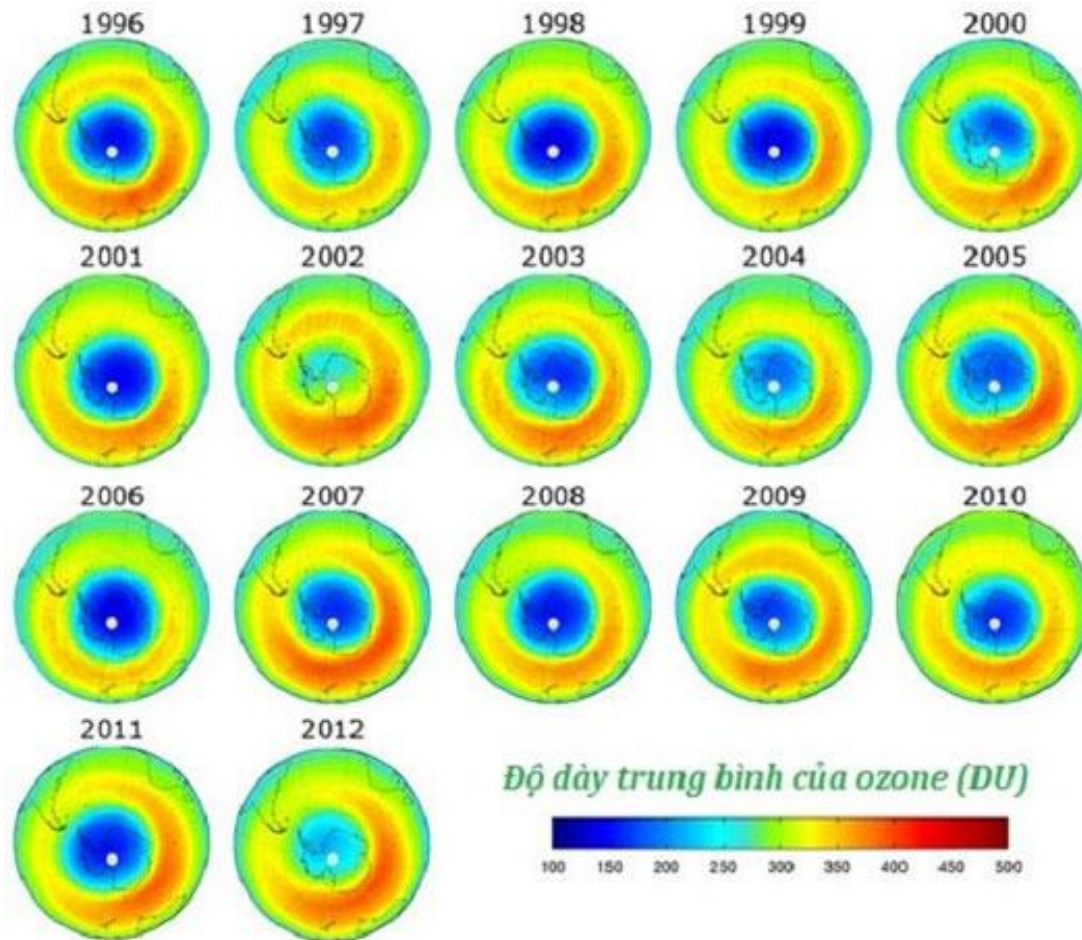


تأثير التغير البيئي على العمارة

Architecture as a manifestation of
environmental change

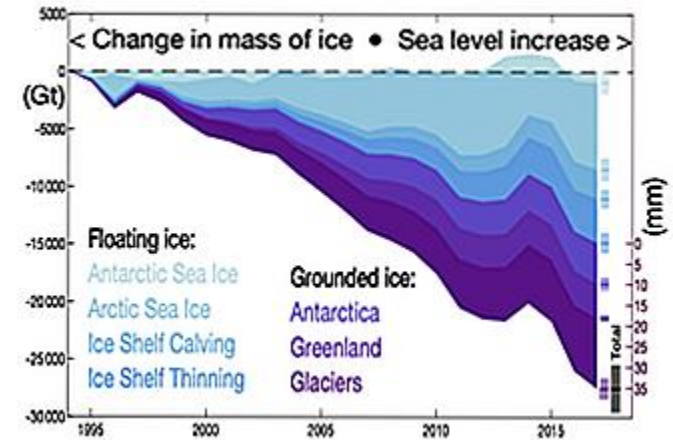
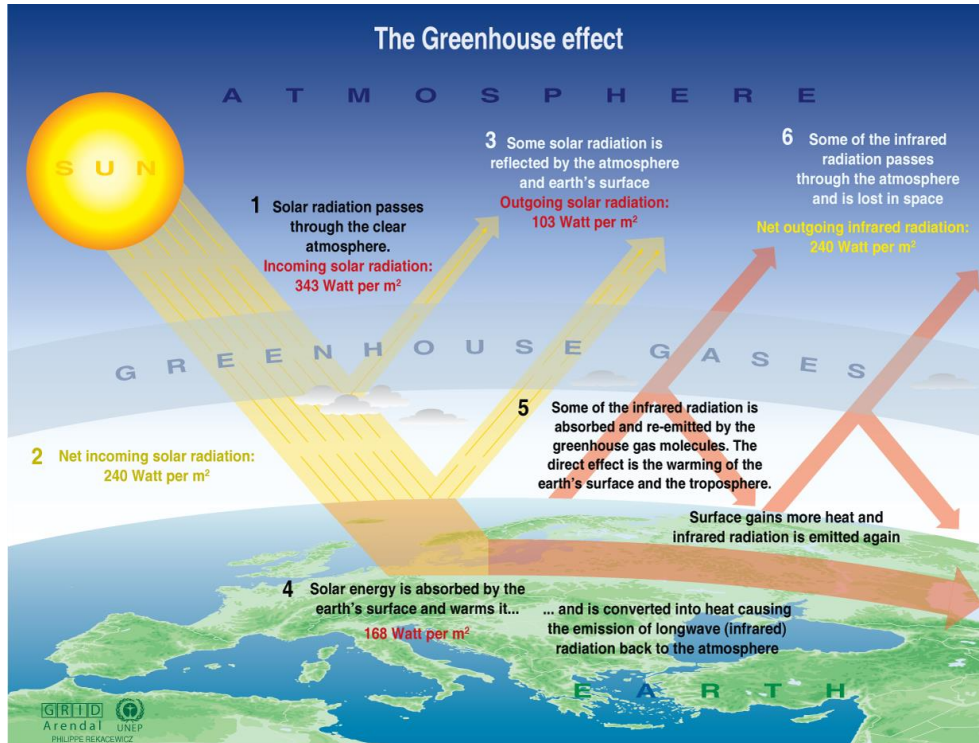
Inductive Prediction

