Invisible in Architecture Confront the Green Architecture

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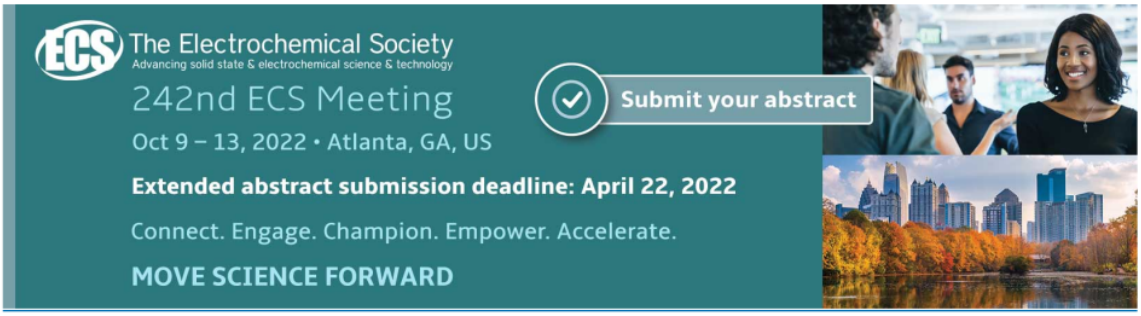

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Invisible in Architecture Confront the Green Architecture

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Abstract. This paper intended to discover how the invisible in architecture in the perspective of behaviour environment, confront the green value in architecture. The invisible in architecture understood as tangible architecture or space, but for some reasons taking place effectively invisible. A cradle–to–grave even a cradle–to–cradle paradigm of green design is still flourishing and many architects still use them, but among many designs still leave the unexpected effectively invisible spaces. The study conducted over and done with literature studies in descriptive manner. The aim of this study enquires the designers beside should keep a cradle–to–grave even a cradle–to–cradle paradigm in action, should be taking into account architectural basic order and spatial order in tremendous way and considering human behaviour in such order, clear function, versatile space, and proximity. This actually can be able to decrease the invisible in architecture. Furthermore, it can be able to reduce even avoid wasting resources, inefficiency, and degradation of the green value. The simple and old theories of architecture if applied in tremendous way, actually can help to overcome the new problems particularly the invisible in architecture in regard with confrontation to the green architecture.

1. Introduction

Despite sustainable architecture considered utopian, yet the architecture and building at the most, still concern to green paradigm. Some countries make necessary every design should meet green standard and achieve certification. The following Table 1 [1] in next page shows summary of green building rating and certification systems of international program in some countries. Green paradigm still flourishes after having existed for a long time. Laura L Barnes one of prominent persons has issued and published reference guide includes links to both popular materials and information that is more technical [2]. Green design is a product that designed with the whole life cycle in mind and not just thinking about how the product performs. Green designer should look at the whole chain of production, from mining and processing, to manufacturing, use, and disposal, in order to minimize or even eliminate the negative impacts and integrate sustainable practices. Such as using materials that will not become waste when the products are recycled, but can be closed loop recycled back into new products. This ends the traditional cradle–to–grave life cycle in support of a greener cradle–to–cradle. Green building as architecture intermediate offers many benefits, to be exact financial benefits that will not happen in conventional buildings. The benefits include energy and water savings, reduced waste, improved indoor environmental quality, greater employee comfort means productivity, reduced employee health costs, and lower operations and maintenance costs [3].

In the opposite side, to be exact the architectural design side, Rapoport's invisible in architecture in regard with behaviour environment recognized that tangible architecture or space, for some reasons occurring effectively invisible process. The side invisible in architecture, found indoor and outdoor

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spaces that caused by some reasons taking place effectively invisible [4]. This phenomenon frequently occurs in the context of vernacular environment but we can found many cases in the context of urban as well, including indoor and outdoor spaces as parts of buildings (see Figure 1).

This study performs literature studies in descriptive manner and tries to offer some simple yet significant conclusions to architecture other than benefits stated above. The aim of this study enquires or asks the designers, should they keep a cradle–to–grave even a cradle–to–cradle paradigm applied in their designs. Beside should be taking into account architectural basic order and spatial order in tremendous way and considering human behaviour in such order, clear function or particular function to every space or make them versatile; consider proximity to every space involved in space organization so that easy to use and maintain. This manner actually can be able to decrease the invisible in architecture, furthermore can be able to reduce even avoid wasting resources, inefficiency, and degradation of the green value.

