The methods of making stability in architecture and future urbanization

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Abstract – Increasing population, to become industrialized. The life, unformed consumption and production of pollutants and building industry are as one of the largest social and economical parts, that are unlike with human’s free soul in changing environment and human’s health and many factors like pressure and alienation in cities. Even though the result of modern crisis are recognized well, but many solutions related to problems seem inefficient and that is because of their separated approach connection to natural, as the value of natural is not revived. However, stable development has ecological, economical, cultural-social roots, but the place of nature would be more clear by researching the ongoing modern human’s problem and their approaches in stable architecture.

At the end and whereas the new activity is correlated with new generation. It world present some approaches by obtained progresses and the speed of modern technologies with the respect of belief, social samples and the role of energy and populations, so that the trilogy relation, human, nature and architecture with the respect of humans role and also architecture would improve people for having such architectural and urban spaces.

The method of this research is based on library. And obtained results of this research will embark on some approaches for designing high green building in future with the aim of reforming the relation of human, nature and architecture.

Keywords: stable architecture management, high green building, environment, human.

1. Introduction

To reform the outlook of nature and because of changing humans behavior related to it will result in changing the consumption culture and the natural and social conditions can not have an advantage to each other and should recognize and search a structure. In this way, instead of accepting nature as a outer and independent creature which should be saved or used, we must understand it with different natural approaches and have related to it. (11)

The environment for living beings is a series of balances that disruption of each balance will weaken the endurance of life. The environmental problems can make an important social, economical and political issues for the governments.

To govern on nature and live inside it, will pull the mind to adapt with nature and more than three years, the humans' relation with natural world is in specific and sometimes offensive categories because of a wide range of environmental crisis. Emigration to city is a social phenomenon; which happens to all cities of world and cause fundamental events in human history. (In 1900, most of world population lived in villages and only 10‰ were in cities). Unprecedented growth of cities tow many environmental and social problems by itself.

Because of confusion in modern industrial and urban life make double the needs of making relaxation. Unfortunately, today by developing apartment life, oversight from coordination between building and nature, feeling loneliness of inhabitants, over consumption of energy, broke the relation of human with nature considerably and human always try to compensate this vacumm with pulling nature to its life.

Also, as the ground is very expensive and scarce for making a green space in cities, so it should be used of height for this work. Our country like other areas of world with motivation of economizing, an expensive centre ground of big cities start to make high-ranking. These groups of buildings are from humans phenomenon. So, the need of much attention to
proportions, form, geometry, index beauty and stability, playing role to make relation between observer and building.

2. Stable urban designing in urban architecture

Stable design in architectural and urbanizational arena is not a new method like modernism Badikanstruction, but it is a method in designers thought which its base is on connecting to nature. By the way, in the stable design, the building and city are considered like alive creatures, which eat food (consumption of fuel), give back wastage and have a life, become old and finally die. It means building is like other thing in nature with 3 processes: advent, growth, decline and as a partial of nature, should be in its framework not farther than it and move toward stability.

1-2. The dimensions of stable city

- Urban economy: business income
- Urban society: social correlation and unity
- Urban shelter: worthy and afford all house building
- Urban environment: stable ecosystem
- Urban categorization: movement with protecting resources
- Urban life: establish a city to live
- Urban democracy: make strong the citizens

To measure each dimensions can be defined indexes and measured them regularly. The municipalities can control the situation of city from the stable development point of view with regular measurement and improve it.

3. High buildings

To recognize the features of high buildings with specific or various functions are from issues that today has special position in the knowledge of architecture. The high building over other things will recognize with technological feature and issues related to urbanization, architecture, structure, installations, wind, earthquake, fire can give a special and complex new sample to this building. There are not exact definition for high building which said the height of building is more than n meters, so this is a skyscraper. But they will classify as below:

3-1. A relative height in front of around environment

Only the height of building is not important, but we should examine that the proportion of surrounded environment is placed in what level. For example: a building with 14 floors in America doesn’t consider as a high building but building in European cities as a high building.

3-2. Proportion of dimensions of the building

Not that much height but because of being narrow seems high (narrow building) and vise versa that more height buildings because of being much width, at the first time seems to have low height.

3-3. Having the technology of high building

Because of high height of these buildings, it is necessary to be suitable technology and the issues related to architecture, structure, electronical, mechanical and electrical installations, the factors of urbanization, security, high speed elevators, System, earthquake, ... But generally the buildings with 14 roofs or height about 50 meters are placed in high buildings classification.