تنبؤ استقرائي



deductive Prediction

تنبؤ استنباطي



Sources: Okanagan university college in Canada, Department of geography, University of Oxford, school of geography; United States Environmental Protection Agency (EPA), Washington; Climate change 1995, The science of climate change, contribution of working group 1 to the second assessment report of the intergovernmental panel on climate change, UNEP and WMO, Cambridge university press, 1996.



deductive Prediction

تنبؤ استنباطي

الخليج أونلاين
نبض الخليج العربي

هامبورغ

ألمانيا

هلسنكي

فنلندا

إسطنبول

تركيا

إزمير

تركيا

كوبنهاغن

الدنمارك

المصدر



مدن
مهتدة
بالغرق

كشفت الأبحاث التي أجراها علماء إسبان عن ظاهرة الاحتباس الحراري، أن مدن ستغرق تحت الماء بحلول العام 2100 بسبب ارتفاع مستوى سطح البحر إلى أكثر من نصف متر

أمستردام

هولندا

أثينا

اليونان

برشلونة

إسبانيا

دبلن

أيرلندا

غلاسكو

اسكتلندا

deductive Prediction

تنبؤ استنباطي



deductive Prediction

تنبؤ استنباطي



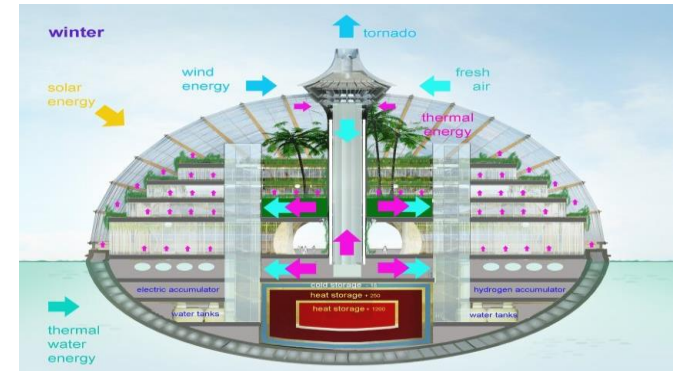
deductive Prediction

تنبؤ استنباطي



deductive Prediction

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deductive Prediction

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Seeker

deductive Prediction

تنبؤ استنباطي



NOAH'S ARK

NOAH'S ARK is a concept for a floating city, designed by the architectural firm HOK. It is a large, multi-level structure that can be moved across the ocean. The ark is designed to be a self-sufficient community, with its own power, water, and food supply. It is intended to provide a safe haven for people and animals in the event of a global disaster.

END OF THE WORLD #1

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DESCRIPTION

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CONCEPT

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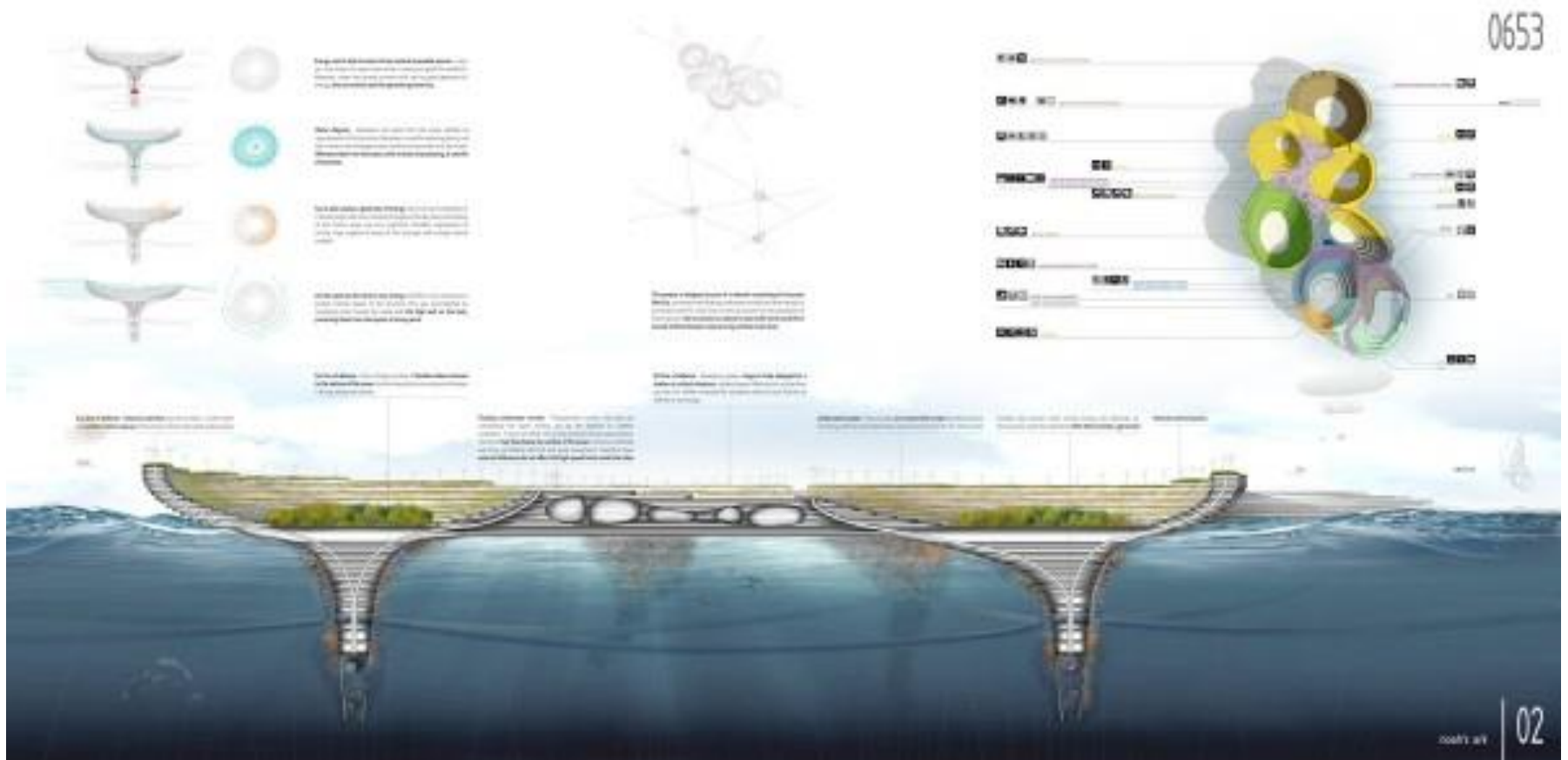


