國立交通大學 建築研究所 碩士論文

設計事件與創作 Event Versus Operation of Design

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中華民國九十八年七月

Abstract

Creativity is independent from the exchange between individuals arising an original thinking of certain value.

We have to think about this world through a different of sensing and experience. Visual, sound, movement, text and language. To understand this variety from abstract terms and operations. Architecture is to think through the design.

Across from the small to large, the multi-level. The interaction between personal consciousness and operation of object. And to face the real physical conditions for the application and coordination. Also discuss about the history, geography texture, structure and culture issues. The possibility of using variant of methods and technology as media to observe and create a topic in different design.

Learning to modify the phases variances, and different perspective in every fields. From a wide range of creative and conceptual thinking, as well as the depth of the profession and to reach a balance between accurate.

Architecture, design as a way of thinking. Space as a way for expression.

創造力是來自於獨立個體間交流而產生具有某種價值的原創性思考.

我們透過各種感知來思考這世界. 視覺,聲響,動作,文字語言.各種抽象理解與具體操作. 建築則透過設計來思考.

由微至著跨越多種層級,經過找尋個人意識與物件操作行為間的互動.直至面對真實物理條件狀況之應用與協調.進而從歷史服絡,地域紋理,文化涵構產生對話. 用多種可能性的方法論述以及技術媒介,觀察而創造出在不同議題與尺度下的題材.

學習協調在各種面向,領域間不同觀點的差異.從廣泛思考的創意與概念,以及深入探討的專業與執行準確之間取得平衡.

建築,以設計作為思考的一種方法.以空間作為展現的一種元素.

Event Versus Operation of Design 設計事件與創作

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Episode _01

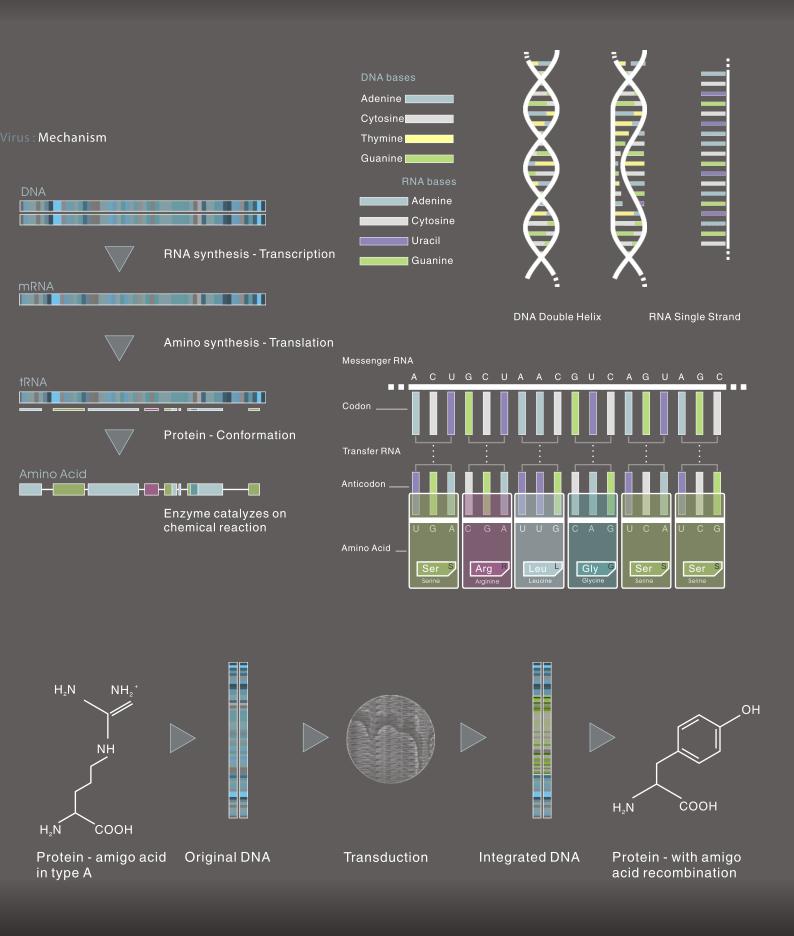


Project Name: Recombinant Complexity

Site: Dunhua S. Rd., Da-an Dist., Taipei City

Project Brief: Recombinant architecture is radical requestioning of the most fundamental programmatic assumptions about the logic affordances of built space. When both architecture and the bodies that inhabit it are themselves both organic and inorganic, when both are materially alive and not-alive, when the nature of both are understood as artificial and artifictual, the first premises of their interactions in space and over time are reopened.

Design Thinking: Focuse on the relationship of architecture to molecular biology. From research to design, synchronized two field of knowledge. The importance is the translation of internal genetic codes to the external architectural expression.

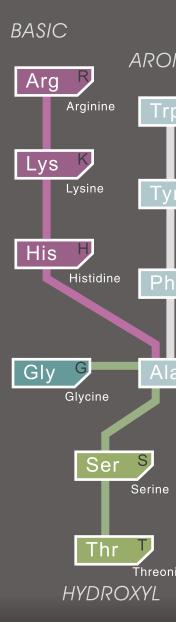




Amino acids are usually classified by the properties of their side chain into four groups. The side chain can make them behave like a weak acid, a weak base, a hydrophile if they are polar, and hydrophobe if they are nonpolar. The chemical structures of the 20 standard amino acids, along with their chemical properties, are catalogued in the list of standard amino acids. The place of amino acid can be re-arrange into a route map depends on the complexity of its chemical formula.



Virus: Map of Amino Acids



Glycine

Alanine

Valine

Leucine

Isoleucine

Tyrosine

Histidine

Tryptophan

Aspartic acid

Asparagine

Glutamine

Lysine

Arginine

Serine

Threonine

Methionine

Cysteine

Proline

Glutamic acid

Phenylalanine

| Amino | Acid | | Molecular Formula | |
|---------|-------------|---------------|--|--------|
| Arg | R | Arginine | H2N(=NH)NHC3H6CCH(NH2)COOH | |
| Lys | K | Lysine | H2N(CH2)4CH(NH2)COOH | |
| Asp | D | Aspartic Acid | HOOCCH2CH(NH2)COOH | |
| Asn | N | Asparagine | H2NCOCH2CH(NH2)COOH | |
| Glu | Е | Glutamic Acid | HOOCCH2CH2CH(NH2)COOH | |
| GIn | Q | Glutamine | H2NCO-CH2CH2CH(NH2)COOH | |
| His | Н | Histidine | H2NCH[CH2(C3H3N2)]COOH | |
| Pro | Р | Proline | (C4H8N)-COOH | |
| Tyr | Υ | Tyrosine | HO(C6H4)CH2CH(NH2)COOH | |
| Trp | W | Tryptophan | (C8H6N)-CH2CH(NH2)COOH | |
| Ser | S | Serine | HOCH2CH(NH2)COOH | |
| Thr | T | Threonine | CH3CH(OH)CH(NH2)COOH | |
| Gly | G | Glycine | H2NCH2COOH | |
| Ala | Α | Alanine | CH3CH(NH2)COOH | Aminos |
| Met | M | Methionine | CH3SCH2CH2CH(NH2)COOH | |
| Cys | С | Cysteine | HSCH2CH(NH2)COOH | |
| Phe | F | Phenylalanine | (C6H5)CH2CH(NH2)COOH | |
| Leu | L | Leucine | (CH3)2CHCH2CH(NH2)COOH | |
| Val | V | Valine | (CH3)2CHCH(NH2)COOH | |
| lle | <u>'</u> | Isoleucine | C2H5CH(CH3)CH(NH2)COOH | |
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| Ası | n N | G | In 9 AMIDE | |
| / (3) | <u>'</u> _/ | | | |
| _ | Asp | aragine | Glutamine | |
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| | | | —————————————————————————————————————— | |

MATIC

W

Tryptophan

Tyrosine

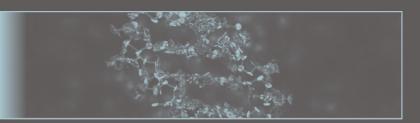
Α

Alanine

Met

SULFR

Phenylalanine



Mapping programs into amino acid's route map based upon the complexity of programs. By using these properties, a structure of relationship among programs could be defined.