4. Green architecture

One of the tendencies related to stable architecture which is as a result of nature along with having common and universal point in designing with all principles includes: 1) Conservation of energy 2) work with climate 3) reduction of using new resources 4) respect to user 5) respect to site 6) totality which is a factor to make balance and create green architecture.

4-1. To reform humans relation, nature, architecture in stable architectural approach

A: Humans role

The stability needs ongoing and continuing endeavor. Without peoples participation, there is not the possibility of improving and reforming manufactured environment. Stability is not something that people agree simply with its rules and regulation, so it should be done by participating meeting in an effective management of resources with looking at equal rights which is the basis of stability levels. (20)

B: Human and nature

Maybe, we don’t take serious the word “stay together” and its concept, but ever-increasing separation of people from each
other and other life time symbols in this planet is a serious subject.

"Ecology" is knowledge about this "be together "of things and environment .the regional condition which human changes his regional condition which comes from it and this change is so illogical and thoughtless that will risk his future.

Aleksander says : If by high speed growth of population assuming that it is possible to provide their food and if human remains under this situation and lives with others , without doubt ,he is changed to another parson or at least ,a person who is not a changed to another person or at least a person who is not accepted from his view .He talks about weakness of humanity [22].

Sholtez at the introduction of book (architecture : meaning and place) writes :during y activity , modern world beared a very complex crisis. our historical ecosystem destroyed quickly , our natural environment is the victim of pollution and over using and in spite of we are human, simply is treated as a "human matter" generally ,human doesn't from a part of meaningful integrity and is stranger with himself and world".[43]

5.Stable energy

The most fundamental foundation of development is energy. "If energy produces and consumes in such a way that human's development provides in a long time and in all social , economical ,and environment dimension , the concept of stable energy will fulfill.

6-Stable Building

The building which has the minimum in compatible effects on natural environment during the life of building and regional and universal stationing buildings are one of the largest economical and social parts and are made with environment and meaningfully have effect on changing the natural environment. Building in comparison with other manufactured goods have a more life and during all mapping process , making building , equipping and building has considerable effect on human's health.[21]

7-stratagems of architecture and energy

By starting new are and realizing different approaches of fossili fuel, for living technology related to production of sun has progressed considerably.

Fineness of this technology provides us to eliminate many of our daily needs through this energy. The building which can use the maximums of this energy ,is very important and useful. It would require to abide some points in making building about architectural issues ,its correlation with micro klima , receiving heat and cold in buildings is done by two ways: active method and inactive method.

1-7 active sunny system

1-1-7 heat system and consuming heat water.

The sunny water heater includes sunny collector which receiver sun radiation and change it to heat and then heat pass from collector by a transferring heat ,the absorb and save or consume.

2-1-7 Both usages (hot water and central heating space) offer with together in one place.

3-1-7 Photovoltaic Systems

4-1-7 Natural Light System

A little light in day and shortage of light as a reason of seasonal disorder called SAD ,that in specific times it ,affects on many people because of shortage of sunlight.

Unsuitable light can have destructive effect on human's health and result in eye backache , visual,organic ,migren and other incidents which are famous as an illness syndrome of building .considered strategy for daylight can provide a considerable thrift which includes sports.

It is installed on the roof and connected the sun energy and transfer to building by conductors.

Maybe ,acceptance the subject of thrift in energy became wrong by the principles of lighting and sky lighting .Therefore it is important to make a balance between ease and happiness environment with other parts.

5-1-7

Intelligent system which registered the changes women in moment and correlated itself with new conditions of environment and around it.[1]

Building management system (BMS) or building automasion (BAS) is installed in building and make possible the control of different parts of building and show adequate outers for users through its implementation .The goal of above system is correlating to condition of different elements function like mechanical utilizations, air –conditioning system ,lighting
equipment with respect of environmental conditions and need to different parts.

This control can speed up to fire department, safety, regulating availability providing electricity, emergency electricity, too.

The ability of relation of modern systems it different lateral systems which have separate system like density boiylers, sunny systems, the systems with contemporary production of electronic and heat (CHP)…

A: The advantages of system (BMS) for inhabitants

1. The height of relation condition of life place.
2. To crease the control of different of inhabitant’s taste.
3. To decrease energy consumption and spend expenses.
4. To decrease friction and destruction
5. To increase information technology by showing different data.
6. To avoid unexpected destruction of equipments.

B: The advantages of system (BMS) for building.

1. To increase flexibility in case of changing usage.
2. The ability of controlling facilities and different parts.
3. To increase the life of building and the cost of rebuilding

C: System components of building management.

1. processor and central control
2. sensor
3. monitoring system
4. configuration and relation equipments.