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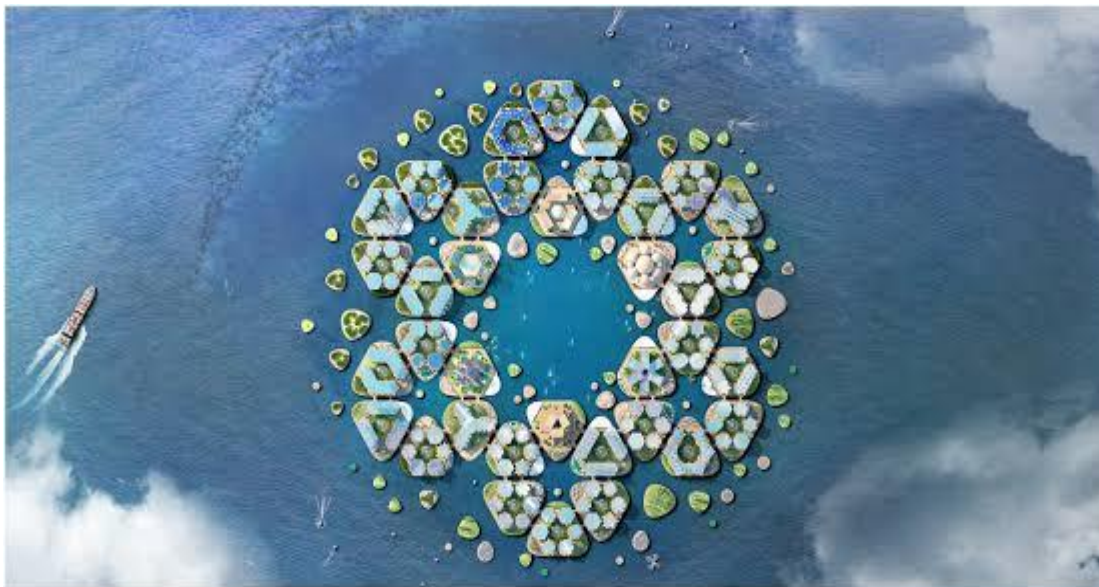
deductive Prediction

تنبؤ استنباطي



deductive Prediction

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deductive Prediction

تنبؤ استنباطي



Project objectives

The main objective of this project is to create a sustainable building that is both functional and aesthetically pleasing. The building is designed to be