

BIOTECHTURE : Futuristic Approach in Architecture

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ABSTRACT

“Great things are not done by impulse, but by a series of small things brought together. And great things are not accidental, but must certainly be willed”. Said by great painter Vincent van Gogh. Same goes with planet earth and its condition at present. Planet Earth aged 4.5 billion years, is one of the beautiful planet in the solar system, as it contains numerous kinds of living beings and their habitats in an ecosystem and there exists again number of ecosystems each with a different physical and biological design and property which deal with the surrounding habitats and ecosystems to maintain equilibrium in the environment. As the time passed on many changes occurred on this planet, many species vanished and many new were born. It comes all about is humans, ages ago humans were first appeared according to the fossil records about 66 million years ago they were part of the nature and environment, but as the time passed on the humans started evolving and started shaping the earth according to their comfort. They killed many ecosystems and wiped off many habitats without thinking what is going to happen later and without knowing where their actions are leading them to. Now its 21st century the world has been cursed with the knowledge provided to humans, it’s all habitats is polluted, all ecosystems are affected, and the environment is totally destroyed. The planet earth is yelling to heal and to be cured from the destructions caused by the humans for their growing population and comforts, power and status. Now it’s time to heal our planet or else we will end it and ourselves with it. How to heal it? By building with nature many says, but they only say, and end building in nature but not with nature. Now the condition of the planet is such building with nature doesn’t help at all. Then what? Now it’s time to build within the harmony with nature. Can be named as ‘Biotecture’ instead of ‘architecture’. Do we need a new breed of buildings to save this planet? May be, it’s time to build ecosystems rather than to construct just buildings. This will help to improve the living conditions of the planet.

Key words- *vanishing species, destruction of habitats, equilibrium in environment, earth yelling to heal, cursed with knowledge, mankind, polluted habitats, over population, evolution of new breed of buildings.*

INTRODUCTION

Architects are not endowed with designing just buildings but with time, we are now building ecosystems. This expanded role of architecture is becoming more and more evident with the

passing century, where the profession found itself from making enclosures for functions, to defining how the functions would be. The keywords to define architecture, transformed from just Aesthetics and Order, to efficient and sustainable. And it's still continuing to change. As we enter into the 2020, these changing definitions are becoming more noticeable. With our education springing from the grassroots of architecture legends, to modern stalwarts of today, more braver design explorations and more diversity in design, with knowledge passed on to progressive countries. As architecture evolves these themes continuously in future.

Proposing the next step-a living architecture which is capable of growth, birth, death with the possibilities of self-directed evolution. In this kind of future, there might not be any architects; there would be architectural veterinarians, psychologists. building nutritionist, pollinators and building isometric trainers to keep skyscrapers from developing flabby muscles. [1].

ATTRIBUTES OF A CONSTRUCTED ECOSYSTEM

Designing the ecology 'ecosystems' is the new challenge for today's architectural world. To emulate and replicate our built ecosystems as they don't cause harm to the surrounding habitats and ecosystems. [2]

Ecosystem Biological Structure

Our earth is covered by the thin firm layer known as biosphere around 10,000 m height. Within the biosphere all the life forms exist and live and within the biosphere there are units in nature which is the ecosystem ecology model of nature. Now ecosystem consists of both biotic components and abiotic components and they both contain together to form a whole and this is what we must try to emulate and replicate in what we do. Now these abiotic and biotic constituents have the complex relationship. Now professional architects and engineers have to integrate and organize biotic constituents' property of physical, synthetic, artificial for the mapping of the abiotic and biotic constituents.

Ecosystem Biodiversity

Now not only by keeping vegetation and biotic constituents we have to go beyond that. We have to evolve the biodiversity by putting the vegetation because what we do is we separate the nature and we produce it down to almost zero. So instead we need to prepare a biodiversity matrix and identify the habitats in the site and surroundings. The habitats can be underground, on the ground, or inside the building, on walls, etc. all need to be done is establish different types of habitat in the project and identify the nature fauna that we need to bring back they are not hazardous to human beings. And grow flora that at least the fauna and from that matrix we design the landscape and which continues to go on risky for seasons and on. By creating different habitats on the different and we look at the proximity of the bring back the species like dragonflies and butterflies. Some birds zone and then migrating birds' zone etc.