D: function (BMS) in building equipments

a) Energy module

... To design and implement energy module with the aim of decreasing energy consumption, progress building energy grade and increase the quality of relaxation condition for inhabitants.

... To design and implement lighting module according to modeling lighting behavior, using natural lighting and usage features of different spaces.

... To design and implement of energy management system according to ISO 5001 standard.

b) Security Module

... To design and implement the system of providing building security with the respect of usage features of different spaces and required security level.

... To design and implement the system of tracing thing.

... To design and implement the system of access control.

2-7 inactive sunny system

1-2-7 direct receiving system

2-27 indirect receiving.

The sun radiations shine to absorbed substance between sun and inside house and then give its energy to rooms. This work does through a substance or meditative space like green house, under roof sunny space and heat wall[9]

3-2-7 Establish Shadow

The angle of shining sum in summer is almost vertical at noon. but in winter, the sun shines with less angle, we can use of this feature in southern side, By placing a awning over the windows of this site, can avoid to enter sunshine and heat building in summer.

4-2-7 To increase productivity in consuming energy through natural ventilation.

The climatic areas of country with the respect of geographical condition and blowing wind and shining sunlight have conditions (That can use in case of correct use of natural powers to answer.

The ventilation of buildings and decrease energy consumption to related condition)[4]

5-2-7 Function
Combination of inner spaces should such a way that spaces get the most sun energy according to importance.

6-2-7

Using topography and vegetation is the simplest form of establishing shadow naturally.

Because of evaporating water to establish coldness in environment, the plants have more effects. Besides of increasing proportional moisture, plants make shadow in summer.

Another one of features is guiding and decreasing the intensity of wind. Also, by planting tree in the direction of south, in spite of using them in summer, it can be used heat radiation of sun in winter.

7-2-7: Greenhouse

The whole idea of spaces in south for inactive utilization of sun heat can go forward one step and by designing sun rooms or centrally are, can use the maximum of direct sun heat the acquired heat in sun room can transfer to other rooms or one source of saving heat through natural transformation or fun.

8-2-7 The Ground Protection

The earth’s crust as a thick heat insulating prevents to transfer heat into earth. From the depth 1.6 meter to end, the degree of earth heat is almost fix and equal with annually heat degree in its outer space.

8. Stratagems and approaches of reaching to green building

1-8 Vertical Green Space

In buildings with low and medium height, making green space with using vases of plants and green roof is possible but in high buildings is a little complex. There are suitable conditions that these plants are in these kinds of:

Building:

..To improve inhabitant’s moral in building.
..To increase beauty in building.
..The factor of making shadow for inner space and outer wall.
..To establish effective small region
..Cooling building by circle of plant evaporation

2-8. Green roof

The roof which all and part of it is planted on anti water, is covered. As a plastic layer on traditional roof is broaden and under and over this plastic layer the insulating materials over the insulation layer will add a drainage layer. Finally based on the slope of roof will add a this and mixed layer and over it will plant stable coverage in front of dry land and will classify in centralized and pressed, semi-centralized and wide that is connected to mediate depth planting and amount of necessary installations. This roof may include some layers like:

..Moisture wall (the conservation of moisture)
..Insulating
..The roof’s crust
..The gourd of drainage
..surface farming environment
..Farming layer

As the roof of these buildings are placed in direct sun radiation and naturally does not come a shadow on it and can be used from the level of roof for the collecting energy. In green roofs attention to physical conditions of building (the slop of roof, the amount of flowing wind.)

And the amount of production which can bear the structure is essential. This roof in addition to positive points which carry along, we should consider the need of improving the structure of roof and difficulty of corresponding with climatic regional condition.

3-8 The crusts shot

This system with two membranes’ between life space and outer environment which do a current of through these two layers, with shading members which are the factor of beauty and variety in outer crust. The kind of this system behaviors' will be with different seasonal changes. Generally, the heat which is in height degree of hot air, is the factor of removing heat and saved energy in crust, and this factor (a current fair) of temperature into crust will decrease which cause to decrease a current of sun energy form the surface of crust into building and the habitants feel the relaxation but in low temperature and cold.

1. By closing the whole system in shot, the ways of air influence into crust will close. So by this way, with keeping
current into crust will case to heat the keeping air and will cause to heat inside the building by transforming and removing.

2. Using the depth of adequate influence of sun into building for heating it. In the meanwhile, the tools of making shadow of this system in the figure of horizontal roller shutter with ability to adjust an inactive cooling tool has ability to absorb or repell sun energy. The general characteristics of this approach:

The ability to open the window in inner crust, energy economizing, security, sound insulating, heat, beauty, ventilation, keep lighting system, heat relaxation, the temperature of inner walls, but the weak point in this approach is to decrease daylight related to kind of crust, high cost of keeping, the growth of structure weight and cost of implementation and making, unresistance, the speed growth of air current and decrease of useful space.

