'ECOLOGICAL BUILDING DESIGN IN MALAYSIAN PERSPECTIVE' – A GUIDE FOR YOUNG ARCHITECTS

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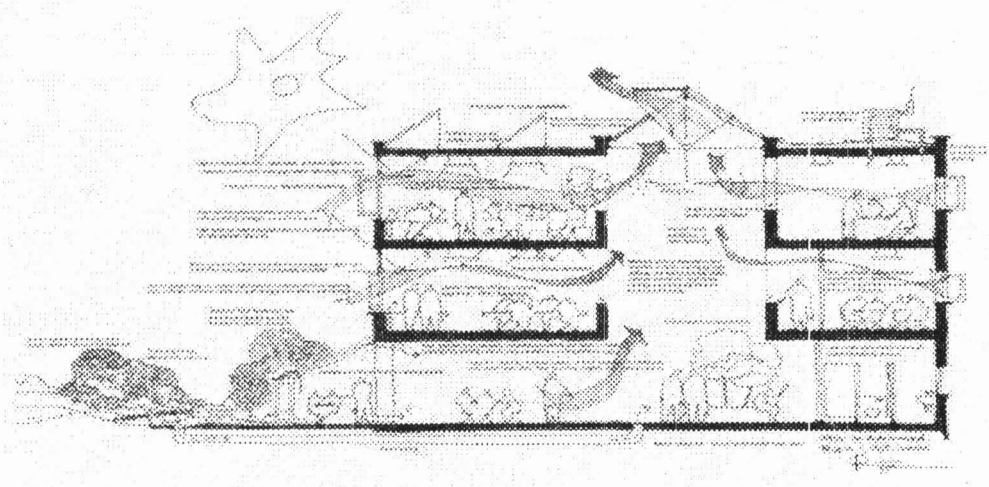
Abstract: Architects are made to design a good building. Not to mention, they are also responsible for the comfort living of the environment and the fulfill ness of people needs in spaces. In this millennium however, architects are challenged with enormous and thousands of issues to be taken care during design stage and process.Today buildings are produced for users without giving benefit to the ecology and human. A good design must have the equilibrium between this two. In order to create this, architect must be wiser and design a building more towards the environmental consideration.Unfortunately, most architects today have not been trained in any serious background on ecology and environmental biology. The understanding of the environment as a functioning natural system and the recognition of the dependence of built environment on ecology and environmental biology seem not to be acknowledged in architectural practice today. We are living in an era where natural resources are fast depleting; therefore, implementing passive environmental controls by sustainable development through modern thinking, or by advanced and sophisticated technology are essential. Inasmuch as symbolisms and meaning making are important to define 'humanness' of the built environment. All those involved with the built environment should learn to give more importance to ecology and environmental biology. This paper is an attempt to promote such thinking among the young architects or designers or even the building team. It is imperative that we should start to re-conceptualize the design of our built environment in a way to make better use of our current land and resources for assuring the quality of life for future generations.

Keywords: Environmental issues, architectural practice, Ecological design

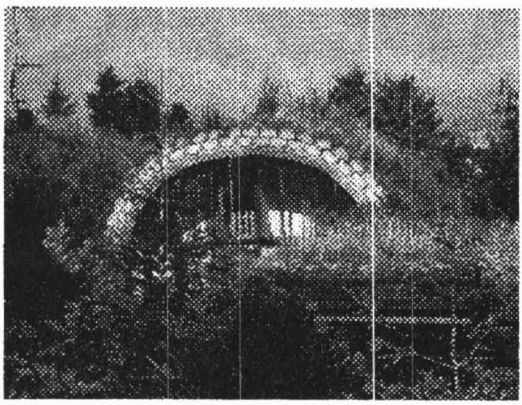
INTRODUCTION

The roots of the environmental movement in building design have not been practiced seriously in Malaysia. The understanding of the environment as a functioning natural system and environment biology seems not to be acknowledged in architectural practice today. The lack of interest and shallow knowledge on environmentally friendly design in the university is the cause that most of the graduate architects today have problems of integrating design with the environment. In other word, designing in ecological building design.