Ecosystem and Provision of Ecosystem Services

Nature does various processes for us for free without human intervention like photosynthesis, absence of CO₂ and other gases. It is so complex that it is almost impossible for technology to imitate it and to accumulate it. So, what we do because of increasing deforestation daily losing the opportunity to do the plantation and ecosystem. Approach to augment building systems with biotic constituents is the demand of this hour. One approach is to use a series of ecological figures that weaves the vegetation and biotic constituents in the abiotic constituents or vice versa. so, starts with infrastructure and then we try to weave it together. [1]

Ecosystem Bio Integration

This is another complex challenge, if we are able to bio integrate everything that we do we make and we build our production system seamlessly with the natural environment then there won't be

The infra structure like social, economic, political, institutional, educational systems form infrastructure which determines what physical systems we build.

Ecosystem Responsiveness to Climate

Ecosystem respond to climate at different bios along the planet at different climatic zones there are different species, different habitats. There is a developed system that design shows straight line and a curve to show the constant temperature, constant humidity on whole year. If we adopt

bio climate techniques, we can improve the micro climatic conditions in the ecosystem without any technology and any electric machine.

Ecosystem Use and Cycling of Materials

Materials have a significant impact on environment. The relationship between the built environment and materials is to be based on the natural systems such as to build the closed loops or cycles as the nature does. We need to look at the impacts which are operational, and the impacts which is useful and we have to close the loop. To implement this, we need to make a change in mindset and residential waste recycle is not enough at the infrastructure scale.

Ecosystem Connectivity and Nexus

Everything in nature is connected and everything we do is connected if you on a switch that is connected to everything that impacted on nature. What we do is chop up the landscape and change the homogeneous ecosystem into patches and destroy it what we need to do is repair nature and make nature and whole again. If we bifurcate the nature and make it in patches by road what happens is we bridge occurs at and vegetation and it is called as eco bridge by doing so we enhance biodiversity of a location. [2]

We call green infrastructure and then we lay the roads and see that greenery is bifurcated by the roads. This can be used to correct by using the eco bridges by building the bridges above the ground and let the flow of nature continues beneath the flow of nature. We need to check the species on both sides before building the eco bridge.

Ecosystem Hydrology

Water is life; we look for planet surfaces we look for water, because that's what the main thing which helps organic life to live. This is the schematic of what hydrological cycle could be both internal within the built environment and external. But anything which is outside we need to bring it back to the ground water and it should not be drained off. What goes to drain it goes to rivers and rivers to seas and oceans. We need to recycle, and need to trap the water as much as possible. [1]

Ecosystem Symbiosis

Symbiosis is an ecological relationship between two species that live in close proximity to each other. Organisms in symbiotic relationships have evolved to exploit a unique niche that another organism provides. It may be the flora and fauna in micro climate or habitat which we create inside or outside the building.

Ecosystem Homeostasis

Ecosystem homeostasis is equilibrium, or a balance of the organisms in an ecosystem. This means the populations of species in the ecosystem are relatively stable. Over time, these populations will change, but in the short term, they should move up and down in cycles around an average value.

Ecosystem Food Production

This is totally about to make the ecosystem self-sustainable and make it a cyclic process like a food pyramid. This helps the built ecosystem to sustain for a long-term run.

Ecosystem Succession

Natural, gradual changes in the types of species that live in an area can be primary or secondary. The gradual replacement of one plant community by another through natural processes over time.