4-8 The wall of garden

Modern technology which today finds its position in cities. It can use the wall of garden in different scales, from creating small private spaces to shot of towers. Green walls have different kinds and features which are related to kind of building, water and air, height and plant will choose and classify into two groups.

1-4-8 Green façade

It is a kind of green wall that a simple structure as a scaffolding is connected to wall of building, rail, pillars and the shots of building from( wood, metal, cable wire, wire ropenet) , as a support acts for crawling and climbing plants( hair, patial) which plant over the wall or vase. Green shot is divided into two groups by implementing.

...Mordular trellis panel system
...Cable and wire ropenet systems

2-4-8

The combination of panels with vegetation are planted before that install vertical by a simple structure system as building shot and are self-static independently. Also we can use the spaces of inside house from living wall. Living walls based on its productive factory, sheet substance, outer or inner kind, have different executive details. Living wall in comparison with green shot is considered as a complex and more expensive system and need to more conservation from watering and providing additive nutritious materials for plants. Living wall is divided to below categories:

...Passive living wall
...Active living wall
...Patric Bellan vegetable wall

3-4-8 The functions of gardens wall towards stable architecture and urbanization

...Developing green space
...Heat insulating, moisture insulating
...Control of rain water
...Reduction of pollutants and destructive effects
...Mental health

5-8 Atrioum

The element for making ecologic relation between building and its environment and changing it as a macroklima (small region) which improve the building related to temperature fluctuations and changes. Atrioum is the factor of increasing skylight, reduction of consuming electricity, entrance of fresh air(coldness, evaporation) in winter and summer. Atrioums classify into five groups: central, united, linear, environmental, short circuit, but briefly Atrioums which design linear or central are more wealthy and effective to answer the needs of building.

In summer, Atrioum catches temperature growth, that some thoughts are effective on increasing temperature, using wind turret, cast a shadow, levels with trees or hanging sheet, sunshade connected to Atrioum structure, ventilation and use heat substance and shining coldness. Atrioums present specific and different mediate space inside the buildings, specially generally which increase social values and exchange of views and visual relation, establish stable relation for building and define their boundary. But we should avoid the issues of energy wastage.

6-8 Sun systems

1-6-8 Picsel medium green wall

A big screen which covered of organic modules and saved its energy during day to shine at night. If the inner spaces need skylight during day, light passes through glass wall and infiltrate inside. And when it needs to electrical current, the sunlight shines to organic cells which is laminated on the glass wall during day, will happen the saving process as uses for media and light system until night.

Lucidity and turned towards and ability to establish relation with urban environment through a new kind is from digital lucidity. The intelligent crust which operates in interaction...
between inner space of building and outer public space and change the shot of building into an answerable environment.

2-6-8 sun roller shutter
This screen is from two parts:
  a) The turned towards sun cells which installed on each horizontal strips of screen. And lights (LED) which use in day, when the screen is using for conserving sunlight to the room. Organic cells which place on horizontal strips of roller shutter in the direction of sunlight and become charge and use at night.

7-8 Nano technology and mechanical installations
Traditional systems which utilities engineers design for building, should provide clean air sufficiently, until the amount of oxygen reach to acceptable extent and dilute productive pollutants into space. Air should be devoid of dust in some extent. This condition provides with using filter and entering outer air into building. The best method for improving the quality of air is exchange or ventilation. By helping different Nano parts, the mechanical installations systems were improved. In this direction can refer to:
  ...Heat elements with conservative coverage
  ...Heat sealant
  ...Heat converter(pipes)
  ...Heat shield(insulating)
  ...Inner cooling and heating equipments

2-7-8 Nano technology and the sweet-smelling air capsule
When the most beautiful spaces have unpleasant smell, they don’t seem comfortable and beautiful. Microcapsules explode in a controlled situation if they happen by a mechanical contact and release their material and perfume the space.

3-7-8 Nano technology and regulate heat (changeable material)
P.C.M or changeable material embark efficiently to regulate the temperature of inside the building. It can use of high ability of conserving heat of this material as decreasing temperature fluctuation in building. P.C.M keeps the heat well and can use in buildings as a passive and submissive tool in changing heat in order to heating and cooling. Energy in P.C.M saved secretly, when the materials changed from physical mood to other mood, whether solid to liquid or liquid to gas, and the hidden heating and cooling regulate the temperature efficiently.