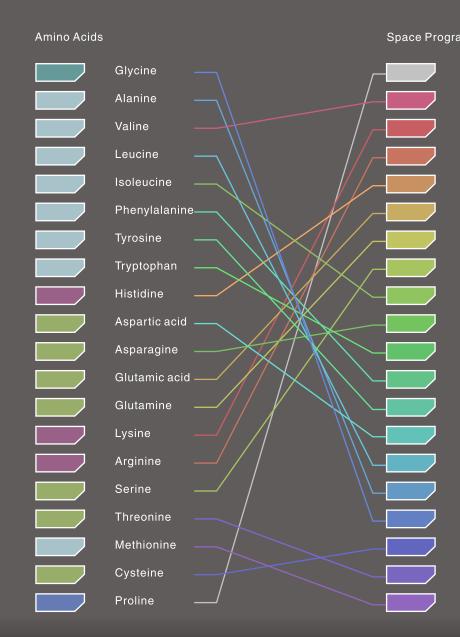
Virus: Program Mapping

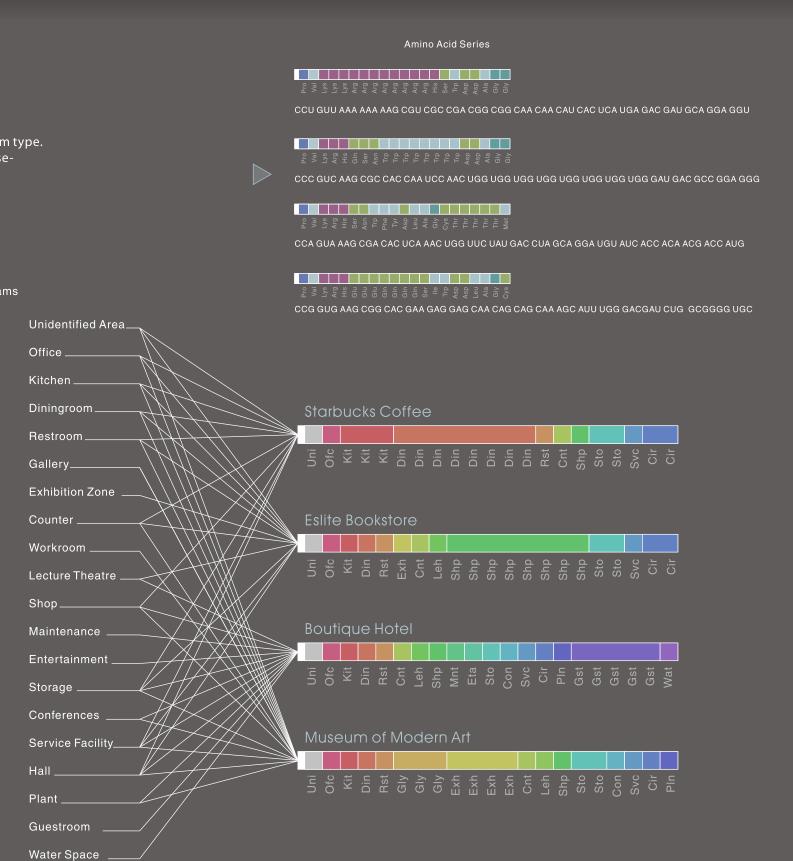


Second Letter Third Letter UAU UUU UCU UGU Cys Phe Tyr uucl UCC UAC UGC Ser UUA UCA UAA UGA Leu uugl UCG **UAG** UGGI Trp CUU CCU CAU CGU His CCC CCA CUC CAC CGC Pro Leu Arg CUA CAA CGA CUG CAG CGG CCG AUU ACU **AAU AGU** Ser AUC ACC AAC AGC AUA ACA AAA AGA Lys Arg AUG | Met ACG AAG AGG Space Programs First Letter GCU GUU GAU GGU **Unidentified Area** GUC GAC GGC GCC Val Ala mercial GUA GCA GAA GGA Office GUG GCG GAG GGG Kitchen W Diningroom Shop Leh Temporary Restroom Lecture Hall Exhibition Zone Gallery Exhibition Zone Entertainmen Permanent Sto Counter Storage Gallery Workroom Maintenan Lecture Hall Working Shop Wrk Ofi Con Maintenance Service Facility Office Workroom Conferance Entertainment Storage Conferences PIn Service Facility Plant P Circulation **Unidentified Area** Plant Wat Water Space Habitation Open, Void Space Landscape Water Space



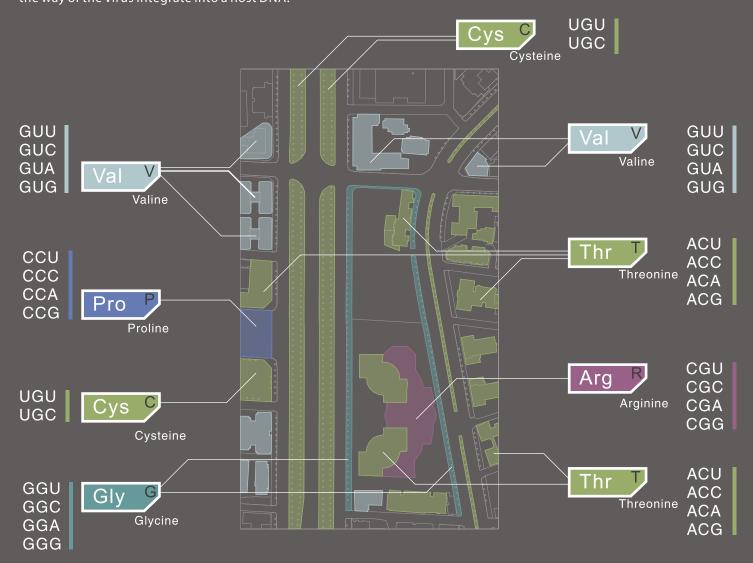
By architectural analyses obtained the series of progra Through the progress of reverse-translation and revers transcription to get the internal genetic codes.

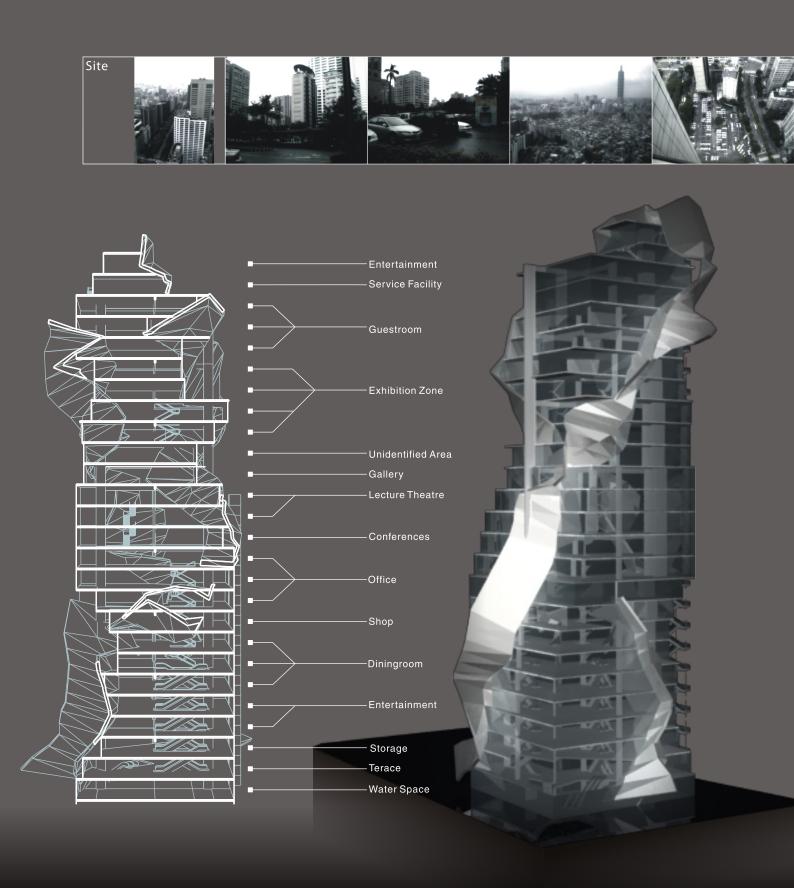


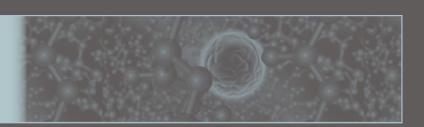




Take site as an outside environment and main program as "host". Insert the required program type into the main one as the way of the virus integrate into a host DNA.







