THE ARCHITECTURAL PRINCIPLES OF RAHMATAN LIL ALAMIN IN THE REALIZATION OF SUSTAINABLE ARCHITECTURE

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Abstract*: Indonesian nation, with its majority of Muslim population, should implement its local wisdom that is derived from the Holy Qur'an and the Prophet's Sunnah in managing the nation and the state. In this way, it will be explicitly capable of developing built environment model based on the principle of sustainable architecture as an introduction to the implementation of the principle of Rahmatan lil Alamin in architecture. This can be pursued by starting to awaken an appreciation of the practice of the Qur'an and the Prophet's Sunnah in everyday life, including in the employment of architecture. The theory of sustainable development is not a very popular concept among both the public and the architects themselves. Sustainable architecture is defined as a concept applied in architecture to support the sustainable concept, namely the concept of maintaining natural resources in order to last longer, which is associated with the vital potential life span of the natural resources and the ecological environment of human beings. Allah reveals in QS ar-Rum/30 : 41"Mischief has appeared on lands and seas because of (the meed) that the hands of man have earned, that (Allah) may give them a taste of some of their deeds: in order that they may turn back (from evil)." Architects should have awareness about this subject in order that in conducting professional practice they always carefully pay attention to the natural environment so that the results of their design could provide a blessing for the environment. That is the true meaning of Rahmatan Lil Alamin.*

Introduction

In Indonesian architecture, there exists a local wisdom that is reflected in the tropical styles of constructions, which by nature correspond to the local climate. This local wisdom has already

been applied for generations, so it has gone through a number of tests over the time and hence becomes the most suitable for Indonesian people to apply as it was born from a study that has been going on for hundreds of years. However, the trend of modernization can take away the local wisdom from architecture, and the emerging technologies also take a significant part in it. The society tends to refer to Western architecture, which is actually less compatible with Indonesian local climate. Nevertheless, it still can be applied with the use of technology, which so far has in fact turned out to contribute significantly to the global warming.

In fact, architecture adds the largest contribution to the global warming. Buildings consume a lot of energy in order to provide visual and thermal comfort (environmental control), wherein the application of AC (Air Conditioning) and lighting with high energy consumption are considered to be the solution. The invention of elevator as a replacement of stairs or the application of other ME (Mecanical Electrical) equipments have caused people to unknowingly become more accustomed to using excessive energy. Yet to achieve thermal and visual comfort in buildings, internal environmental conditions (temperature, humidity, illumination level) can be set with or without using mechanical electrical technology equipments that applies energy from non renewable sources

Bearing in mind the negative impact of the emergence of the architectural technology, which is highly potential for bringing about global warming, it is now about time to think about its replacement with an environmentally friendly technology. For the current time, however, environmentally friendly technology is still relatively expensive, as it involves research and license from certain countries or companies. In this regard, the aspect of local wisdom

in architecture needs to be reconsidered for it is proved to be more environmentally friendly by implementing environmentally friendly technologies that is updatable with reference to the context.

Rahmatan lil Alamin in Architecture

Local wisdom is reflected in the life of the society based on their religious practice and attitudes to always construct development with due regards to environmental ethics as a rule and guidance for Muslims' morality based on the Qur'an and Sunnah. In playing the role as architects in designing, Muslims should understand the principles contained in the Qur'an and Sunnah relating to the environment. These principles comprise:

1. Good attitudes toward the nature

   This means that since human beings are parts of the universe, they should give nice attitudes ("be polite") to the nature. "… and seek not (occasions for) mischief in the land: for Allah loves not those who do mischief " (Q.S. Al-Qasas: 77)

2. The principle of *amanah* (trustworthy)

   This principle requires human beings to show responsibility for they have been given mandate by God to serve as His vicegerent on earth. The Qur'an reveals: "I will create a vicegerent on earth" (Q.S Al-Baqarah: 30). So human beings should manage well everything on earth, including in constructing development.

3. The principle of Love

   Humans are expected by Allah and His Prophet to maintain good relationship with fellow human beings and with the nature. "Those who do not maintain good relationship will not enter paradise. " (Nasir, 2006) In this term friendship means a bond of love.