A cross section of ecological building

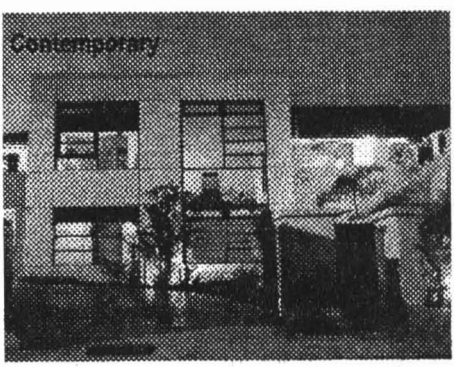
Dr. Yeang explains that, "*Ecological design or Green design here means building with minimal impacts, and where possible, building to achieve the opposite effects, this means creating the building with positive reparative and productive consequences for the natural environment, while at the same time integrating the built structure with all aspects of the ecological system (ecosystem) of the biosphere over its entire life cycle...* " [1]

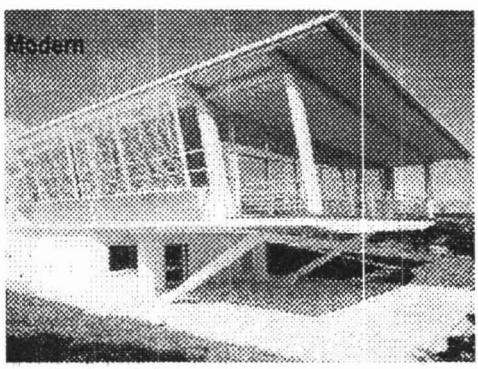


The earth-sheltered housing in Germany

The issue of sustainable development or sustainability is currently the most pressing, complex and challenging agenda facing the architects. The ever-expanding urban population caused by job opportunities especially in urban areas, un-controlled land development and also unbalanced development has meant that it has moved on from being a single concern, focused largely on global warming, to one where much wider issues of the environment and ecological health. Therefore, it is the right time to turn to positive effect as ecology comes to the fore, and as the only viable movement bridging the social purpose with the technology and nature become tools in the designing process.

The Typical Design Approach in Malaysia

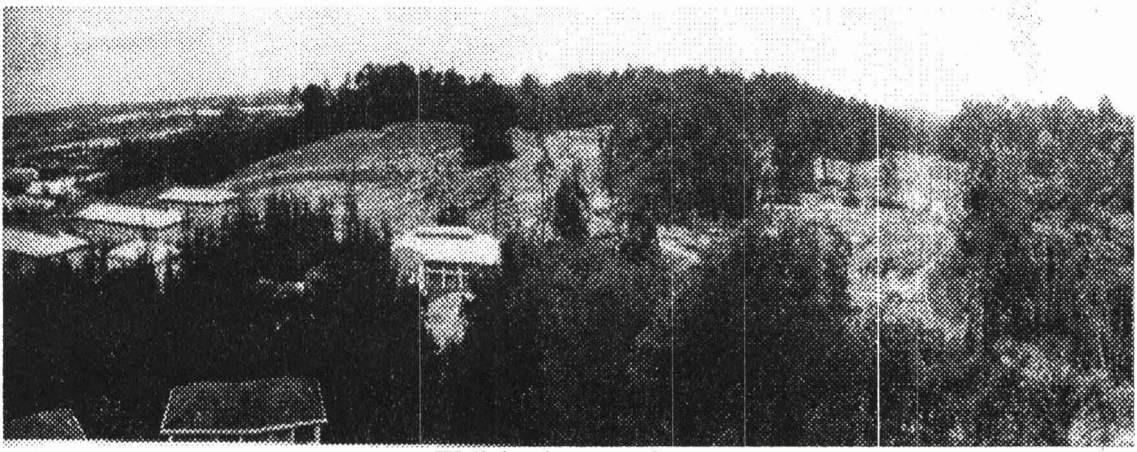




Traditionally, the building designs in Malaysia are influenced by the surroundings, culture, climates and even financial factors. However, most of the buildings are designed in such away because of the trends and also influences by other factors. There is no doubt that the client's needs are also

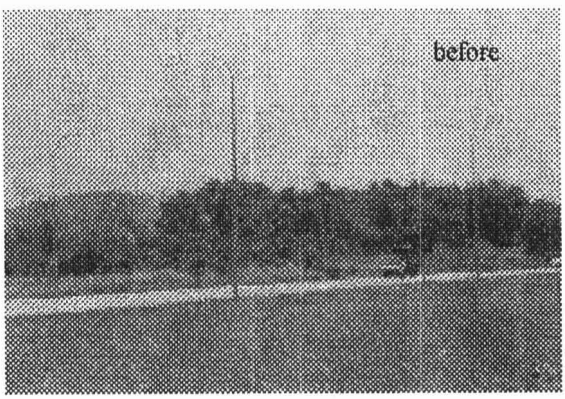
contributing a major influence to the architectural evolution and style. Architects are ethically responsible for conserving the land by integrating the building with the environment in a practical and ecological way and need to approach any projects professionally.