RNA Strain Direction

RNA Strain Direction

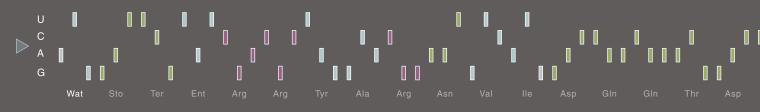
CCA C GUA C

CCA G GUA /

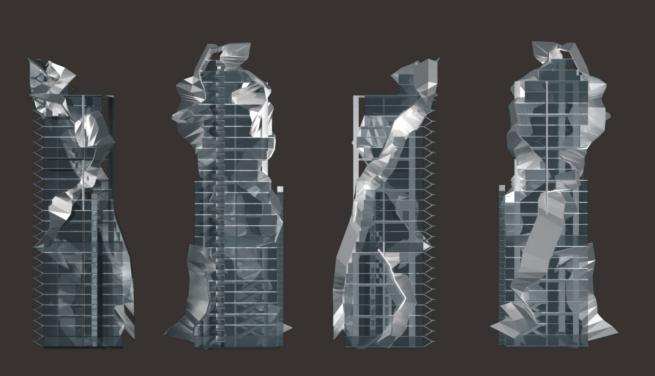
COAU GUA G

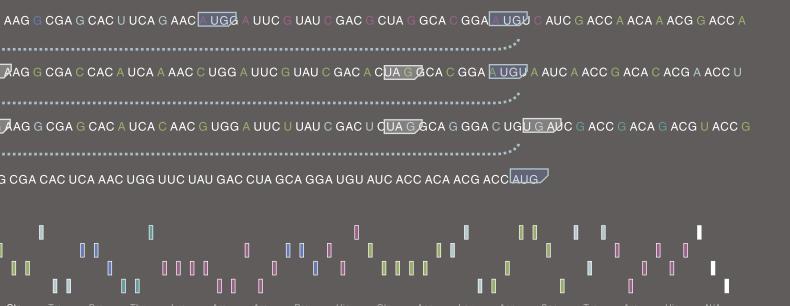
CCA GUA AA

The conformation of 'DNA series' and programs is based on the site's influence and position of codes.

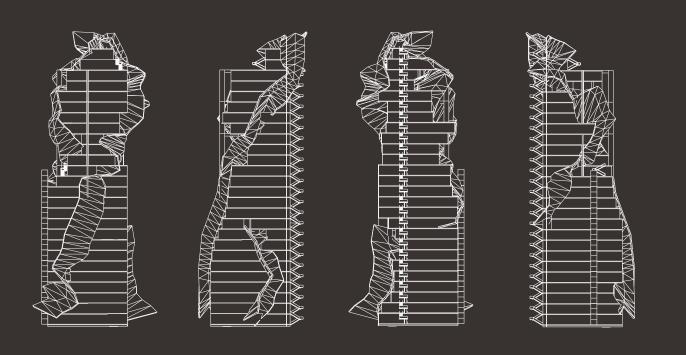


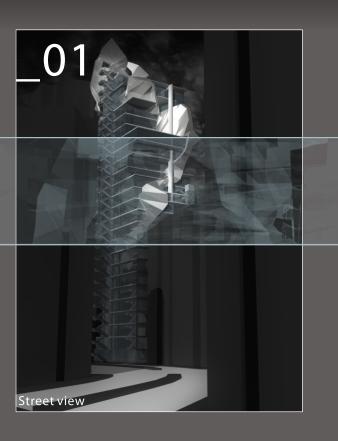
Elevations





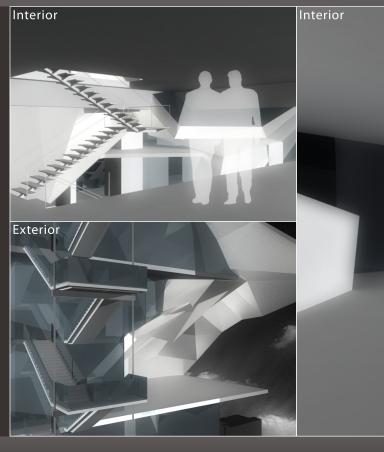
Sections





This is an era of incoming changes. The concept of future architecture also becomes different. The studio is going to find the relationship between genetics and architecture, recombination the complexity of architecture. We put a focus on the internal genetic info, thus generates external spatial expression. This method sets a new way for approaching architectural design.

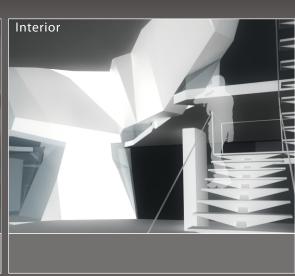
Street View

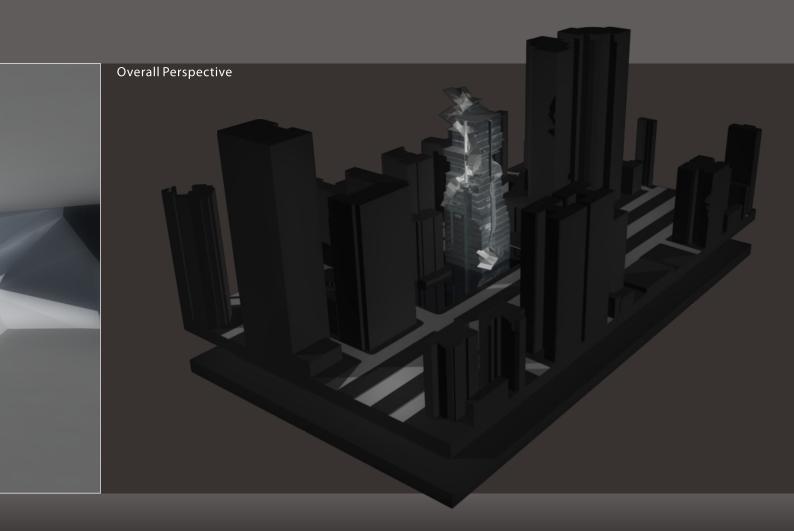
















Austronesia+Stone+Worship

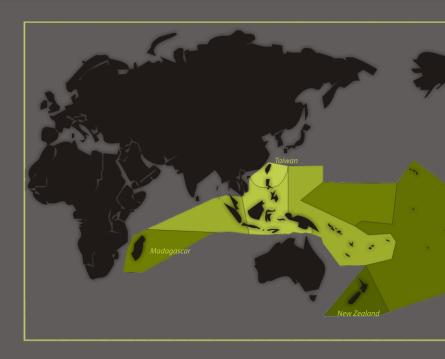
風動石聖

This site is locate in middle of a road which is along the river side in Taipei county. As a temple of God of groundkeep worship by Han-people. Through search of this historical underground temple, from a view of an archaeologist. To know it's original relation with Austronesi, a tribe that expand through whole pacific ocean. The stone worship and ways of thinking in their cultural sprit with nature; is the main concept. In the cennection with environment and tradition, an approach from spatial and time.









Map showing the distribution of Austronesian languages, which lie in the green area.

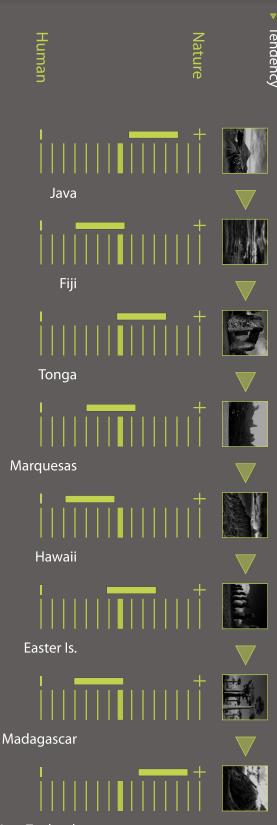


The Austronesian languages are a language family widely dispersed throughout the islands of smembers spoken on continental Asia.