DISCUSSION

There are major changes going on in urbanization, in production of the landscape and in production of the built environment. Which we really don't understand that well and we are trying to create new problems by going on constructing the buildings which we name them as green and sustainable buildings without having a sense of the context of the place and without understanding the sensitivity of the site, what we are building and where are we building at. Without understanding that building with nature doesn't mean building and covering it with greenery, green roofs, green envelopes and making it sustainable by using some modern-day techniques which runs on energy and emits number of harmful gases and radiations. But you say

them building with nature, and I say building in nature, building living spaces with nature happens, when the living spaces are built in the harmony with nature, not with or in nature.

Taking the green area 'site' and replacing it with the 'green roof' and sustainable techniques are used, doesn't mean that the building is not causing any harm to nature. Instead it destroys ecosystems and those ecosystems impact on surrounding ecosystems and then they impact on their surrounding ultimately causing ripple effect, like a single water drop in a still water does. It causes the ecological imbalances which are very deep to understand the losses created to the habitats of the ecosystems on the spot and surrounding it.

It requires a lot of research to understand and to replace that as it was, or not to destroy and to even build with it. There are many major challenges in the world coming up ahead that we need to deal with but in order to deal with them we have to figure out how to even conceptualize them. The major issues of environmental transformation are diverse as climate change and urban challenges etc.

PROPOSAL

The proposal is for futuristic skyscraper as per the learning from natural systems. In this design proposal is the model of integration of living space after modification of genes of trees. Mapping of variables are proposed to get better performance in urban spaces which will not be harmful for the surroundings and they will not spoil the surrounding eco systems. The whole model is based on conceptual exploration and integration of natural phenomenon into futuristic habitable spaces.



Figure 1: Model of conceptual exploration and integration of natural phenomenon

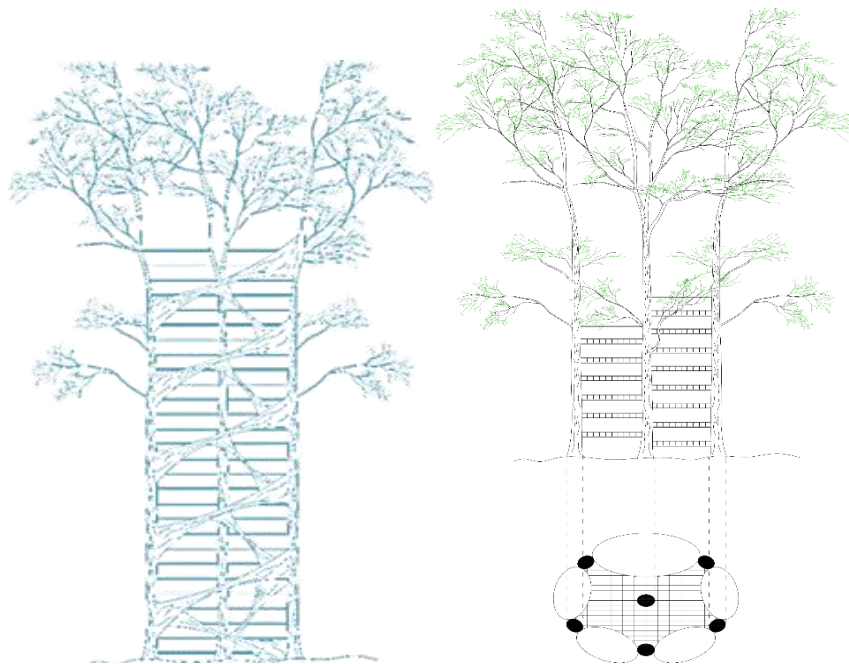


Figure 2: Vertical Transformation of natural phenomenon

CONCLUSION

The ecological understanding of building ecosystem instead of building the concrete blocks helps us to develop foundation of new breed of building ecosystems instead of just buildings for a major radical shift in the future and for the protection of the environment which instead saves planet and improves life and habitats on it. It would be tough, complex to understand and may consume a lot of time a single project but the thing is not about all this thing now it's time to see where we stand at present and where we want to stand in future. What if there will be no future. It's time to remake our cities as per the idea of constructed ecosystems.

REFERENCES

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