

NATURAL CONSERVATION AND ARCHITECTURE

CASE STUDY: THE ARCHITECTURE OF APARTMENT IN SURABAYA

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ABSTRACT

Nowadays, architecture can no longer be unconcerned by the problem that faces the world. Particularly the most basic problem of natural conservation. As an attempt to preserve the nature, green architecture is the jargon that we are frequently heard. But have this noble intention really implemented in contemporary developments of high-rise buildings? This research was intended to find any congruence between theory and reality. Surabaya in Indonesia, as the city which is now known to have a thousand parks, pays attention to the greening of the city through planting trees within the city's landscaping plan. But is this green gesture also implemented in the context of architecture? By sampling and analyzing several apartments in Surabaya as case studies, this research sought to comprehend any congruence and incongruence between architectural theories and their practices through survey and descriptive criticism methods. The results were intended to provide constructive suggestions to the practices of architecture.

Keywords: *natural conservation, architecture, apartment*

I. INTRODUCTION

Architects, as the people behind uncontrolled building developments, are still believed to be the culprit of natural devastation. Bouchlaghem (2012) also pinpointed that built environment is the largest contributor to energy consumption and carbon emission. As of 2012, housing architecture is the object that contributes sufficiently large natural devastation. In a research with sustainable architecture context, Rachmawati (2009) showed that the most important issue of the 21st century that should be noticed by every practitioner of architecture is natural conservation. Since early 1970s, many people have initiated concerted efforts to preserve nature after the first oil crisis which also marked the birth of ecological movement (Steele, 1997: 229). McDonough (2000), Crowe (1997), MDG, and many others have also been encouraging the preservation of natural environments is an imminent necessity.

This research investigates specific aspects related to natural conservation and integrated architecture which is then implemented to high-rise public housings such as flats and apartments. Through a series of interview regarding green architecture with various people, as well as through field studies of its implementation, using descriptive and normative criticism methods, this research is intended to provide results that show any

congruence or incongruence between theories of housing architecture and its practice within the context of environmental architecture.

II. THEORY AND METHOD

Brenda & Robert Vale (1991:15) in *Green Architecture* suggested that architecture should take part in the global effort of saving the earth. Architecture that stands upon the earth in a better future (Vale & Vale, 1991:42). They also proposed six principles that coherently can build green architecture, namely: energy conservation, co-operating with climate, minimizing the consumption of new resources, respect to users, respect to land, and done thoroughly. From those five elements, hence architecture should join the effort of saving the earth as well. These efforts from Vale were more concerned with public awareness on saving energy for the future through an integrated and comprehensive management. Such a problem-solving for environmental issues is also known as ecological architecture, or sustainable architecture. One of the prominent promoters of sustainable architecture, John Norton (1999), elaborated that there are several principles that can be referred to in assessing sustainable architecture. Additionally, the consumption of natural resource can be conducted only when it is possible and in sufficient amount to prevent natural devastation. Norton emphasized more on local elements of architecture, including material selection and transportation which should be prioritized for locally-made materials and/or from local vendors, labors and experts also come from local communities, within the context of local socio-economy, responsiveness toward local climate, adapting to local customs and needs and intending the products to be reproducible by local people.

Therefore, a direly needed architecture should not only be in alignment with the environment by preserving existing natural resources, including by efficiently selecting renewable materials; but also through a more thorough approach that involves human and all natural aspects in a continuous cycle in order to restore the nature. Rachmawati (2010) showed viewpoints related to how to make architecture to be in alignment with nature and environment, by maintaining existing natural resources; continuously better life quality for mankind, based on two viewpoints, that is, how to build and how to use architecture:

1. Creating building/architecture with minimum destructive impact on nature:
 - Minimizing unfavorable impacts on nature;
 - Minimizing the consumption of non-renewable energy;
 - Minimizing the use of toxic materials;
 - Minimizing the devastation of natural elements: vegetation, water, air, soil, and climate;
 - Minimizing excessive use of energy/materials;
 - Minimizing building footprint on site;
 - Recycling building materials and other human needs to enable them for further or repetitive use, or recycling for personal use; recycling building materials to prepare them for natural decomposition and integration into the earth.
2. Utilizing building/architecture in a way that preserve nature and the people inside:
 - Minimizing the use of toxic materials;
 - Minimizing dependency toward mechanic or electric conditioning system;
 - Minimizing the devastation of natural elements: vegetation, water, air, soil, and climate;

- Minimizing excessive use of space/land.

Based on a review regarding nature and its correlation with human, there are several directives to be noticed:

- 1) Human plays an important part in the making of built environments that are both most comfortable and still in alignment with nature;
- 2) Mankind must be able to align/create a symbiosis between nature-made and man-made environments;
- 3) To enable comprehension works together with nature and its resources in harmony as rooted culture and personality of mankind.