a landmark in its community and to serve as a model for other sustainable buildings.

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Sustainability of the material

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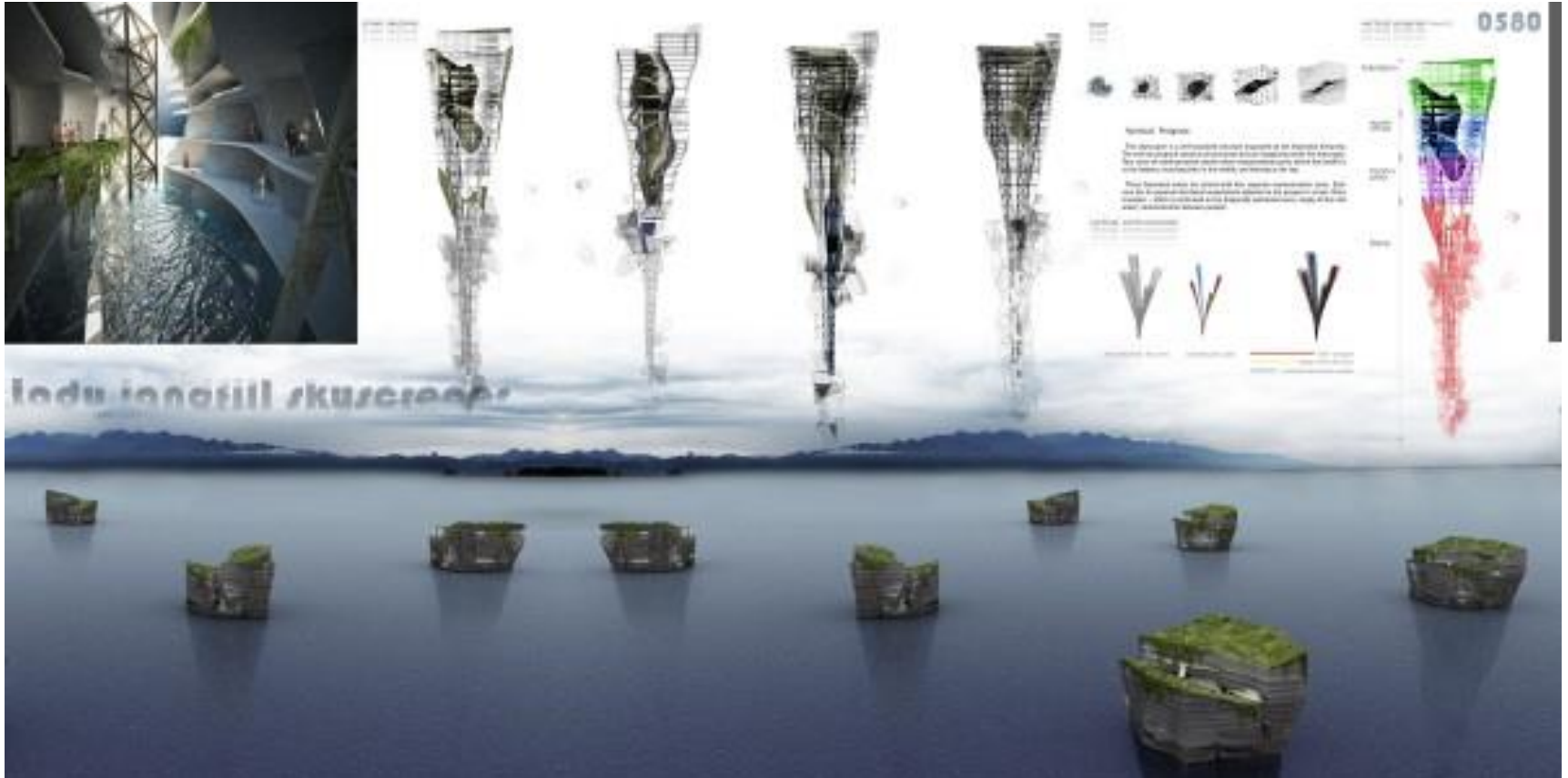
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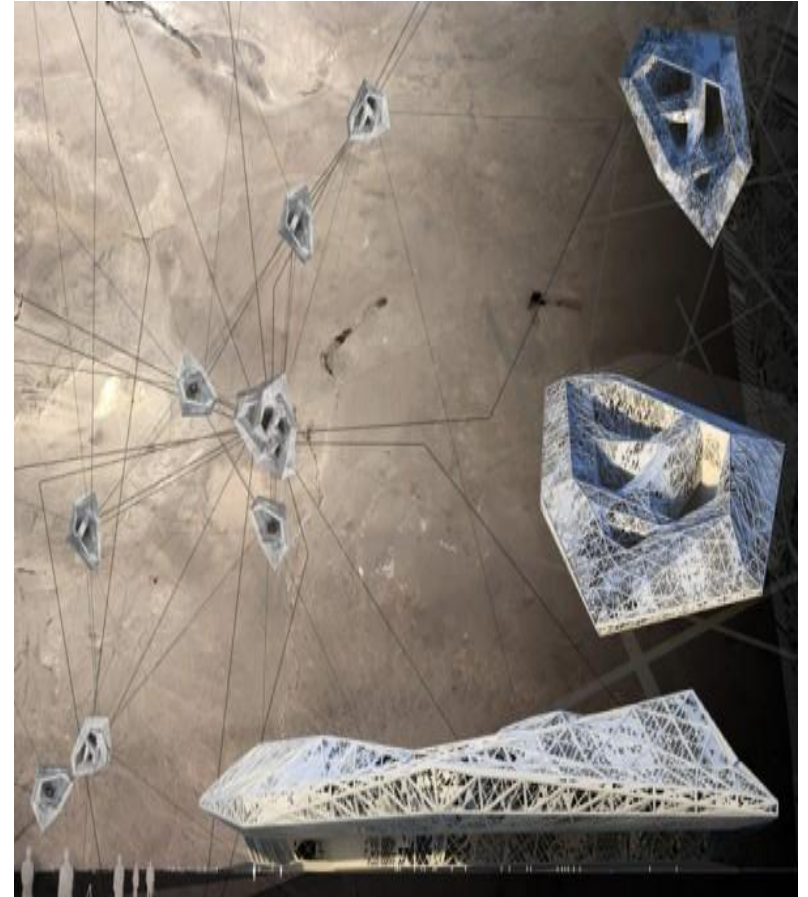
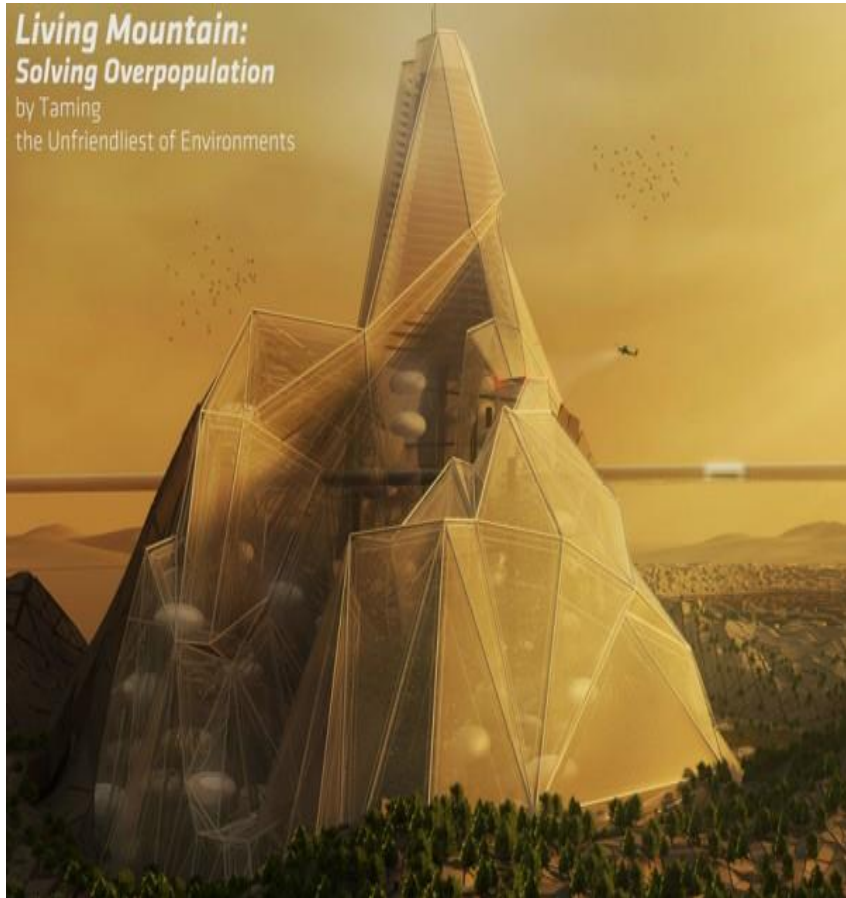
deductive Prediction