Table 1. Summary of Green Building Rating and Certification Systems
Source (Whole Building Design Guide – WBDG, 2016)

BUILDING RATING AND CERTIFICATION SYSTEM	SINGLE OR MULTI ATTRIBUTE	TYPE OF STANDARD OR CERTIFICATION	MANAGING ORGANIZATION	ISSUES AREA OF FOCUS
BCA Green Mark Scheme (Singapore)	Multi Attribute	Benchmarking scheme that aims to achieve a sustainable built environment by incorporating best practices in environmental design and construction, and the adoption of green building technologies.	Building and Construction Authority (BCA)	**Rates buildings according to five key criteria:** • Energy Efficiency • Water Efficiency • Environmental protection • Indoor environmental Q • Other green and innovative features that contribute to better building performance
Beam (Hong Kong)	Multi Attribute	Certification system is a multi tiered process with pre assessment, third party consultant guidance through an assessment organization for • New Construction • Communities • In Used Buildings and • Eco Homes	Business Environment Council	**Performance and Assessment in:** • Site aspects • Material aspects • Water use • Energy Use • Indoor environmental Q • Innovations and additions
BREEAM (UK, EU, EFTA member states, EU candidates, as well as the Persian Gulf)	Multi Attribute	Certification system is a multi tiered process with pre assessment, third party consultant guidance through an assessment organization for • New Construction • Communities • In Used Buildings and • Eco Homes	BRE Global	**Assessment areas include:** • Energy and water use • Internal environment (health and well–being) • Pollution • Transport • Materials • Waste • Ecology and • Management processes
CASBEE (Japan)	Multi Attribute	**Building Assessment Tools For** • Pre–design • New Construction • Existing Building and	JSBC (Japan Sustainable Building Consortium) and its affiliated sub committees	**Assessment areas include:** • Energy efficiency • Resource efficiency • Local environment, and • Indoor environment

BUILDING RATING AND CERTIFICATION SYSTEM	SINGLE OR MULTI ATTRIBUTE	TYPE OF STANDARD OR CERTIFICATION	MANAGING ORGANIZATION	ISSUES AREA OF FOCUS
Pearl Rating System for Estidama (UAE)	Multi Attribute	• Renovation **Green Building Rating System For** • Community • Buildings • Villas • Temporary Villas and Buildings	Abu Dhabi Urban Planning Council	**Assessment of Performance in:** • Integrated Development Process • Natural Systems • Liveable Communities • Precious Water • Resourceful Energy • Stewarding Materials • Innovating Practice

2. Method

This study is conducted over and done by literature studies including author's earlier research, and presented in descriptive manner. The invisible in architecture of Rapoport's environmental behaviour perspective was studied and parts of author's doctoral thesis or dissertation, while green architecture was studied parts of author's magister thesis.

Green building and sustainable building comprehended as buildings refer to the design and construction of buildings that have minimum impact on the environment. Those are including energy and water savings, reduced waste, improved indoor environmental quality, greater employee comfort/ productivity, reduced employee health costs, and lower operations and maintenance costs [7]. Green building encompasses all phases of design, well known as cradle to grave process, from materials selection until construction including life cycle analysis and energy efficiency.

Green design is a product designed with the whole life cycle in mind and not just thinking about how the product performs. Such as using materials that will not become waste when the products are recycled, but can be closed loop recycled back into new products. This ends the traditional cradle–to–grave life cycle in support of a greener cradle–to–cradle. In Indonesia, green paradigm has been flourishing since 1990's through two generations, although the standard and certification of green building in Indonesia not yet effectively applied, this shows how the awareness of Indonesia architecture to environment increasing [6].

In the opposite side, to be exact the architectural design side, Rapoport's invisible in architecture recognized that tangible architecture or space, for some reasons happening effectively invisible process. This phenomenon frequently occurs in the context of vernacular environment but we can found many cases in the context of urban as well, including indoor and outdoor spaces as parts of buildings (see Figure 1).

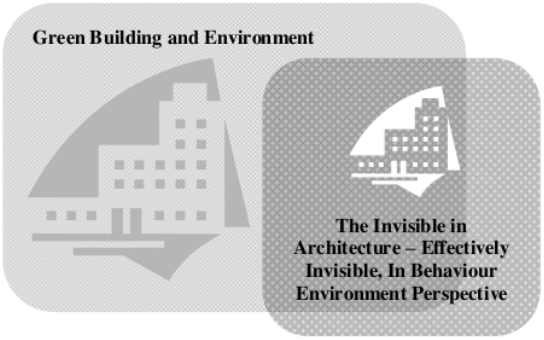

Figure 1. Green Building and environment versus Invisible in Architecture

Nowadays, encircled by industrial revolution 4.0 era, invisible architecture as far as people concern are architectural works that achieve distinctive appearance by minimizing of what are being built, these can be buildings, pathways, and all materialized designs. In short, invisible architecture creates illusions of nothing being there. Many years earlier, invisible architecture known as parts of building that hidden or covered such us perceptible structural system, mechanical and electrical system, and plumbing system.