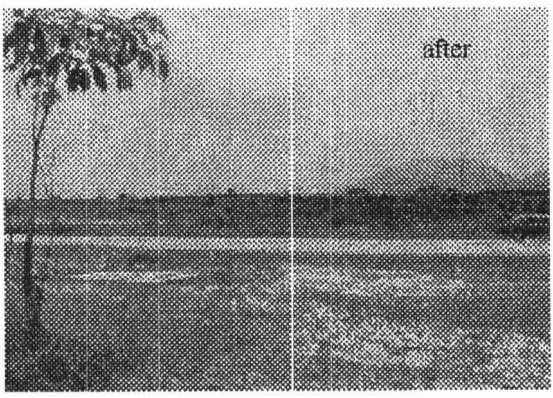
The developers and contractors also need to be trained and exposed to the concept of sustainability in sustainable development. They should also play the important roles and take full responsibilities to ensure that the surrounding environment will be saved and less damaging to the environment. By doing this, trees and hills can be saved for better living environment, not only for human but also for any living creatures.



Well development plan

In some areas, the land development is perhaps the main cause of deterioration of the natural environment. In certain places such as big cities like Kuala Lumpur, Johor Bahru and Pulau Pinang for example, where the availability of land is scarce and consequently very expensive, profit is the most important criteria rather than the issue of sustainability. Therefore, the challenge lies on the architects in how to create the architectural models that can generate the maximum variety of types and create certain traditional environments in a minimal space, and at the same time taking the advantages of the surrounding elements as tools in designing a better living environment.





A typical process of development in Malaysia

It is the time to change the architectural movement from typical modern contemporary, which focuses only on the beauty of the facade, towards architectural that concerns not only the function of the building but at the same time to create the space that is integrated with the environment as well. The architects have to make up their minds and change their work attitude in making decisions about recent issues. The architects must at least design on the basis of what they already know in an anticipatory way, rather than ignoring or at worst excluding environmental considerations in their entirety. This is

because, adopting a design approach that is deemed the best that can be ecologically achieved today, may in many instances be better than for perfection in the future.

THE UNDERSTANDING OF ECOLOGICAL DESIGN

The term of ecological design is a process in which the environmental attributes of building are treated as objective rather than constrains. Therefore, the success of ecological design depends much more upon the creativeness and the inventiveness of the solution to the environmental problems.

It can also be defined as the integration of the three major elements such as energy use, the environmental concern and the ecological factors. It does not mean that the design should be turned into a nature preserve. The most important thing is the building designs must be able to demonstrate or create the interaction of people and the environments by taking into consideration of the limitation of ecosystems and designing the buildings in a sustainable manner.

It is very important to know and understand the ecosystem of the place before we can relate the architectural impacts and the design to their environment. The ecosystem of the project site, for example, must first be analyzed and studied holistically. By doing the site analysis and the synthesis, we can thoroughly understand its components and the potential of the site as a whole.

Therefore, implementing passive environmental controls by ecological design through modern thinking or by using advanced and sophisticated technology is essential. It is right time that such practice should be fostered in a way to make better use of our current land and resources for assuring the quality of life for future generations.

Ken Collins, a Chairman of the European Parliaments Committee on the Environment, Public Health and Consumer Protection has said that, " *money saved today by a lack of environmental protection will be later spent many times over the treatment of human ill health and the cleaning up of a degraded environment; costs that are simply too important to ignore. Investing today in sound environment policies is not only sensible, but financially practical and prudent...* " [2]

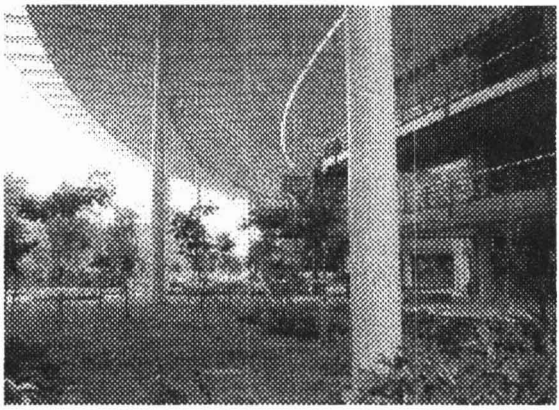
Generally in an ecological design approach, the concept of the environment has to be regarded as much more inclusive, encompassing not only the physical milieu of the building but also the biological milieu as well. The table shows the differences of the design mode or approach between ecological building design and other design approach.

