Dr. Geoffrey Davidson as he was referred by Dr. Nigel, over some questions relating to birds which he thought would be better if I had consulted Dr. Geoffrey. He was quick to accept my invitation for interview and in just after one day, he had answered my interview questions. Although I was hoping his answers could be more definite in providing me with design directions, he corrected my thinking that there is simply no optimal birding level. It depends on the birds you are looking at.

This lead me to think that I could only either design a viewing point for a particular species of bird or just simply provide a heightened point with a look out into the forest. The birding success rate might depend more on chance and individual experience than by design.

However, still there are some measures which could increase the chance of getting closer to these wildlife, as suggested by him, bird hides screens etc. And since the noise level of larger crowds could deter birds, decreasing the width of walkway could limit visitor group sizes and spread them out linearly.

Dr Geoffrey's idea of wild is to get away from people, and I agree with him to some extent. When away from any signs of civilization and being in nature, the atmosphere is different. Still, this experience might be discomforting for some which is why I subscribe more to Dr Nigel 's idea in the way a natural environment is relatively undisturbed but man may be present. My interview with him has deepen my understanding of the complexity of birds habitats and that it might not succeed.

Dr. Geoffrey Davison, Assistant Director of Singapore Botanical Gardens

Email Interview
Date: 6 March 2013
Interview Transcript

KAI XIANG: Do you think that urban greening as a strategy limits directly the diversity of flora and in turns allowing only certain fauna/birds to flourish?

GEOFFREY: I think it limits the flora and fauna, but not necessarily "directly".

KX: Could urban greening be comparable to maybe a secondary forest or regenerate forest, once it is in place long enough or becomes sizable (in terms of biodiversity)

GD: Yes. There are many examples where this has happened in Singapore (e.g., SAFTI Live Firing Area, No Tiew/Lim Chu Kang, Tampines Eco Green).

KX: Do you think a desolate plot of land like the Tyersall forest could be a haven
for biodiversity and birds since it remains untouched for a long period of time as compared to managed regenerated forest?

GD: Tyersall isn't "desolate", it's just not in use – there is quite a lot there already including a few rare species. As it's adjacent to SBG and relatively undisturbed, the fauna is very similar.

KX: According to census from state of singapore's wild birds and habitats, I notice a minor detail. Although bird population for nature and garden park reserve increase, there is more significant increase for nature park as compared to garden park, eg: Bukit Timah Nature Park and botanical gardens. Do you think this can be true for most cases comparing the two types of park reserve in terms of biodiversity.

GD: NParks maintains a range of different parks and some are called "nature parks". But there's a complete range from almost natural undisturbed vegetation to highly managed, manicured gardens. The distinction between the two is vague – it's a spectrum. The botanical gardens is mixture, many parts are actually quite similar to undisturbed habitat (e.g. the SBG Rain Forest). But in general, less artificially managed parks will have more species of flora and fauna.

KX: What is your idea of wild (feeling of wilderness) – most essential or important factor? For myself its proximity to nature.

GD: For me, it's getting away from people.

KX: There are some tree species which attracts birds by fruits/insects/ nest building spots, by planting them nearer to human activity zone/ walkway, is it advisable, or do you think it should be spread throughout the area regardless?

GD: Zoning is an important concept in management of any conservation area, so any park design would surely want to make some sort of separation between the higher impact type of human activities and the more sensitive forms of wildlife.

KX: Is there an optimal birding height? Would it be a better experience at elevated heights? i am thinking about proposing elevated walkways for appreciation of birds and also birding.

GD: There isn't an optimal height, but you will see different things at different heights. So an elevated walkway, platform or tower would provide visitors with better opportunities to see treetop-living birds.

KX: Is there a comfort level for birds which are more sensitive and that human do not appear invasive and if there are particular designs available to prevent scaring them off.

GD: Almost impossible to answer. Every bird species will have its own characteristics, some more shy and some less shy. Individuals differ too. And birds that are nesting will usually be much more wary than at other times of year. There are designs for bird hides, screens, etc. (e.g. you can see some at Sungei Buloh but those are mostly designed for open areas not forest). Human behaviour is important. (Not in big, noisy groups, not wearing brightly coloured clothes, talking loudly or running about.)

KX: Should regaining diversity of birds include a process of introducing birds or should we let birds be attracted to the site naturally overtime?

GD: Letting them be attracted naturally is much more cost-effective, and if a bird comes (and stays) you can be more confident that the habitat is suitable for it. If you introduce birds artificially, can you be sure the habitat is right, and they will find everything they need? How many individuals should you introduce, where would you get them from, and would you be causing harm to the population where they came from?

Title: Public Space: Design, Use and Management

Editors: Chua Beng-Huat and Edwards Normans

Authors: Chua Beng-Huat, Normal Edwards, Victor R. Savage, Ho Kong Chong, Valerie Lim Nyuk Eun, Ooi Giok Ling, Thomas T.W. Tan, Kenson Kwok, Brian G. Field, Clive Briffett, Richard Corlett, Chris I. Hails, and Bernard Harrison

Background Information:
Public Space: Design, Use and Management is a compilation of essays by different individuals to give an insight into a variety of meanings and forms of public space. The collection is divided into three main sections; the historical dimension; current cultural practices and the natural environment. For the purpose of my research, I would only be focusing on the last section; the natural dimension. These essays are mainly concerned with conservation of existing natural environment in Singapore which are slowly disappearing. The last of them by Bernard Harrison on designing natural settings for zoo is interesting but would be outside my scope of interest, thus It would be neglected.