تنبؤ استنباطي



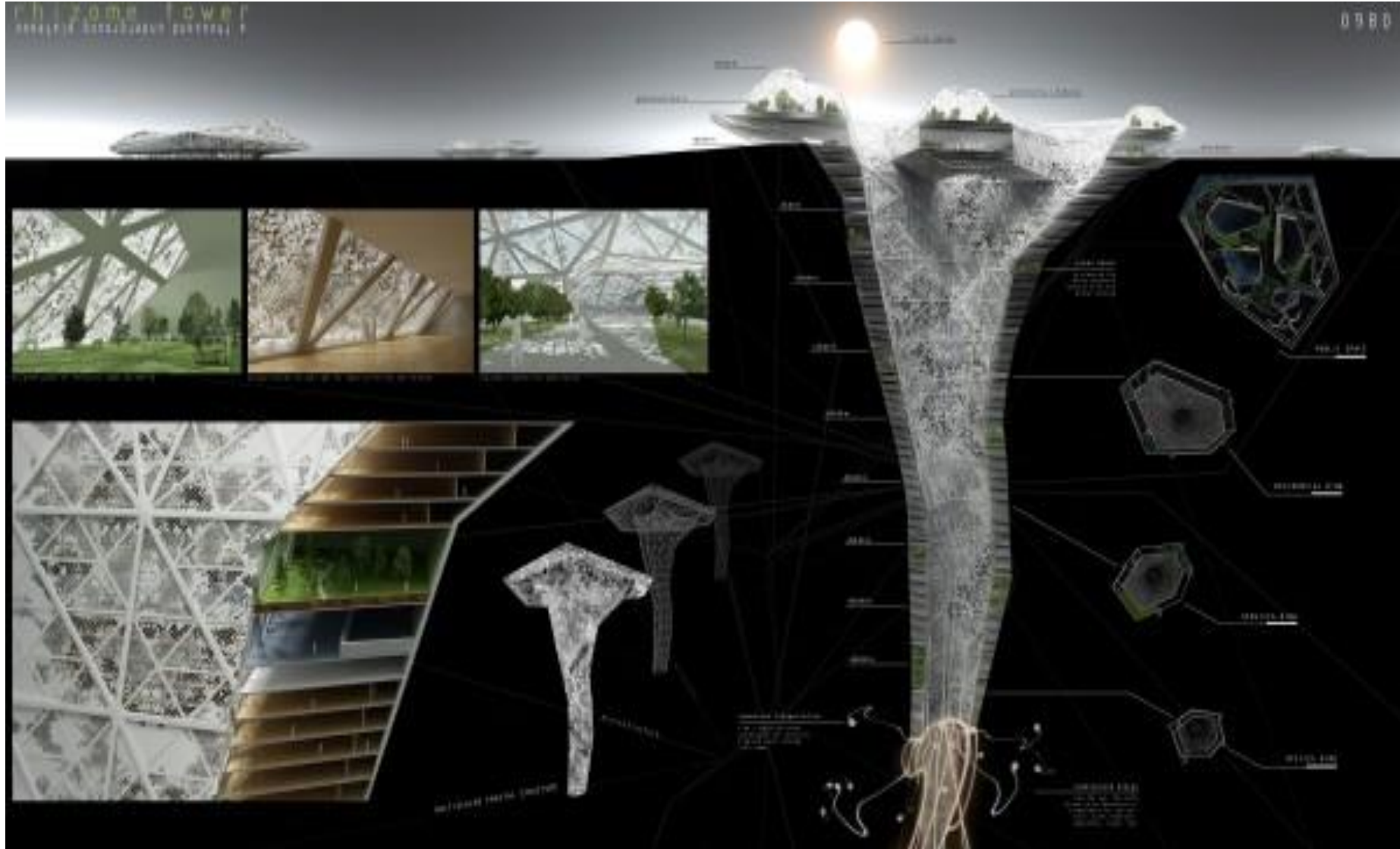
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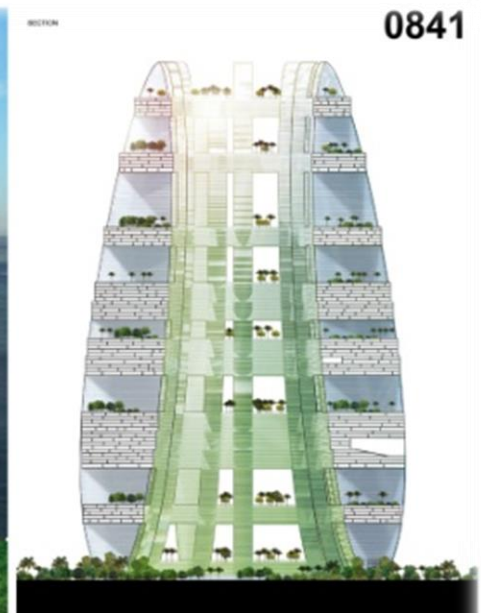
deductive Prediction

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deductive Prediction

تنبؤ استنباطي



deductive Prediction

تنبؤ استنباطي

Tree of life

The concept of "Tree of Life" is a fundamentally concept concerning the life of Man in which he views himself not as a consumer but lives in symbiosis with Nature.