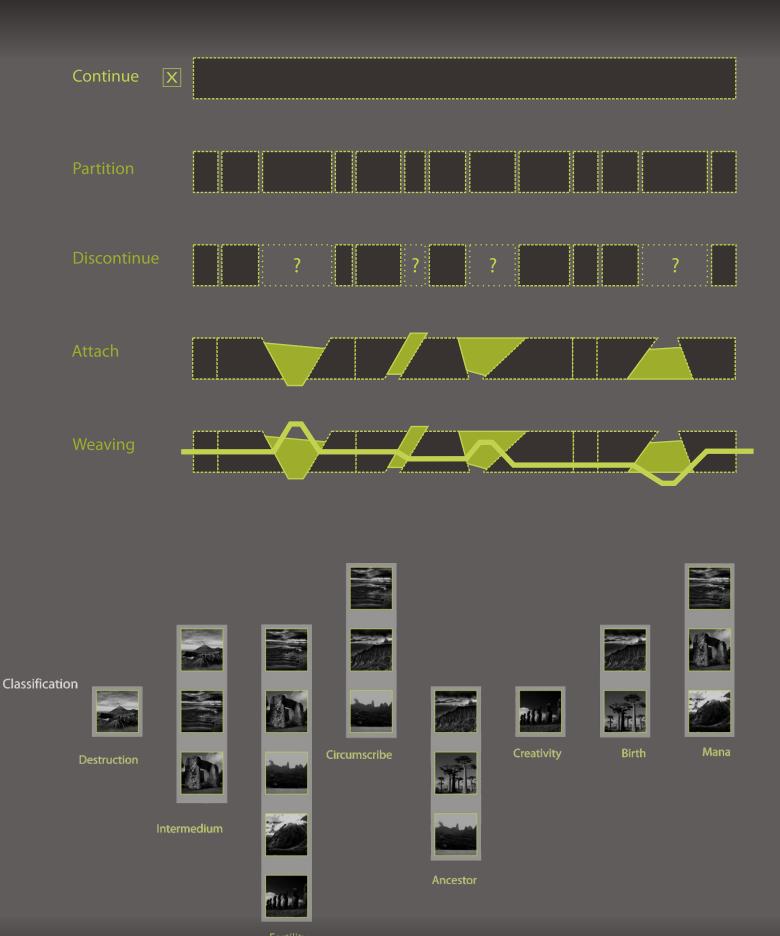




outheast Asia and the Pacific, with a few



New Zealand









Other gods fill smaller niches, including one who according to some accounts, could be either the Hindu diety Durga or a legendary arrange woman turned to stone for refusin

he Oglala believe the circle to be sacı ecause the great spirit caused everyt

sky, the earth and the moon are shield, though the sky is deep lik Everything that breathes is roun

Everything that breathes is round like the stem of a plant. Since the grefit spirit has caused everything to be round mankind should look upon the circle as sacred, for it is the symbol of all things in nature except stone. It is also the symbol of the circle that makes the edge of the world and therefore of the four winds that travel there. Consequently it is also the symbol of the year. The day, the night, and the moon go in a circle above the sky. Therefore the circle is a symbol of these divisions of time and hence the symbol of all time.





+

Stone







a secret initiation ceremony for youths, performed on a rock-walked platform area with a stone pyramid in the manner of a Polynesian marae. There were three degrees vouths, men, and priests, and the rite consisted essentially of the simulation of death and revival—a kind of ancestor worship. The formal ceremony was followed by an orgy, and recalls the similar licentiousness in the Tahitian areoi societies. "The concept of mana associated with the ancestor cult is strong in the native pattern of thought. According to this concept mana is the vital force or potency which gives supernatural significance to persons or things...Its presence in a person or thing is not attributed to power inherent in the thing itself but to some spiritual force lodging in it...The first-born of each noble clan was the temporary repository of the mana of the clan's ancestral forefathers. The chiefs had the strongest forefathers and the high chief was the most sacred because theoretically they received mana from the most powerful





ancestor gods."













These uplands of Wahiawa in central O'ahu were a place where chiefs were born, where famed chiefs lived, and where key battles for the control of O'ahu were fought. The royal urths de of Kukamuko and the associated heiau of Holonopahu were within the Waialua district. Nearby was the royal center of Lihu'e within the lands of Wai'anae Uka. To the south were the houses and fields in the uplands of the 'Ewa district.

Beginning with the birth of Kapawa in the 1300s or possibly earlier, Kukaniloko became recognized as the royal birthsite on O'ahu. Birth at Kukaniloko assured a child highranking status and the privileges of this status. It also maintained the purity of the royal lineages which gave chiefs their godly status and the right to be leaders.













One way of sorting out tribal differences was the annual competition at the volcano Rano Kau. High on the rim of the crater was the ceremonial village of Orongo. It was built to worship the god of fertility, Makemake and became the site of the gruelling competition.

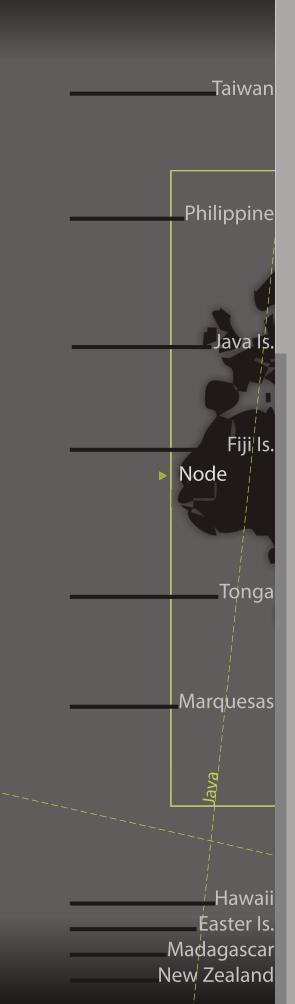
After the civil war between the short ears and long ears, and the subsequent fall of the long ears a new competition started. High on the rim of the crater known as Rano Kau was the ceremonial village of Orongo. Built to worship the god of creativity, Makemake, it became the site of a grueling competition.