4. The principle of efficiency

   This means that humans are encouraged by God to live a moderate life, and it means not being wasteful in every action, such as: not to exploit the nature nor to use it excessively to fulfill their needs. The reason for this is because God is not pleased with those who live excessively. (Q.S Al-Isyraa: 27).

5. The principle of moral Integration

   This principle demands that humans always keep *akhlakul karimah* (praiseworthy attitudes) in living their lives. Human beings can achieve *akhlakul karimah* when they take the Holy Qur'an as their life guidance. (Q.S Al-Baqarah: 185)

6. The principle of beauty

   This means that human beings are inquired to create something in order to beautify, as Allah is Beautiful and He loves beauty. (Faiz Almath, 1991)

In the field of architecture, Muslims should incorporate environmental ethics in designing, as the definition of architecture itself is a science that studies not only about the science of buildings but also extensively studies their relevance to human beings and their environment. Architecture is not a personal philosophical or aesthetic inquiries pursued by individuals; rather it has to consider the everyday needs of people and to use technology to provide an environment fit for human habitation. Design Methodology Movement, which involve people such as Chris Jones or Christopher Alexander started searching for a more inclusive process in designing in order to obtain better results. Extensive studies on areas such as behavior, environment, and social sciences were conducted to set a base for the design process. (Christopher, 1978)

As for the basic human needs, they comprise as follows: (Abraham Maslow, 1993)

- *Physiological needs (hunger, thirst)*
- *Safety needs (securing and protection from physical harm)*
- *Belonging and love needs (membership in a group and the receiving of affection)*
- *Esteem needs (desires of an individual to be held in high value by himself/herself)*
- *Actualization needs (representing the desire to fulfill one's capacities)*
- *Cognitive and aesthetic needs (the thirst for knowledge and the desire for its own sake)*

In planning and designing, architects must consider the needs of people (the clients). These needs will shape the behavior of the society, which will eventually form the characters of the building and environment in accordance with their intentions. Errors will occur if a building or an environment designed do not fulfill human needs and do not correspond to the pattern of behavior, as it is the humans who will use the building and the environment and they are the subjects who will respond.

It worth noting that the impression on a certain location is not only determined by the existence of the buildings, but rather it is more related to the question of why the buildings exist in that certain location. "Physical identity" such as magnificent landmark can be developed and are in fact can be found in different places, but the uniqueness of an area will only appear when a touch of "soul" could be added to the building. This touch will answer the question why a certain building was established on such certain location and how it is related to other locations in a space system. Hence developing constructions should follow a designed context.

The uniqueness of an area is for sure closely related to the local culture. Unfortunately, such uniqueness is not commonly set forth in the space design system, thus it is not surprising to see the same arrangement applied on different cities or regions. In addition to this duplication of space arrangement, there are also constructions of houses or buildings that do not reflect local cultures. The society seems to prefer constructions models adopted from the Western countries, and of course, in terms of climate, this choice of preference is not appropriate to apply in Indonesia. To overcome the problems resulted from such misapplication, people turn to technological aids as a way out, such as for example the use of air conditioning, the use of materials that are not energy efficient and less environmentally friendly. This situation is unavoidable as information technology has become so advanced that the world has increasingly felt more global. This happens due to the lack of sensitivity in dealing with the environment on the part of a number of sections involved in a construction project, comprising the owner, the planning consultant (architect, interior designer, etc.), the executor (contractor), building materials industry, the building management, and the users or tenants.

Fortunately these negative excesses of modernization eventually bring about awareness on the part of the consultant planners to realize that building designers play a strategic role in restoring and preserving the nature. Some architects have started to realize that the local identity, shaped by respective local wisdom, should be maintained as it proved to be more environmentally friendly. This local identity can be developed through the arrangement of the space within the building based on the local culture. The inner spatial structure cannot be separated from the overall shape of the building. The local wisdom, which is

extensively influenced by the local culture, proved to be enduring to withstand age and the nature, and it has the identity of its own according to the culture in its respective regions. The culture itself is normally formed and developed with the influence of the local environment, including the local climate and social life. The element of local wisdom in architecture is capable of forming a tropical architectural style, which is born from tropical environment and climate (including Indonesia). Tropical architecture is claimed to be an environmentally friendly architecture that is suitable for Indonesia, as it has been adapted in accordance with the existing climate. To consolidate the role of the environmentally friendly tropical architecture, it needs to be supported by technology as well as by innovations of environmentally friendly and renewable materials.