0397

1. The generation of the structure, 2. The existing structure, 3. The final space after the structure.

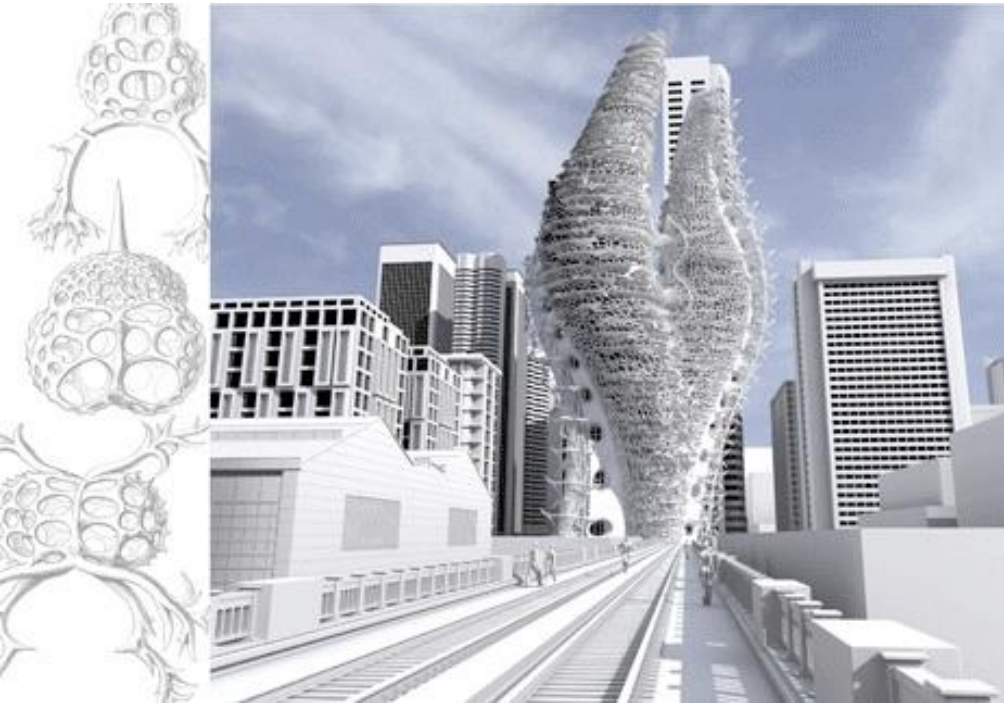
Revolution change

برج الشجرة تايوان



Revolution change

ناطحات السحاب الراقية



Revolution change

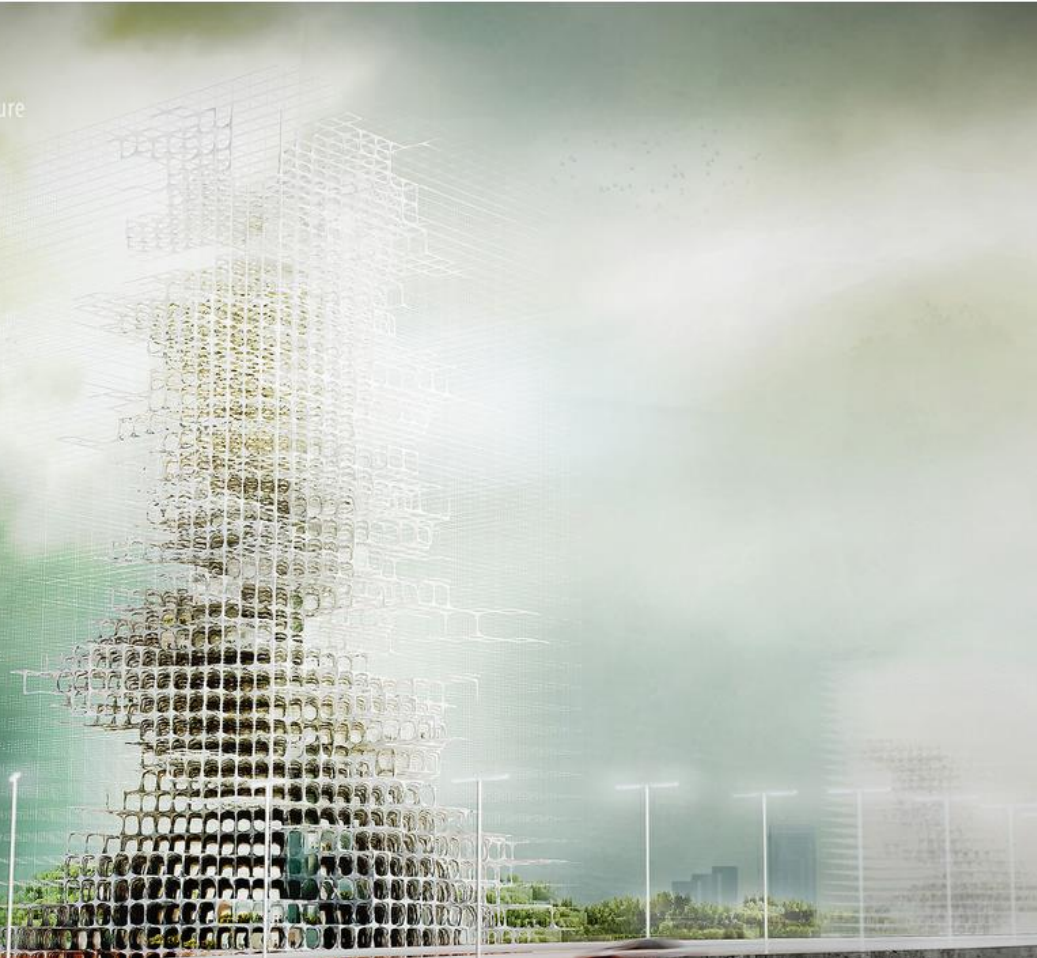
ناطقات السحاب الرأسية

BIO CITY



Revolution change

PROPAGATE tower grows.
carbon assimilating structure



0612

Challenge

Carbon capture is an emerging practice aimed at capturing and containing greenhouse gases to mitigate its net availability in the atmosphere. However, existing carbon capture practices use the method of point capture, capturing carbon gases at the source, requiring a significant initial investment in additional facilities, infrastructure, and maintenance of underground storages. Hence the implementation of point capture method may directly and indirectly contribute to a significant sum of greenhouse gases through construction, material production and processing, in addition to the contingencies associated with underground storage.

Current research on carbon gases suggest alternative method of capture, such as air capture through carbon-phobic resins and material processes that reform carbon dioxide into solid construction material. Taking this one step further, we hypothesized a material capable of assimilating carbon dioxide as a means to self-propagation. Employing such a material allows air capture of carbon dioxide and the resultant production of a solid construction material capable of supporting load.

Channeling its properties, we propose a skyscraper that grows.

Concept

By constructing a simple vertical grid scaffold as a framework, we are given control to the extent and underlying structure of the skyscraper. Required ingredients for material propagation are supplied through the scaffold, while its actual pattern of growth is defined by environmental factors such as wind, weather, and the saturation of carbon dioxide within the immediate atmosphere. Thus each resulting structure is self-generates in its formal expression while maintaining a regular spatial organization for ease of occupation and adaptation.



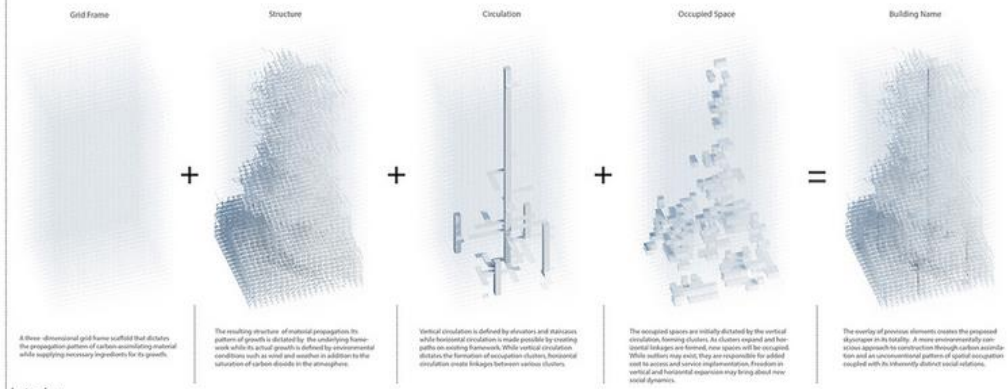
Various circulation methods can be employed depending on the need, and retrofitting of circulation enables the occupation of individuals. Naturally, clusters of habitation will emerge with the circulation access at its center, with each structure able to accommodate multiple circulation access and clusters. As occupied spaces increase, varying access can be linked to form lifted streetscapes between a multiplicity of clusters. While programmatic attributions are left undefined and inherently open to occupying individuals, the open structural framework allows terris-like stacking and up to six directions to extend existing space. The regularity of its physical form guarantees the ease and accessibility of occupation, attracting and inspiring new methods of habitation within the skyscraper. Given the three-dimensional freedom of occupying space, new forms of social interaction may also emerge as a result.



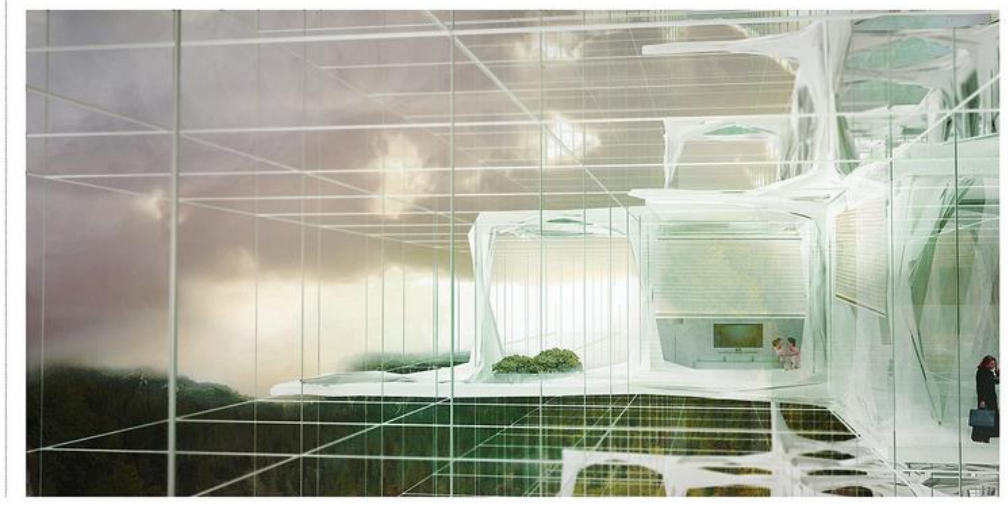
Unlike conventional skyscrapers which rely on steel frame and concrete casting, the proposed skyscraper suggests a more environmental conscious construction method, an alternative mode of occupation and ownership, and possibly a distinct organization of social relationships.