3500 B.C.



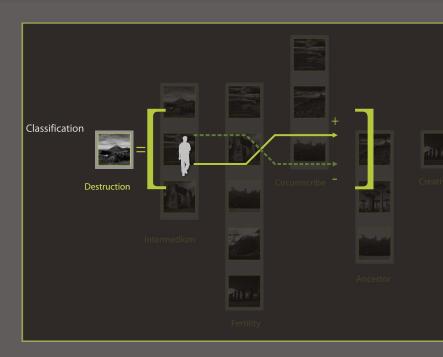
New Zealand

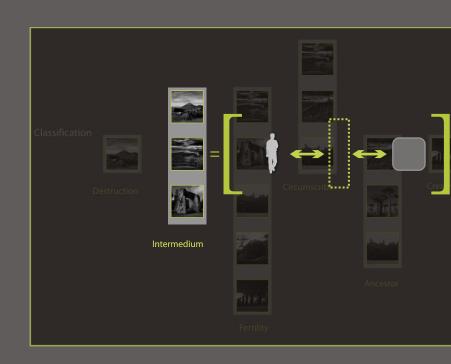
02

Madagascar

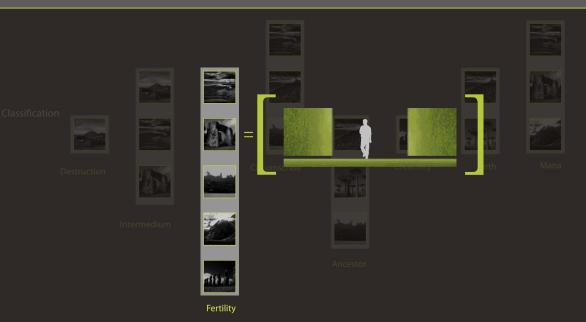


CONDA

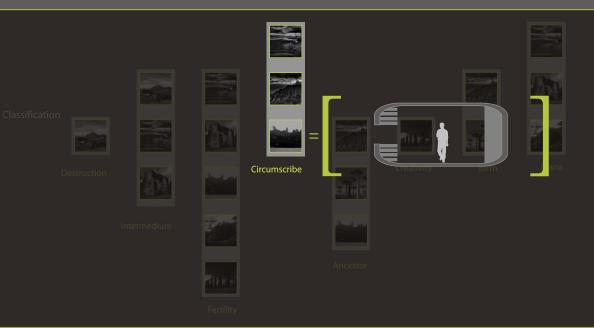


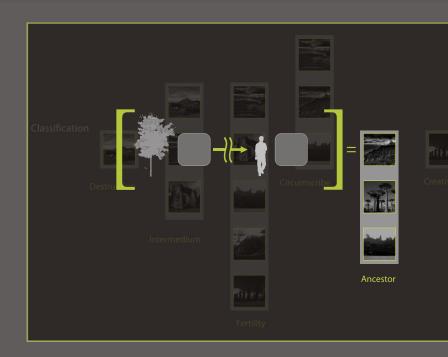


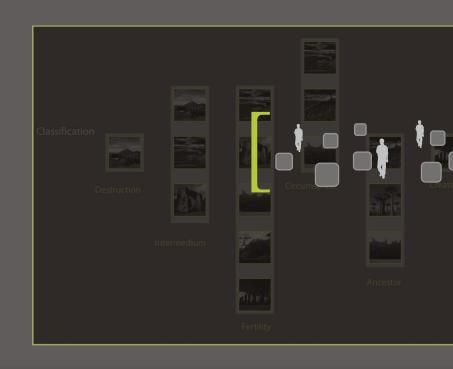




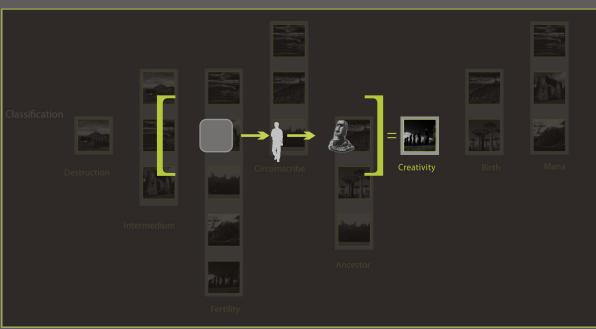


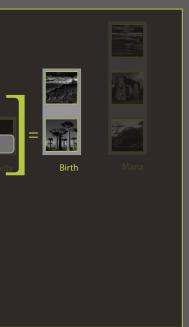


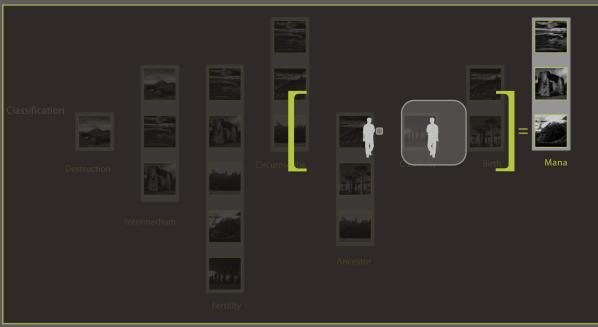




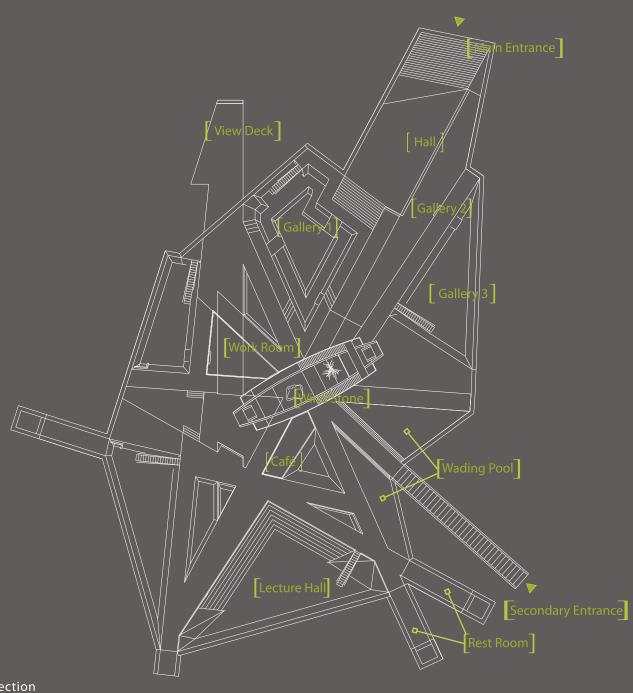






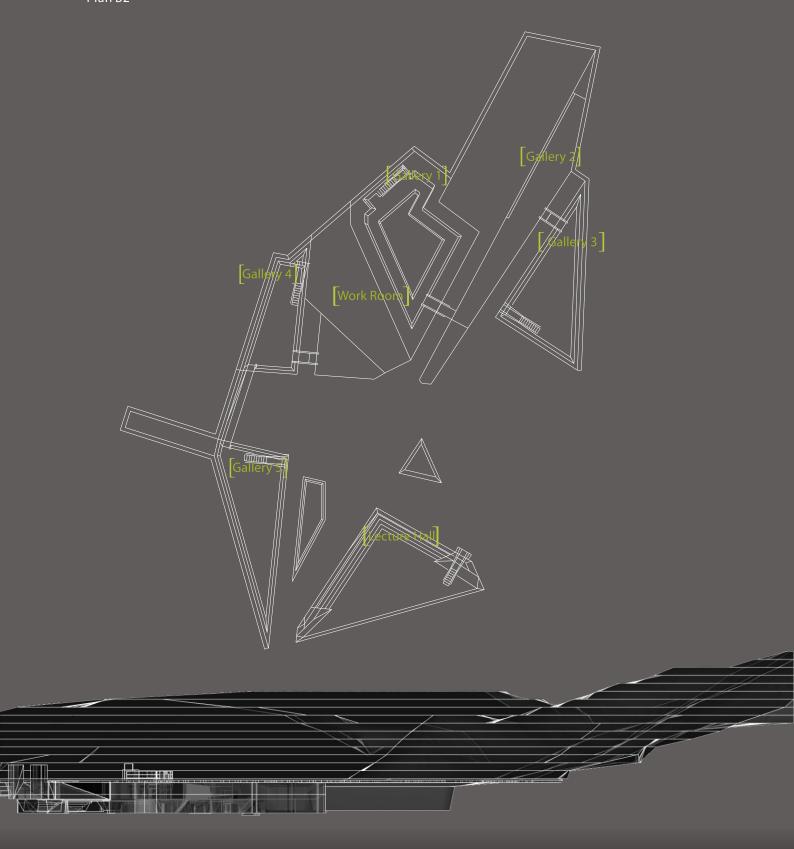


Plan B1

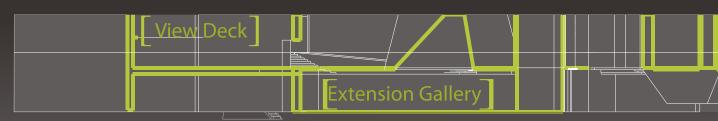


Site section

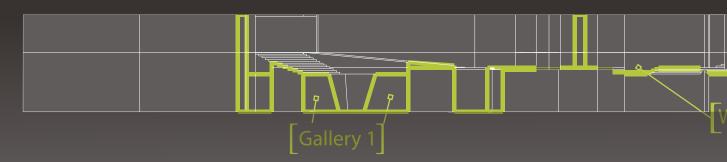
Plan B2

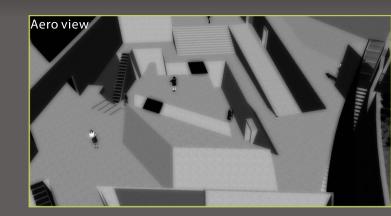


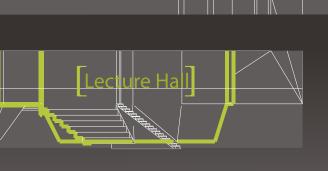
Section A

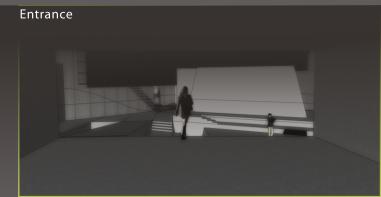


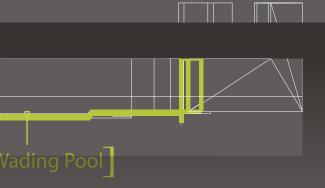
Section B



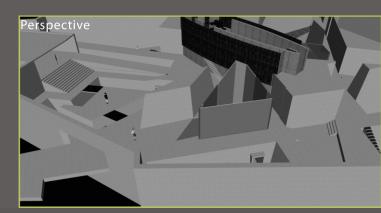








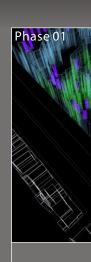




Modify 2



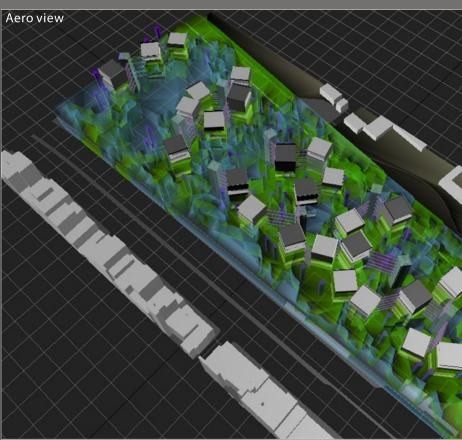
Locate in the undisturbed corner on campus of NTHJ. Also beside the most congested road in the Hsinchu city by a wall. The east-yard residential area of the faculty is a greenery boundary in between these two contract properties. The low capacity of resident area now has to be modify in order to reach a higher requirement. The main idea is to use the original distribution of foliage as a clue to define the allocate for housing. Take an image process as a method and preserve most of existing plant.