Environmentally friendly architecture is also called green architecture or eco-architecture, which proposes principles that should be adopted by architects. These comprise: (FutureArc Vol 2, 2007).

a) In the efficient use of energy

Architecture may be the most influential medium with the implementation of sustainable architecture, because it gives direct impact to the land. Design concepts that can minimize the use of electrical energy, for example, can be classified as sustainable concepts in energy, which can be integrated with the concept of the maximum use of sunlight resource for lighting, natural airing, heating water for domestic needs, and so on. Some of the important aspects to be applied include:

• Utilizing the sunlight for a maximum natural lighting during the day in order to reduce electrical energy use

- Utilize natural air circulation instead of artificial air conditioning (Air Conditioner). using ventilation openings, cross air circulating, and other innovative means
- Utilizing rain water in innovative ways to accommodate and process rain water for domestic use
- The concepts of efficient use of energy such as natural lighting and natural air circulating are specific concepts for regions with a tropical climate.

b) In the efficiency of land use

Land, which has been increasingly less spacious, expensive, and precious, should not be entirely used for buildings, for there should always be green land and sustainable support for land potential.

Some aspects to note are:

- To use the existing land as needed, not to use the entire land for building construction and not to cover the whole land with buildings, as this will leave the existing land with not enough green areas and parks. By using the land efficiently and integratedly, the potential of green floral on the land can be replaced or maximized by means of a number of innovations, such as by creating green roof above the building (roof garden), hanging gardens (by hanging pots of plants on the surrounding buildings), living plant barriers or fence barriers filled with plants, or walls with attached gardens.

Roof Garden

- Innovatiuve wall with bamboo in a house.

- Appreciating the presence of plants on the field, by not easily cutting down trees, so that the existing plants can stand tall to share the land with the building.

Work by Popo Danes
Villa Bayad, Bali

- Open designs with spaces that open onto the garden (in accordance with the flexibility of an open-close preplanned designed) can be the form of innovations to integrate the outside and inside of the building, giving greater flexibility of a greater space. In planning the design, keep in mind some aspects that can be measured in using a variety of land potential, for example, how much space is needed? Where is the location of the land (in a city or village) and what are the consequences of the design? What is the shape of the site and how will it influence the design of spaces? How much lighting potential and natural air circulation that can be used?

c) In the efficient use of material
  - Utilize left over materials in development as well to avoid wasting material, for an instance, scrap woods can be used for other parts of the building
  - Utilize used materials for buildings, old components that can be reused, such as used items from demolition of old buildings.
  - Use both abundant materials and rare materials wisely, especially for the increasingly rare material such as wood.

d) In the use of technology and new materials

- Make a good use of the potentially renewable energy such as wind energy, sunlight and water to generate electrical energy for domestic household and for other buildings independently.

- Use new materials through new inventions that can globally open up opportunities to use renewable materials that are quickly produced, cheap and open to innovation, such as bamboo.

Bamboo House of Elora Hardy, Bali

d) In waste management

- To create an independent treatment system for domestic waste such as dirt water (black water, gray water) that does not disturb the city's water flow system.

- Innovative ways that worth a try are such as creating a system for decomposition of organic waste in order to decompose it naturally in the soil, or creating ordinary

objects from materials that can be easily recycled or can easily decompose naturally.

- This is in accordance with the tradition of the Prophet, who said that cleanliness is part of faith. (Zainuddin, 1992).

Rahmatan lil alamin Architecture in Built Environment

The development concept of *Rahmatan Lil Alamin* (including "sustainable architecture") is not well understood by the general public and even by architects themselves. Additionally, building construction technology is not developed as fast as other technologies. Sustainable architecture is a concept applied in architecture to support the sustainable concept, namely the concept of maintaining natural resources to last longer, which is associated with the potential age of the vital natural resources and the ecological environment of human beings, such as the system the planet's climate, farming systems, industry, forestry, and of course architecture.