Revolution change

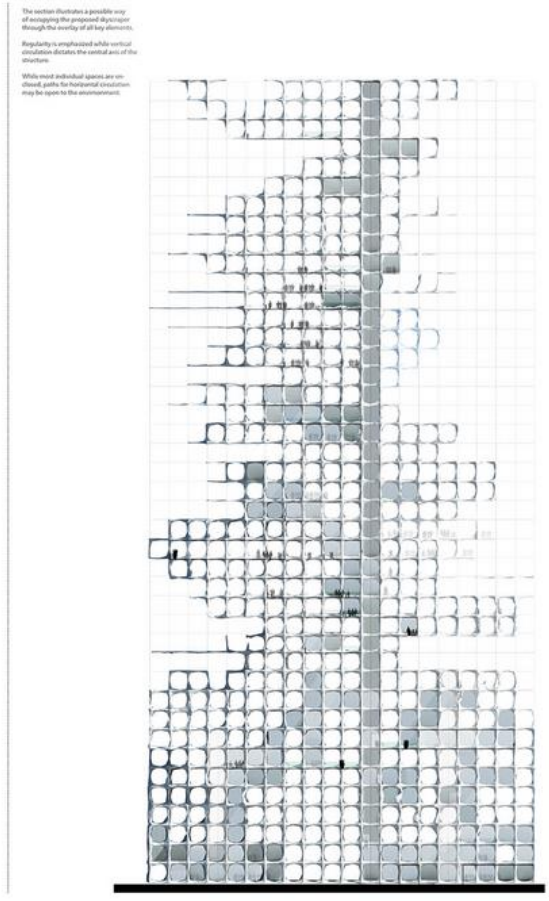
Diagrams



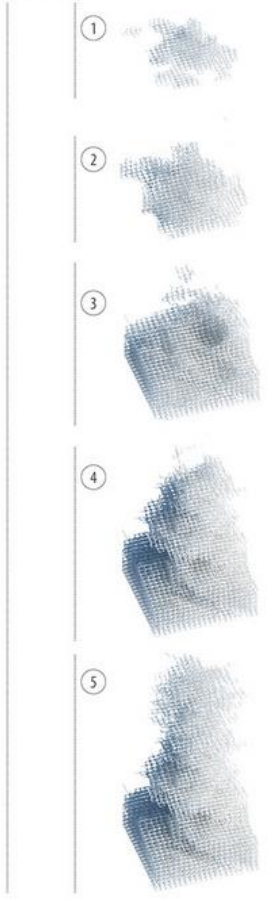
Interior



Section



Structural Growth



Revolution change



SAND BABEL

SOLAR-POWERED 3D PRINTING TOWER

Background

When we first visited the Sahara Desert in southern Algeria and saw a seemingly boundless expanse of sand further than the eye could see, we thought of the planet Arrakis from the movie Dune. As a designer, not a science fiction movie director, my initial instinct to transform the desert led us to begin a feasibility study on constructing man-made residences in the desert. In our view, this not only increases the amount of living space available for mankind, but also protects against the ever-increasing threat of desertification.



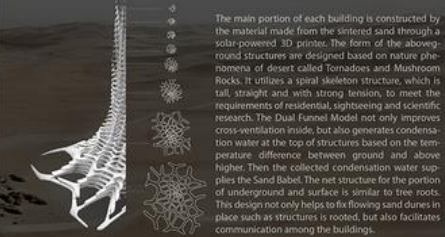
Idea

Thanks to advances in manufacturing technology, specifically in the form of Solar-sintering 3D Printers, our design may one day come to fruition. In my eyes, sand is a perfect building material – it has stable chemical and strong physical properties and is resistant to weathering. The sand is our thermoplastic powder and the ample sunlight of the Sahara is our inexhaustible source of energy. Sand and sunlight, these are the sources of Sand Babel.

3D Printing & Structure

Solar Energy + 3D Printer + Sand $\xrightarrow{\text{Sintering}}$ Sand Babel Building

Sand Babel, which is a group of ecological structures, is built in the vastness of desert, serves the purposes of both scientific inquiry and sightseeing. The structures are divided into two parts: The first part is above ground part that consists of many independent structures and forms a well-proportioned Desert Community. The other part is underground and surface, which is connected by buildings, and creates a multi-functional tube network system.

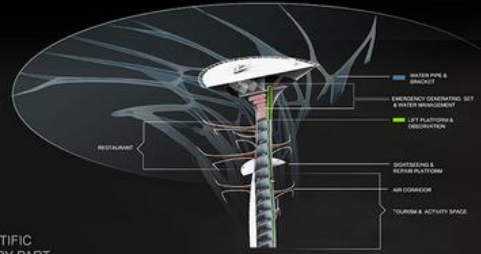
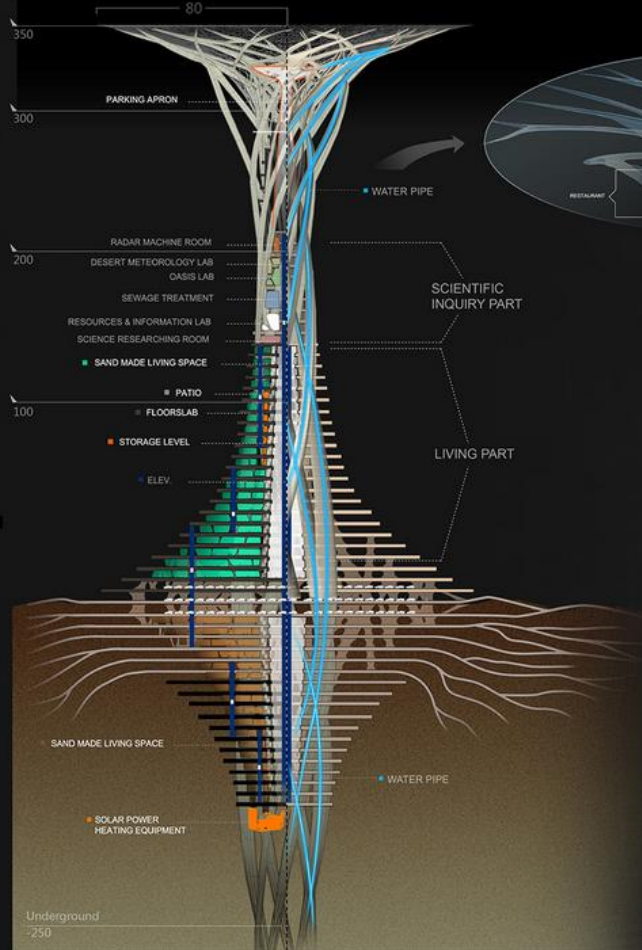
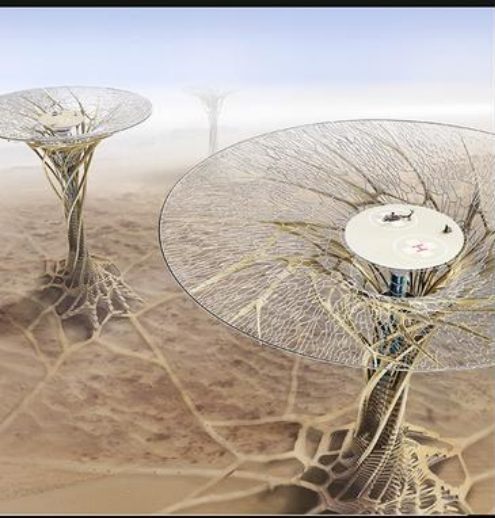