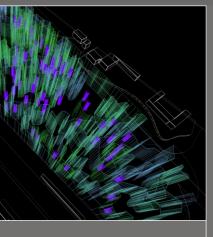


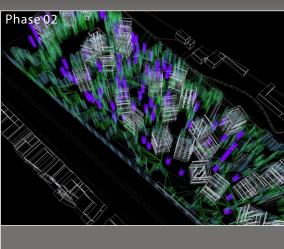
Episode _03

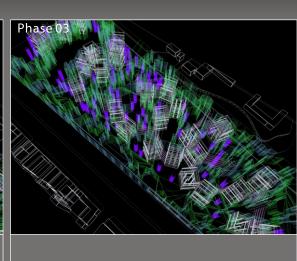
Collective housing

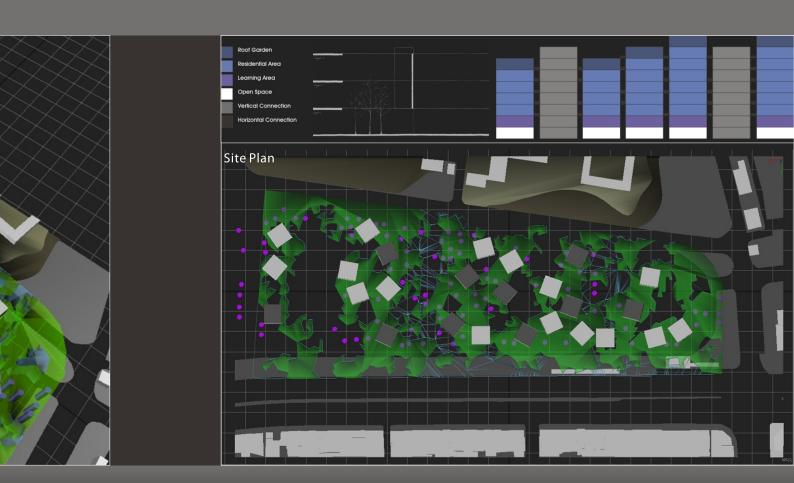




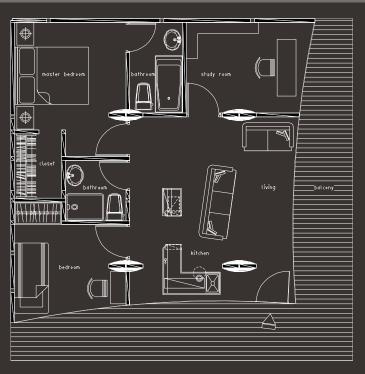


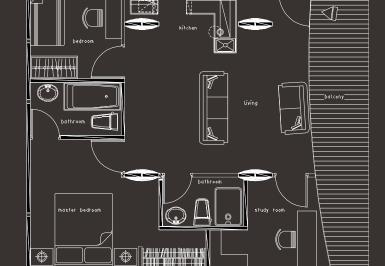






_03



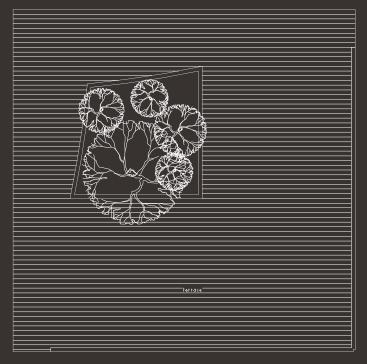


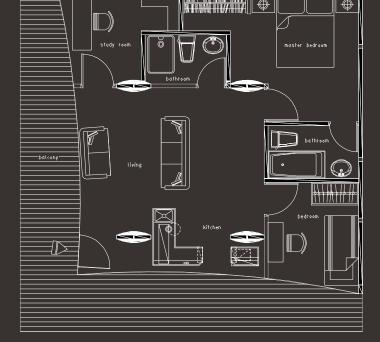
Plan type A

Plan type B

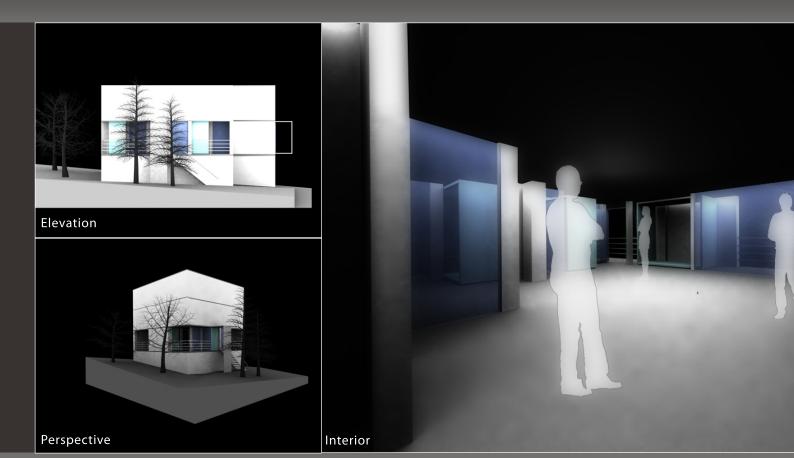


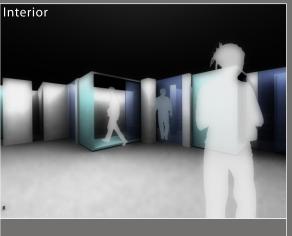
Plan type (



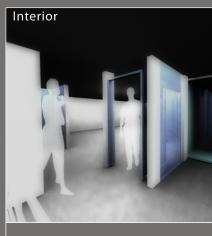


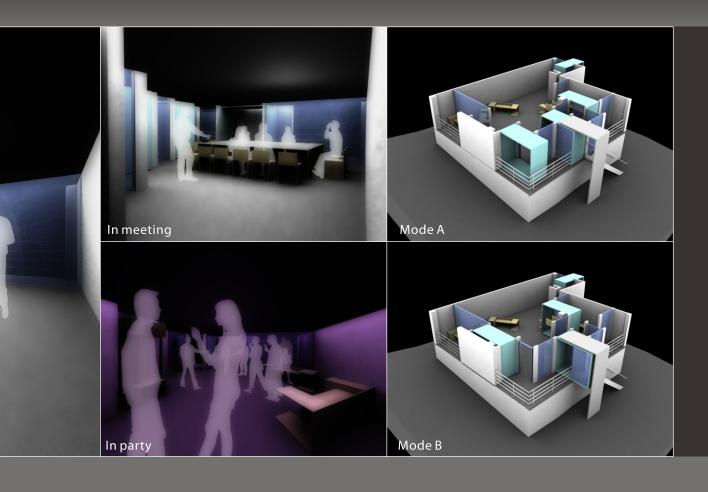
Roof plan Plan type D

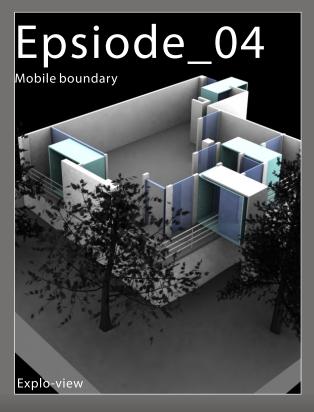












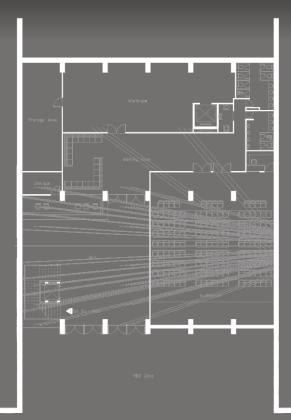
This is a project of re-modle for the meeting room in THU architecture building. An interface between outside and interior which is moveable. This can indicate the programs which take place in the room. The programs define the boundary and make an intermediate place in the environment. Create a mobile facade and space.