Table 1: Differences of the design mode between Ecological Building Design and Other Design Approach

	Design mode	
	Ecological	Others
Site ecology	Crucial	Relatively unimportant
Building orientation	Crucial	Relatively unimportant
Built form configuration	Environmental influence	Other influence
Façade and window	Environmental responsive	Other influence
Energy source	Generated/ambient/local	Generated
Energy loss	Crucial/Reused	Relatively unimportant
Environmental control	Electro-mech./manual	Electro-mechanical
	Artificial/natural	Artificial
Comfort level	Variable/consistent	Consistent
Low energy response	Passive/ Electro-mechanical	Electro-mechanical
Energy consumption	Low energy	Generally high energy
Material source	Low environmental impact	Relatively unimportant
Material output	Reused/recycle/reintegrate	Relatively unimportant

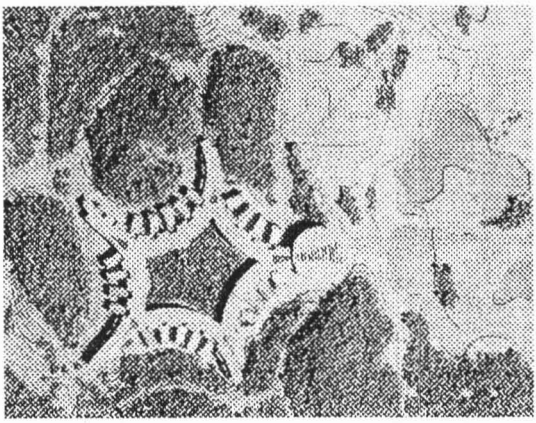
According to Prof. Klaus Daniels [3], the technology of ecological building can be defined as applying technical aids sparingly and making the most of all passive means provided by the buildings fabric. Buildings must also be in harmony with their environment, for example, to live in and with the environment.

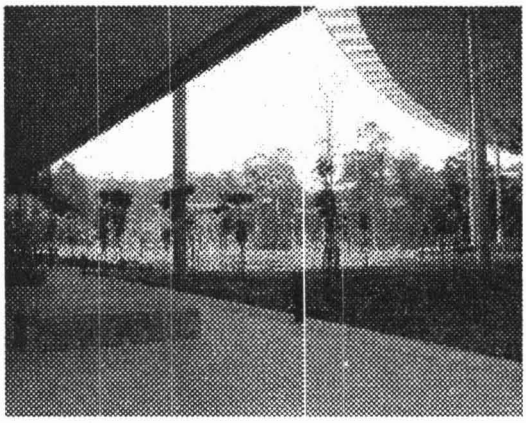
Therefore, the climate zones and precipitation region will determine the development of building designs without leaving behind the ecological demands. The basic elements such as the building form, planting and terraces, building orientation, building envelope, shading and solar heating, wind, external humidity and the quality of rainfall always play important roles in the design process.



Integration of Nature Elements

The building orientation, for example, will determine the very best location for placement of transitional spaces such as lobbies, stairs and other annexed areas because these areas do not require total climatic control, however natural ventilation is usually sufficient. The most critical side of the building is at the east and west side especially during midday till afternoon. Therefore, shading devices are required along these sides of the building. On the other hand, this is the very best location for heat gain, which can be applied with the solar panel known as photovoltaic.





The building form that influence by the environment

CONCLUSION

The architects and other specialists that involved in the production of building such as engineers, consultants and the contractors, must take full responsibility in order to make environmentally ecological sound decision as well as to maintain sustainability awareness. However, there is no doubt

that the architects are still the key players in the team and have a larger share of the responsibility than any other professional group involved.

Brenda and Robert Vale [4] have said that, "*What is required is for architects and designers once again to realize and shared experience with the users of buildings, and a shared responsibility for earth's resources...*"

The use of new advanced technologies, by taking the advantages of the environmental criteria such as the design of an ecological building that makes extensive use of light and ventilation can generate its own energy and minimize energy as well as maintenance costs. These initiatives and creativeness of design show that it is possible to achieve a totally ecological building design that is responsible from the environmental point of view and virtually free of pollution.

I believe that, it is really hard and crucial to make decisions because the decision that we (as architect) make about buildings, towns and their spatial distributions are the keys to creating a future built upon the concept of sustainable development. However, it is our duty as architects to ensure that our design must somehow contribute to the greater extent possible in reducing the overall environmental impact of such intensive buildings on the environment while allowing for future enhancement, improvement and replacement as well.

It is obvious that the significance of taking actions based on a proper and full understanding of ecological criteria during the designing and planning stages will not only have an immediate effect on human population and the environment, but also could influence the quality of the environment for subsequent generations.

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