Sustainable architecture is now considered highly important as a result of the rise of the global warming. Sustainable architecture is supported by Green Architecture / Eco-Architecture. Global warming is no longer an issue provided that the facts on the ground have shown that the Earth experienced a lot of damage and an extreme climate change. This fact causes people to rush on thinking about the best way out. So do also the architects, since in fact the largest energy users is found in the field of architecture, although Indonesia is relatively late in responding.

To properly address this problem, architecture should be based on renewable energy consumption. Architects are encouraged to use the ecological base thinking in their decision

making. And this ecological thinking is a principle of *Rahmatan Lil Alamin* in Architecture.

However, "eco-architecture" is not an architectural style. "Eco-architecture" is the paradigm of how architecture can participate in a sustainable development, and how architects make decisions and set priorities. The ecological based thinking should be applied as the basis for decision making in architecture.

"Eco-architecture" has developed to have its own vocabulary and expression. However, architects are not expected to see this paradigm as a "style and trend of eco-architecture" and ignore the ecological thinking in it.

The occurrence of the global warming challenges architects to produce environmentally friendly design work, or better known as "green design". Indonesian architects should have courage to stand out to be agents of development in the creation of environmentally friendly architectural design. "Domestic interior designers or architects should not be merely money oriented, and hence do not care to have a good awareness about environmentally friendly design. The implementation of "green design" in the development of the times is in fact very easy to apply. (FuturArc Vol 7, 2007)

It is now about time to implement eco-architecture in built environment. Built environment means an environment that characterized by the dominance of man-made structures. The systems a built environment depends on the intake of energy, resources, and human engineering in order to sustain. In urban planning this term implies that most parts of the environment inhabited by man are of man-made environment, and that built environment should be adjusted in order to well preserve human. (FuturArc Vol 7, 2007)

In essence, the spatial planning activities have an ultimate goal of creating better living environment, in which determining whether a living environment is classified to be 'good', 'less good' or 'ba' is not an easy conduct. Quite often the quality categorization is closely related to the local cultural context (Rapoport, 1979), so the quality that is considered good for a certain group in a certain area might be classified differently by other groups in the same place, or by the same group at different times.

Thus, the quality of a living environment needs to be understood and studied in its cultural context, as has been defined and understood by the groups involved in the assessment (Samadhi, 2004). In other words, "what is the meaning of living environment quality for a particular group of people" is a fundamental question before conducting planning activities.

Buildings and the surrounding environment is a place where man's main activities take place every day. Formation an environment that combines the harmony between the form of design and the surrounding environment is a concept promoted in eco-settlement. One of its manifestations is to encourage constructions of settlement with the concept of environmentally friendly architecture or green architecture

The architectural design of *Rahmatan Lil Alamin*, or often referred to as the "Green design", is a design concept for producing a built environment that is developed and operated in a sustainable ways. Sustainable architecture in a built environment is a condition in which most of the elements involved during the process of utilization / operation of a system (eg: buildings, residential complexes, cities) can continue to function for a long span of time and to constantly provide self renewal for their

resources, to have only slight replacement, or not to cause other sources to be reduced in amount as well as in quality. Widespread implementation of this concept of "green design" can only be effective when it is supported by the building industry, that is, by developing a number of materials and construction technologies that are environmentally friendly. "Green design" is not a trend or a style in designing, it does not represent a form or a particular expression. It is more of design principles that incorporate aspects of the environment as one of the main considerations in the design.

The Technology to Support Sustainable Architecture

Advances in technology make human living easier and more enjoyable, but the negative impact of such progress is also not insignificant. Among the negative impacts are such as pollution that causes damage to the environment and wasting of non-renewable natural resources. If advancement in technology only focuses on sophistication without considering the negative effects on life, then in reality it is not a true advancement but rather a setback.

Environmentally friendly technologies (eco-friendly technology) can be summarized as all kinds of technological applications that provide satisfaction on the part of users with lower utilization of environmental resources. Before the emergence of ecological awareness, people only think of the economy. The technology applied was the cheapest viewed from the economic angle, using low cost natural resources and human resources although from the point of ecology they might be considered costly. This was the case because the economic system still rarely appreciated environment at reasonable prices.