4-7-8 Nano technology and the pipes of repulsive heat
5-7-8 Nano technology the heat converter
Heat converters are the central nucleus of the most today heating systems. They used with the aim of transferring heat from one part to another part of building or from one material to another. Using nano-fluid with high heat capacity can add on output and the effect of these converters.

6-7-8. Forty piece title
Wall titles are electronic which are made on O.L.E.D. Each lighting title is from transparent O.L.E.D in 150.150mm which make the main design to forty pieces and present a beautiful picture.

7-7-8 Interactive lighting mirror
An intelligent level from bright square titles that can feel the sensor of being a body by closing to people or things in a certain distant of surface and its reaction as an environmental picture of person on his bed or by turning off the titles will present.

8-8 Nano technology and electrical installations
Using Nano phosphors and quantum area result in big evolution on L.E.D and improve their quality level. New generation of L.E.D called O.L.E.D or organic L.E.D and Q.L.E.D or L.E.D are based on quantum area. LED causes the way and kind of lighting architectural spaces face with a big evolution. Phosphors use in equipping lighting, fluorescent lamps, kinds of bands and luminescent chains and the kinds of L.E.D are the sample of using phosphor in architecture and industry.

By helping nano technology, Nano particles called Nano phosphor are replaced by common phosphor in equipping lighting that result in improving the quality of tools and light. Interesting features of Nano particles and Nano material can cause some changes in different parts of shining wave length on material. The several layer movies of Nano scale cause to find the surface, color, and quality of separate reflecting from the angle of reflecting light. Nano particles have different shape and dimensions and show different reactions in front of shining light.

9-8 dynamic buildings (rotating towers)
In designing these buildings the fourth aspect (time) enters, so that each floor is able to rotate separately. So, during the time, the whole form of system will change and the tower will not have a fixed form. Such systems are able to enter the fourth aspect into urban appearance and affect on it, too. These systems follow three principles:
  ...Dynamic design: each floor will embark to rotate separately from other floors and the shape of building always is changing in urban view.
  ...Green architecture (self-sufficient in providing energy)
...Prefab: the main part of these towers (about 90%) is from prefabricated pieces and establish during productive process in factory.

10-8 Other approaches for achieving green building
...Semi- treatment windows
...Dynamic awnings
...Collectors
...Semi- private gardens
...The location of site
...Flexibility
...Materials

Are from manoeuvrous that in addition to described principle in former sheets by them can achieve to green building and compatible with social and economical stability principle and return environmental life suitable urban samples.

9. Conclusion
Most of theoreticians and philosophers are following an out look to nature that results to a respective behavior to nature. As Aleksander knew ecology like a knowledge of being things and elements and humans environment and NourBerg Sholtz is following the meaning of making environment through nature and also nasr thought the only solution to solve today crisis is to return sacred identity of nature to it.

But today we witness that real world is governed with cities. The cities that their resources provide from everywhere and their wastages reach to atmosphere, rivers. Therefore it is necessary to revise about the methods of urban and architecture development system, so it is necessary to find some methods to take the minimum the effects of urban and architecture on jungles, farms, water and air environment. By expressing above materials and cited approaches, with the respect of unrestrained consumption of energies and damages of environment and the condition of energy, the world is placed in a crisis stage, remedy and coordination in all development fields (social, cultural,......) will be a help for conservation and keep environment for young generation.

And because new activity is accompany with horizontal growth of cities as an enemy for stable urban architecture. With the respect of making intelligent vertical and green in direction to adapting with stable architecture principles by inspiration of past and native architecture can take step in producing hidden energy and decreasing pollutions in inner and outer spaces of high building and have effect on these high green buildings in the appearance of cities as humans happening. And an index and comprehensive solution in the fields of energy, environment, social, cultural, economical and specially stable architecture and urbanization will present and use for the future.

References:


[5] Regional Download and design (Theory and implementation of energy use in buildings) translation: Ghobadian, Mahdavi, M., Tehran, 1387


[7] Shaliha N, modern green roofs, building message, 1391


[12] Architecture and decoration, vertical city, message building, 1391

[13] Department of Construction cloud green cities, urban solutions today, message building, 1392


[16] Group of Construction, Urban development based on sustainable development, Message construction, 1392


[22] Christopher Alexander and Serge Chrmayf, Areas of Public Life and Private Life, M. Advantage, Tehran University Press, 1376

[23] Shvltzrya, Christian Nvrbrg, Meaning and Location, Translator Vida Borazjani New Year, the Publishing World, Tehran, 1382