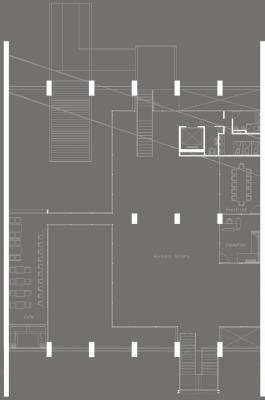
Epsiode_05

Expand modern art

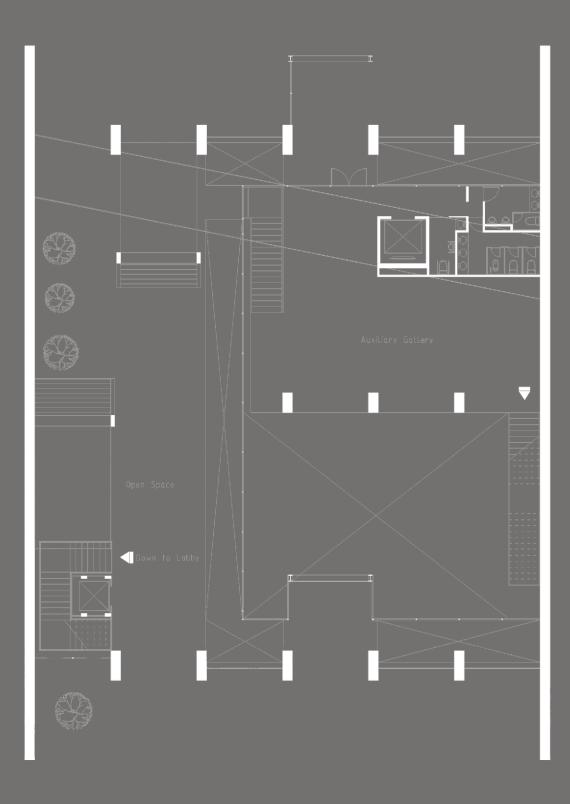
MOCA - Museum of Contemporary
Art is an old building remodel from
the previous city hall of Taipei city.
Near a MRT station and now
severed as popular museum. It has
to be extend to reach the higher
need for new exhibitions and
multiple functions. Through the
investigation of the urban context, a
new link between city life and art
could be created. New space for
exhibition, reading, café, office,
work studio and lecture.



Plan - B2

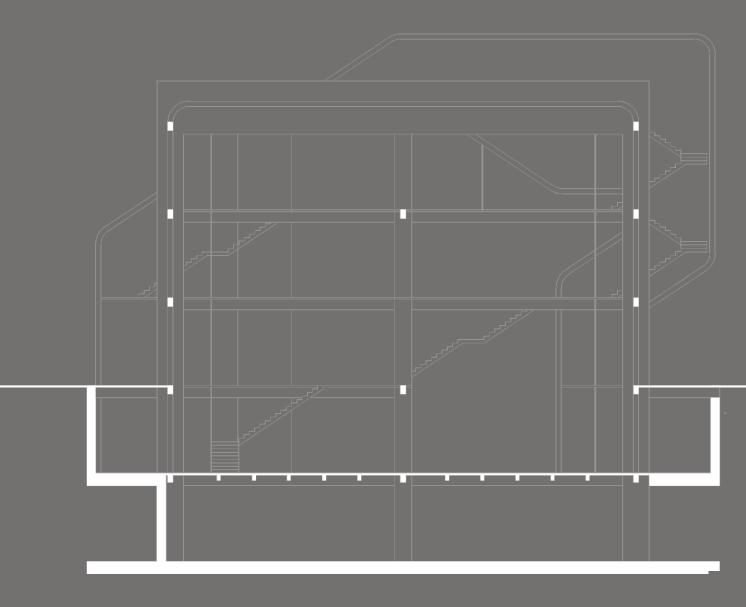


Plan - 3F

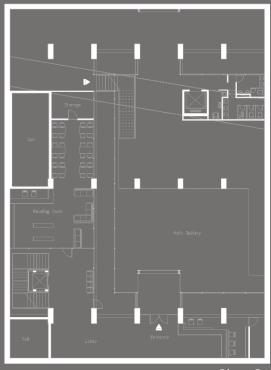


Plan - Ground floor

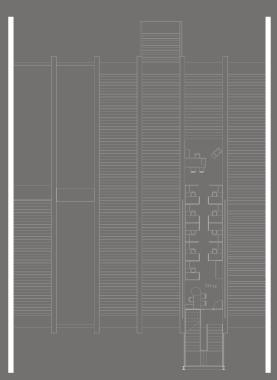




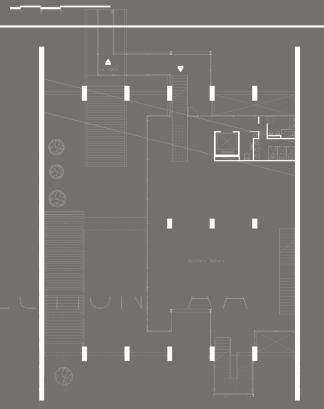
Section AA'



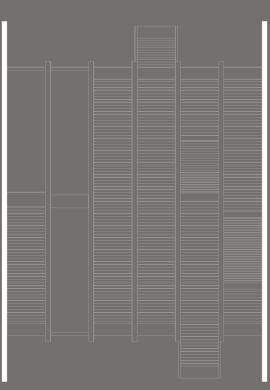




Plan - 4F



Plan - 21

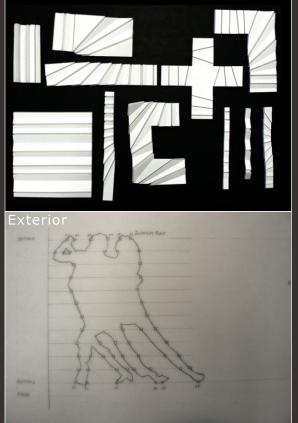


Plan - Roof

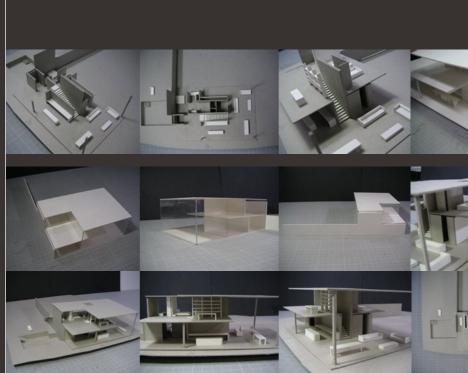


Concept: Continuous flow of drift
Integrated action, Staggered through the. A place to stand. Swiftly moving.