Broadly put, environmentally friendly technology is a technology that save environmental resources (including raw materials, energy and space), and therefore it leaves only a little waste (either solid, liquid, gas, noise or radiation) and it gives less risks to the occurrence of disasters. Environmentally friendly technology which is currently being developed comprises:

Solar energy, as it is considered to be the most environmentally friendly energy. Compared to using a drying machine, laundry drying with sunlight heat is more environmentally friendly. The clothesline just needs to be redesigned for practical as well as aesthetical reasons. Such is also the case of heating bath water with sunlight heating. For a large amount and for a restoration a solar-collector completed with a tank might be required. The technology is actually simple and inexpensive, but it can significantly save electricity or gas, especially in hotel managements.

With a proper ventilation system, designs of buildings can save on lighting and air conditioning, especially when the style of clothing is adjusted. The fashion in Indonesia tends to misleadingly adopt that of the invaders: for formal occasions Indonesians wear a coat and tie, then in order not to gain comfort, air conditioners are turned on at low temperatures. For comparisons Indonesians need to consider Thailand or the Philippines, which set civil servant uniform in with collar T-shirt.

In Germany and Japan, wherein environmental consciousness has been high, many people develop eco-house that optimally combine various functions of the house. The outside walls are covered with vines, the roof is coated with solar panels, water and air flows are thought out as well as possible, for example, used water from the room heating can be used for bath

and the waste is used for the stool flush. The septic-tank produces methane gas that can be used to add energy for the kitchen.

In this light, it is quite natural that architects started to think about how to plan, to design, and to build up or to redesign objects that are environmentally friendly. Environmentally friendly architecture or what we call eco architecture in this term is defined by Heinz Frick as the ecological dimension in architecture that is highly attentive to the limited natural environment and natural resources. The word eco refers to the word ecology, which is the science of interactions between all kinds of living beings and their environment. In the world of architecture environmental problems have actually won much attention from some architects. Some solutions have been realized through the design of smart buildings, buildings that apply the principles of solar passive and active energy (British pavilion designed by Nicho las Grimshaw & Partners, built in Expo complex of 1992 in the city of Seville, Spain), building with geomansif design, and eco house. Basically, in addition to the smart building systems, the other three have close similarities in terms of utilizing the natural surroundings as well as possible and in aiming to preserve the nature. Eco house is a derivative of eco architecture. In principle, the planning concept and its design is similar with that of eco architecture but it more specifically deals with house. In general, eco house does not provide fixed standardization and rules regarding what should be done in planning and designing eco-house, since there are no such binding characteristics. This pattern covers the subject of how to line up human and natural environments, and this indirectly means how to harmonize man with the nature, the society and the culture, the space and building techniques. So the concept of eco-house is not just focuses on buildings with natural look, but more

than that, all process of activities taking place in their construction must be ecologically friendly. This does not mean that the house should be anti technology, but the technology used be applied only as needed and the right technology should be decided in order not to damage the environment.

Conclusion/Recommendations

Local knowledge or what is often referred to as Local Wisdom in architecture is not only based on the knowledge handed down from ancestors on the basis of merely experience, but rather it should be implemented in developing designs and constructions. This means that Muslims architects should refer to the Qur'an and Sunnah in preparing architectural designs in order to realize the architectural design of *Rahmatan Lil Alamin*, which is an environmentally friendly architecture, comprising both the natural environment and the built environment. This is also often called designing buildings with the principles of green design, to develop a sustainable environment.

In reality, when an environmentally friendly technology (eco-friendly technology) is applied on all aspects of life it can provide satisfactions on the part of the users with low use of environmental resources. This means that efficiency is something that God commands in the Qur'an Surah Al-Araf: 31, which says that God is not pleased with those who exaggerate or in all respects, including in terms of design. Therefore, it is normal that architects have started to think about how to plan, to design and to build environmentally friendly objects. This can be achieved when architects practice the true teachings of Islam with the guidance of the Qur'an and Sunnah, and hence produce architectural design that is friendly to the natural environment, the culture, and to

benefit the surrounding community. This is what actually meant by the term acrchitecture of *Rahmatan Lil Alamin* (Q.S. Surat al-Anbiya: 107).

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