Another aspect that should be noticed is the architectural location, from which there are several things that should be implemented, including:

- 1) Promoting locality as a significance in architecture: utilizing local materials, locally available machineries, local workers; preserving indigenous culture/tradition/history, keeping track records of local environmental impacts.
- 2) The result should be able to be replicated by local communities.

Based on all review, aforementioned work that should be done by architecture, most importantly is to manage all three aspects holistically, comprehensively, and integrally among each other—among nature, human, and locality—between an ecological way to another. In other words, the result would showcase an integrated green architecture.

III. METHODS

This research is a qualitative research which requires several interview techniques and field studies to gain data related to aspects to be identified. In a qualitative research that is intended to be able to critically examine housings in Surabaya which data come from literatures or field studies, a method that can describe something through analytical and rhetorical strength. From all methods proposed by Groat & Wang, 2002, a suitable method is the logical argumentation method.

Using data obtained from literature and field studies, as well as structured interviews, this research is intended to obtain data which then is analyzed using descriptive and normative critical methods. There is a possibility that data collection may not come from one similar source for all three aspects. The management of one aspect may come from a different region. Hence, preliminary survey is needed to determine which location that can represent existing problems.

IV. RESULTS AND DISCUSSION

From a total amount of nine flats, six middle-class apartments, and two luxurious apartments; this research examines two flats, two middle-class apartments, and two luxurious apartments, including flats/apartments located across Surabaya. Observations on existing apartments were conducted by noticing aforementioned aspects, which are classified into three main groups, namely: architecture and natural preservation, in relation to human and locality.