Design: Study foamcore material characteristics of its own. Found hidden in a shallow surface. 2D is the pattern. Controlled by the thickness of the notch of the original stiffness of foamcore. Began with a flexible and sheet material at this time has no longer able to stand alone. Need to rely on each other and support. Screen capture from the film moves lines. Its depiction in the material. The beginning of the winding strip foamcore to find space through the reverse, pause, flow and drift. By cutting the lines of the tone of its own began to change the form of development can not be controlled object itself. To find a balance between their own complex physical only from a simple strip. Entangled in the chaos there are harmonic order continuous integration of all sports. Simple, harmonic, motion.



Models









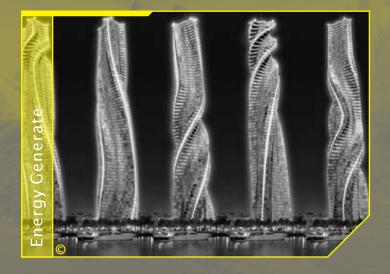




Episode_07



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The Dynamic Tower, it will generate electricity for itself as well as other nearby buildings, making it the first skyscraper designed to be self powered.

The building generates electricity from wind turbines mounted horizontally between each floor, making it a true green power plant. It's wind turbines are practically invisible and extremely quiet. Another environmentally green element of the Dynamic Tower is the photovoltaic cells that will be placed on the roof of each rotating floor to produce solar energy, approximately 20% of each roof will be exposed to the sun.







Architect Pierre Sartoux of Atelier SOA has gone a step further and put some serious design talent behind his proposal for a vertical farming skyscraper. A light-shading skin wraps around the structure and opens to admit sunlight at particular locations for various functional (and aesthetic) purposes. The building's air, heating and cooling systems are wind-driven and circulate oxygen and carbon dioxide between growing and living spaces. The simple but reinforced structure is designed to handle additional dead loads from the weight of growing floors and also serve to make the entire building more durable (and thus sustainable).







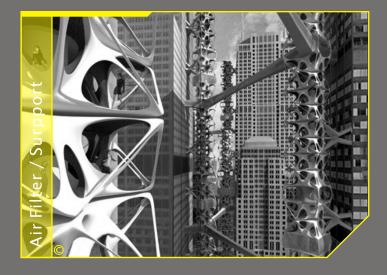


One of the first designs of its kind, the compelling vertical farm project above was undertaken by Chris Jacobs in cooperation with the grandfather of skyscraper farm concepts: Dr. Dickson Despommier of Columbia University. His ideal: all-in-one eco-towers would be actually produce more energy, water (via condensation/purification) and food than their occupants would consume. His mission: to gather architects, engineers, economists and urban planners to develop a sustainable and high-tech wonder of ecological engineering.









Given that most urban cores are already densely built, one designer has proposed an auxiliary series of structures to be attached to existing structures in downtown areas. These modular constructions would provide garden and recreation spaces for residents as well as light and air filters for the adjacent buildings. In some cases, these retrofits could even provide structural stability to aged buildings and prevent the need to tear them down. Architecturally, these modular units stand out and add another layer to the visual hierarchy of the cities around them.









The population growth is not the cause of non-sustainable development, actually is the consequence of it. We are using ancient solar energy such as fossil fuel or coal. That is more energy than nature should provide us presently. If we only use energy form ecosphere, there shouldn't be so many human on this planet. The recycle loop of natural resource has already been interrupted.

The method for sustainable development here is not always work in other regions. The thick walls mentioned in "Passive house" which is not applicable in high-density area such as cities in Asia. Every inch of land is valuable; those thick walls would occupy too much space. Although the insulation is the same important as maintain heat inside as keep them outside. And also there are insufficient areas on the roof for solar panels in these cities. Usually there are many vertical high-raise buildings for commercial or dwelling. Those apartments are usually 10 to 20 stories, sometimes even up to 30 or 40 stories. The distances between each building are small. However such a high-density city will have some benefit about sustainable development.

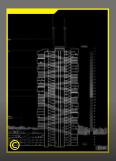
One of the largest energy consumption now-days is in transportation. People have to drive through a long distance to work or shopping if the city spans too far. The commute everyday cost lots of time and energy and produce many pollutions. Transporting of goods is also a big issue about sustainable development. It's all about global marketing. If people always depend on resource or food which are from a place far-away, it's definitely not a sustainable way to live.

If the density of a city become double, it'll only consume one-tenth of energy. That's because the saving of energy in transportation. But these cities should be based on non-pollution transportation such as on foot, bike or electric-motor vehicles. Otherwise the pollution and urban heat island effect will become worse.



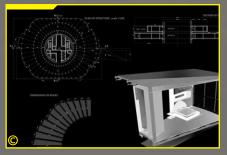








The transmission of energy is much more efficient than the transportation of goods. If we can have an urban-farm within the city, it could be a good way to solve the problem of energy and food shortage. It can produce more food than traditional farmland without the cost of transportation. It'll only need some additional electricity which is easily obtained through powerlines. The electricity generators can be put in the suitable place outside or even far away from current city. For example, large area of solar panels in tropic zone or desert can generator a lot of electricity, which then can be transmits to high-density cities or Nordic countries. By condensing moisture or collecting the rainfall, urban-farm can produce water for itself also. If there is any need of extra water resource, it's relatively easier to get from pipes.



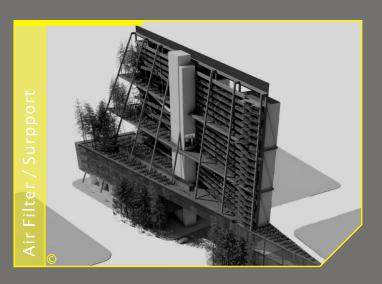


Individual has responsibility to contribute for sustainable development. But more responsibility should be put on professional and corporate.

Electricity is a clean energy. People driving car run on electricity often think that to be environmental friendly and has zero carbon emission. But it's quite important to trace where the electricity came from. If it's form solar panels or wind turbines that's really clean energy. Otherwise if it was came from thermal power planet, it already polluted the environment from begin. That's why a "energy passport" is also important as material passport.

We must pull and push people to live a sustainable way at the same time. Give Information to people and educate them about current situation and how important sustainable development is. Then we can give pressure on the authority to make them doing the right thing and making the correct decision on the way to the future. On the other hand, the authority must give regulations and laws to support sustainable development and punish those who are not follow it, because it will jeopardize all humankind.

Sustainable development is a global issue. If the world wants to be sustainable, all people on this earth have to be it together. Otherwise countries which are fall behind will become factories or landfill to those "advanced" countries.

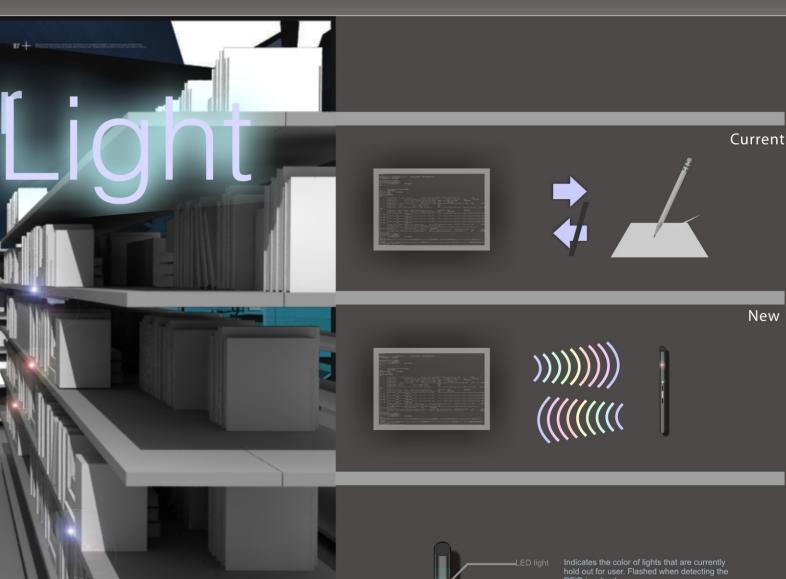




Episode _08

Information architecture





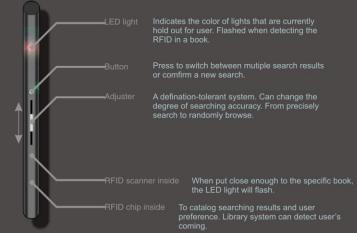
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