Green Architecture

Sand Babel is also a future Green Architecture in light of its sustainable development. It harnesses local resources by using 3D printing technology to turn sand into building materials, thus cost of construction materials and transportation is dramatically reduced. It also helps to solve the problem of sand dune stabilization effectively. In addition, with intention to have a zero carbon footprint, the buildings utilize temperature difference to create internal airflow and water vapor condensation, and use solar energy, wind energy, plus temperature difference to generate clean energy for the complex.

Sand Babel can be called as wonderful flower of desert. It opens up new series of thoughts and establishes a new model to harness desert for mankind.

Revolution change



Condensate-gathering Net

Collecting Condensate Water in the Top of Building
Transporting and Storing the Condensate Water



Solar-powered 3D Printing Technology & Mesh-form Sand Fixation Structure

Preventing Sand to Move
Rooting Buildings
Constructing Channels of Buildings



Helix-form Dual Funnel Model

Enhancing the Building Interior Air Circulation



Reducing the Building External Wind Drag
Conductive to Reinforce the Building Structure



SAND BABEL

SOLAR-POWERED 3D PRINTING TOWER



Revolution change

Climatology Tower: Healthy Climatology for the city

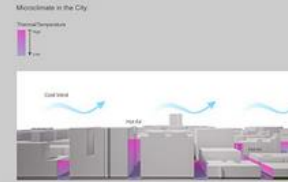
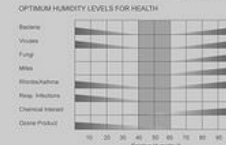
If one feels ill, you may need to seek medical assistance.
 If the city is sick, what will we do for it?
 Healthy Climatology in the urban environment is an indicator
 for a safe living - protecting civic health in the city.



Society is concerned about current levels of environmental damage, resulting from increased pollution in the modern city. But to what extents are considerations of the microclimate's effects on urban spaces. Cities, such as Tokyo and NY, are now full of industrial materials such as concrete, metal and glazing, and create a sub-climate between buildings and empty blocks. Factors from these environments, such as air, moisture and temperature directly affect human health. While toxic substances of air pollution are highly considered in relation to health, one does not always such damaging factors in the

moisture within the air. According to medical research, Asthma is caused by over humidity (70-90% watery air) and contains a high density of bacteria. Additionally, dry environments cause skin allergies and circulation diseases. The Climatology Tower therefore, is a skyscraper which is based on a research centre, aiming to evaluate the urban meteorology. Through mechanical engineering, the tower intelligently responds and adjusts to reform a safe environment throughout. Recorded climate data can additionally be associated with medical research for public health, preventing flu and infections.

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Key Strategies:

In order to maintain a healthy environment for the city, two main strategies are employed:

- 1. Environmental control engineering:**
 The environmental control system consists of evaluation and operational programs. Evaluation programs inspect city climates through a variety of factors such as insulation, radiation and thermal coverage. Collected data is compared with humidity levels and then responds in a balanced stabilisation, reducing or increasing to optimise environmental conditions. These processes will combine automatic mechanisms with physical circulation to achieve better atmosphere.
- 2. Information expression:**
 In addition to automatically adjusting to optimal environmental conditions, data is transferred from a control centre to extensive city departments, giving opportunity to ultimately maintain a healthy environment throughout the entire city. This can benefit entire communities, notifying all of present and upcoming environmental hazards and conditions. Climatic information is also displayed publicly, through digital networks, notifying the public on maintaining certain conditions, to preserve both energy and health.



Revolution change

Functional Programmes:

The following examples indicate operations in various aspects of the Climatology Tower, including programmes such as a research centre and mechanical department.

Environmental hazard coefficient display

The coefficient display follows the inspection results in demonstrating warning hazards for the public. This programme continually protects citizens through updates to healthcare centres, and personal networks.

Microclimate inspection

Following unusual climate changes, data is analysed and monitored through various mechanical processes.



Data collection centre

This centre is based on a statistical program for evaluation of microclimates in the city. The data collection centre generates collected results to manage and transmit adjusting environmental issues.



Water Purifying System

From the top to the bottom, a water purifying system uses gravitation forces in principle to clean the water reserves from the natural precipitation.

Green Terraces

Based on top and at the bottom of the tower, these terraces are designed to create air circulation in between tower blocks.

City Botanic Garden

Education Centre

Global positioning system

Each Climatology Tower can transmit information with other cities through GPS technologies. Capital cities for example are able to connect climate data through satellites to reach other dwellings to maintain entire regional meteorology.

Green Terraces

Solar Energy Generator

The tower roof is equipped with solar panels, allowing for the generating of electricity for the research centre and mechanical processes.

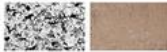
Air Pollution Purification

The exterior facade system contains a filtering function to purify air quality.



Urban moisture/temperature adjustments

The elliptical facade is built with ventilated material, which can emit or absorb moisture from nearby buildings; the inner spherical structure consists of ceramic materials containing water pipes to maintain water for evaporation. This action can adjust water-related temperatures and humidity.



Air Conditioning

Centrally to the tower is an air conditioning unit which is equipped with a turbine for increasing air circulation.

Urban climatology research centre
Natural circulation and mechanical systems
Public Space



Natural circulation and mechanical systems:

Based from natural circulation theories, these mechanical devices adjust moisture levels, making automatic modifications to reach optimum environmental conditions from the research centre.



Urban climatology research centre

This department is based on the city's climate collection and distribution of analysis to professional programmes. All research data is integrated into a library system, where various generic typologies are available for further utilization. The research centre also connects with local medical institutions and health departments.



Public Space

The ground floor provides public access for citizens. On this level, the education centre runs healthy living courses, demonstrating health issues between society and the urban environment.
-City Botanic Garden
-Education Centre

Revolution change