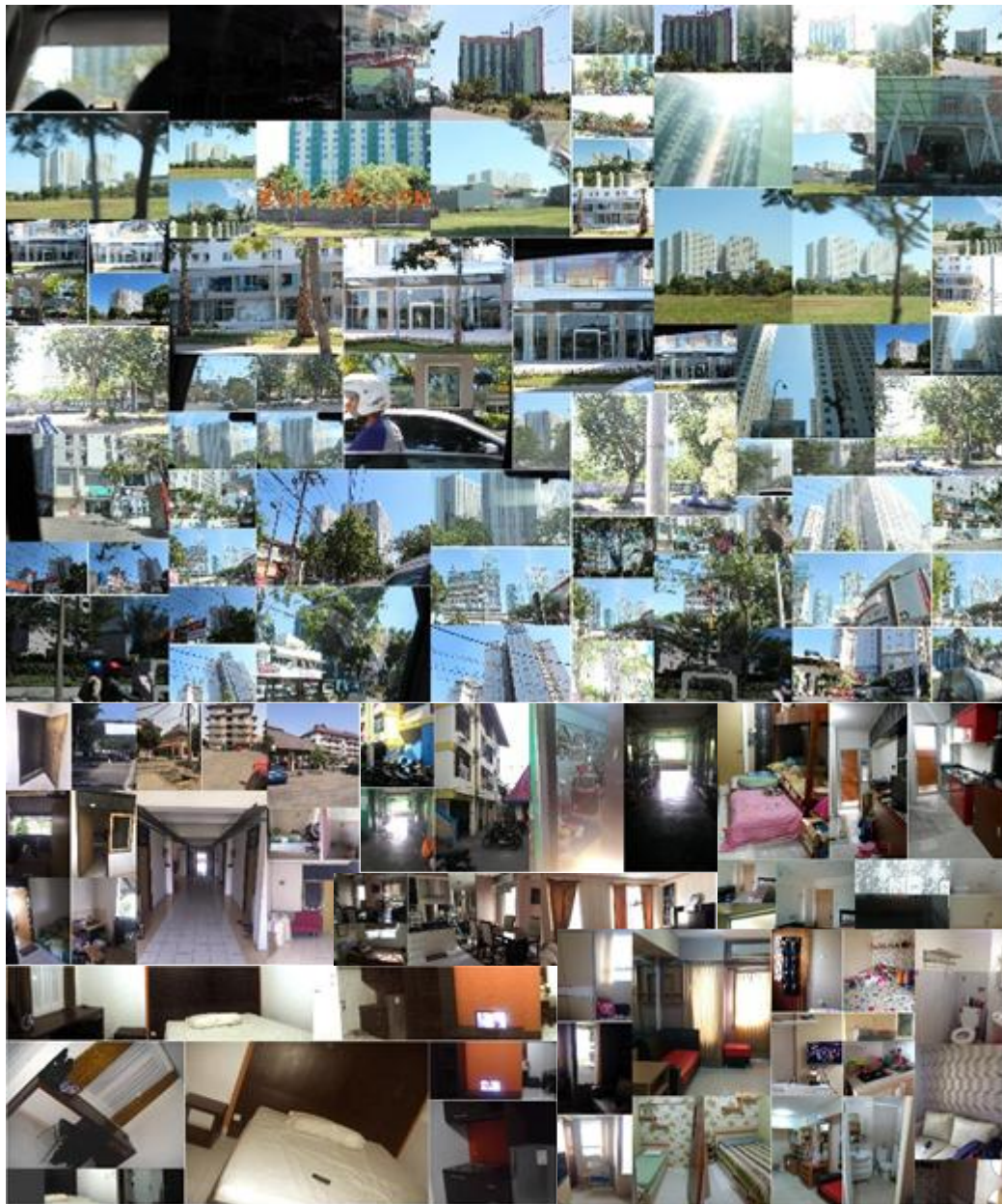


Fig. 1. A Mosaic of Apartment Pictures in Surabaya

Apartment buildings usually were built on a piece of fertile land, and only a small portion of the land is not cemented and built upon. Most of the lands are used for building foundations and floors. From all studied apartments, minimal footprint that should be maintained is not accomplished. Although apartment units have terraces, most of them are left without vegetation but used as sunlit spots to dry clothes and towels. Efforts to provide vegetation are merely for aesthetical purposes. Most apartments apparently do not have closed fences, only few apartments which stand on the sides of main roads. Most of them built stone fences combined with vegetation, others use hedges. Most apartments tried to minimize unfavorable impacts of nature on their residents of the sake of comfort, but were not concerned with the preservation of natural elements, particularly: soil, air, and vegetation. Efforts to minimize unfavorable impacts of nature are also noticeable from the utilization of electrical air conditioning and fans, and not relying on climatically-optimized architectural designs.

The selection of non-toxic materials were also left unnoticed by the architects of existing apartments, not to mention the utilization of renewable energy. The implementations of material recycling were limited to reusing formwork woods for frameworks of plafonds. While casting design seems very efficient. It is caused by the steep price of land, hence common and living spaces were designed according to the primary needs. Luxurious apartments, however, have the luxury of spacious atria filled with vegetation and public facilities such as a swimming pool.

The design of apartments that is heavily controlled by the architect is different from land houses, which are usually designed according to the owner's requests. Architects design their apartments by calculating what they believe in. The outcome is a reflection of architects' humanistic role in shaping apartments, whether or not he or she is able to synchronize natural with man-made elements. Unfortunately, the comprehension possess are not used entirely to design architecture that can synergize with and not endanger nature, but prioritizing on the aesthetics and efficiency of space.

This research is located in Surabaya which should utilize local materials, labors, and machineries; also taking notice of local history, culture, while keeping track records of impacts on local environments. Most apartments used local material, which means they are available within Java Island or Indonesia. The labors did not come from local communities, but outsourced to workers from other cities. Heavy machineries were commonly utilized in combination with conventional/traditional utilities. The roles of human workers, however, were not central; merely as operators of machineries or for works needing manual handling by hands. As of today, there are no effort to keep track records of environmental impacts of building location in all studied sites, as well as the entire city, as a measure to prevent worsening natural devastation.

V. CONCLUSION

It is safe to say that the definition of natural preservation in relation to architecture or green architecture is limited to mere efforts to add greeneries on the ground level of apartments or flats; although there are attempts to add potted plants. This is hardly natural preservation in a deeper sense, which includes the use of renewable energy, minimizing building footprints on land, and recycling building materials. In terms of technology being used, a conventional/traditional way of labor-intensive works was still preferred for small and non-structured developments. While structural buildings were mostly supported by heavy machineries. It is not confirmed whether or not they use toxic materials, as well as reutilize used/recycled materials. Most common were reusing formwork woods for the frameworks of ceilings. Natural preservation related to architectural design has yet be implemented well, not as common as planting trees on empty spots on the ground level and on roadsides around the city. The cultural tendency of Surabaya's cooperative and communal residents is apparent in flats, facilitated by several public utilities that enable various communal activities. Cooperativeness in flats enables a share of knowledge on natural preservation such as planting trees and so on. On the other hand, middle-class and upper-class apartments only provide togetherness through common shops and restaurants. This togetherness and cooperativeness is spreading thin day by day, as shown by the lack of initiative to green their apartments with potted plantation. They usually were satisfied with what they get when purchasing their apartments.

This research is concluded with a conclusion that further comprehension and integrated implementations of architectural theories on natural preservation are still needed so that efforts in natural preservation can really be

committed by apartment architects and residents. A primary alternative that can be determined is to make the principle of natural preservation in architecture as one of the requirements in building development, as well as an ethical reference which sanctions moral penalty for its violators.

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