The Potential for the Conservation of Nature in Singapore
Author: Clive Briffett

Reflections:
There are existing few natural ecosystems unaffected by human activities in Singapore. Lining road sides with trees and creating urban parks helps in creating a more comfortable environment for people to be in touch with nature, but it is not enough to be considered contributing to conserving nature in Singapore. Currently there are 3 natural reserves left in Singapore which are namely: Bukit Timah Forest Reserve (75 ha), Laborador Park (4 ha), and the Central Water Catchment Area (2059 ha).

The Chapter also looks at some case study and potential reserves sites in Singapore. For example, examining Sungei Buloh Bird Santuary would inform us that the walking trails are only located at existing bunds and when there are natural screens. There is also consideration for the blind and disabled and also how to attract migratory birds. Kranji reservoirs, Kranji Dam Ecological Park and Mandai Mangroves are some of the proposed sites for potential natural reserves.

Some key ideas are that with suitable screening and hides, it would allow visitors to observe wildlife closely with little disturbance. When there are elevated boarded walkways, it could allow people to walk more quietly in the park. There are also example of usage of water hyacinth in the water, in Singapore, it might be a nuisance but for other countries it is actively being used as a bio-pollution filter.
Carparks should also be screened by trees by the road edges and some bridges over water body should be hidden. Information booth should also be placed only at the entrances. With these in place, it would increase the chances of opportunity to see wildlife and lower possible human disturbance.

Conserving the Natural Flora and Fauna in Singapore
Author: Richard Corlett

Reflections:
Singapore's surviving native biota is facing increasing pressure from urban developments. There is a wrong conception in that the public believes that most flora or fauna in Singapore is already extinct or is already protected by the current natural system. This both is not justified at all.

Presently there are existing in Singapore four major types of forest, Mangrove forest, Beach Forest, Fresh water swamp forest and Low land tropical rainforest and the nature in Singapore is subjected to 6 main processes throughout history in the following order, deforestation, cultivation, succession, building, extinction and introduction.

In Singapore, as the native forest and coastal species are becoming extinct, large numbers of exotic (non-native) species were actually introduced by the government. These are naturalised over the years with 65% from tropical America, 11% from Africa and the remaining from Asia. These would usually occupy permanently open or disturbed habitats which native flora cannot occupy such as the clearing in Tyersall Forest. The interesting note is that no naturaised exotic flora has managed to invade the forests in Singapore.

Reading this chapter has let me understand what is happening to Tyersall Forest, where forest is not being disturbed which could be restored easily but is being cleared. This means that all forest dependent species are eliminated and the soil is usually degraded. When abandoned for some time a forest might still emerge comprising only those flora with good colonising abilities. A survey of several sites across Singapore would show that Sites abandoned last decade would usually support only herbaceous species like exotic grasses or legumes. These open spaces have low species richness, a simple structure, a sparse or absent tree layer and a continuous herbaceous ground cover.

Conservation efforts should priortise with recreating the natural community with all its interactions and not simply the number of native species present. There is also an understanding of how recreation activities are in fact not compatible with conservation of forest. This is because humans activities would tend to open up forest as they need some light and air movement while forest need humidity to flourish. Even small paths and clearings would affect the developments just like in Bukit Timah Nature Park.

A thing to note is that small reserves are not useless but that they are just more fragile and need more careful management.

There is much complexity involved in designing a park which has objective in conserving nature. this is because both requirements of nature and of humans are drastically different. Humans would usually need spaces which allow light to enter and also circulation of air to feel comfortable. On the other hand, the optimal environment for forest regeneration needs to be enclosed and humid.

There are many such opposing forces because modern man and nature do not mix so easily. I find that however there is a certain point or boundary between this two zones which is where my park design and activities can be found.

One of the major limitations is that there is not enough study into the ecological systems of the forest to fully appreciate it to implement as a design planning or zoning in the park.

There are many assumptions and over simplifications in this area and that the most important element of the park which is the forest is somewhat lacking and needs more research. The actual composition of the layers of canopy, or the soil, the fauna and also other animals which might be present to enjoy the regenerate forest.

There is also not enough study into the climate and soil conditions, it is assumed that the soil is of good quality and if needed some may be imported from East Malaysia (volcanic soil).

Even so some trees may not adapt to the local conditions and not grow to their optimal or adult heights. Although local case studies and overseas project has high success rates.

The entire process of this project has influenced me to some extent as my understanding of the natural environment deepens. I am dealing with many issues which are outside the boundaries of strictly design. This has broaden my perspectives that designing for real world has its implications and is not so straightforward.

There are many times when I am having doubts over if my decision would produce a result which is really beneficial for nature and people were it to be built. However, for an academic project there are many issues which are slightly neglected to simplify the design process a little.

I think this has been a good opportunity to learn and grow and the process could be a foundation for my future thinking and practice in the industry. Particularly useful was the interactions between my lecturers and also the interviewees.