Nevertheless, as mentioned earlier, there is invisible in architecture in Amos Rapoport environment–behavior perspective. Invisible in architecture comprehended as indoor and outdoor spaces that cause of some reasons occurring effectively invisible. The phenomenon shows the deprivation of relationship between human and the environment. This happen since the cultural landscape only pays attention to the relationship between material elements than to the nature of material. Name it a building material considered bad so that outstanding relationship immediately invisible, the best example for this case occurred in developing countries settlement. Actually, those conditions still create extra ordinary setting since the functions stay run very well. Another example, building that considered looks bad, made of bad material, soil floor, and without utility. As soon as the building turns into better condition, have good association with the users, yet the building effectively invisible since the literature avoiding them.

3. Results and Discussion

Many architects are still using basic order and spatial order in their design processes such as Particular and Clear Function, Versatile Space or Multi–functional Space, and Proximity. There are many reasons why indoor space as parts of building and outdoor space is occurring effectively invisible. Summarized from Rapoport's invisible in architecture, the reasons among others are avoiding behavior setting, avoiding publication, ethnocentrism, and invisible landscape in the head.

Functionalism in architecture has principle that architects should design a building based on the purpose of the building. In a building, function of spaces represents certain activity or activities embraced. In the years of early 20th century, Louis Sullivan an architect of Chicago introduced and popularized the dictum form follows function in order to define his conviction, that a building, design order, and other characteristics should only according to the function of the building. The implication of this, considered that if the functional aspects were satisfied then architectural beauty would follow naturally and necessarily [3].

A space is the opposite of an entity; it could be building, pathways, and other materialized design. Outside or surround of an entity, there is the space that is invisible and untouchable. Moreover, space is something formed in the relationship between an entity and the one who feels it [7]. The so–called space should accommodate certain activities or clear activities of an organization by considering the behavior of users, so that can avoid the space from inactive condition. Nevertheless, dictum Louis Sullivan's form follows function actually is not really in critics. In Sullivan's architectural theory, as

Collins in *Changing Ideals in Modern Architecture 1750-1950* pointed out; the functionalism necessary for life in nature was considered necessary for beauty in architectural design [8].

Versatile space literally means space with many uses. Versatile space, which is multi–functional, is the opposite of unitary space. Versatile space accommodates diverse functions, while unitary space is only suitable for a particular one. We should make an improvement to all negative spaces as parts of invisible in architecture in order to reduce the disadvantages, furthermore reduce inefficiency in energy. Versatile space offers or facilitates new functions with or without physical changes. Facilitate new functions in most cases does not require the change of the whole structure.

However, to modify or replace building parts is a difficult thing, because the adjustment would affect other parts, and require removing or taken away the parts even has to rebuild. These building parts might be under control of different parties, and need correspond with those parties. There were friction and conflict in the process of change or adjustment; we will find a kind of building mess or building entanglement [9]. Versatile space that embraces well–planned multi use by involving the behaviour of users can remain the space occupied even one or more uses decrease even dismiss. Furthermore, it would be an advantage if the space designed as open plan and flexible.

Proximity literally means nearness in space, time, and relationship. Consider the proximity in space organization give some benefits. For example, in the telecommunication and internet era, physical proximity increases in forms of collaboration. Hagstrom (1965) demonstrated this phenomenon for scientific collaboration in the 1960s, and it is still true among scientists who have access to the Internet and are heavy users of telecommunications and computer–mediated communications. A reanalysis of data reported in Kraut, Egido, and Galegher (1990), predicting the probability of successful collaboration among scientists and engineers in a large telecommunications company. This company had been using Internet–based e–mail since its founding, and at the time of data collection, every member of the research division had an e–mail account and a personal workstation or computer, and most used e–mail heavily.

Nevertheless, in this circumstance, pairs of researchers were doubly to complete report together unless their offices were physically near each other, even if they had previously published on similar topics or worked in the same department in the company. However, researchers with the most similar interests were more than four times as likely to publish together if their offices were on the same corridor, as they were if their offices were on different floors of the same building. Researchers whose offices were in different buildings, almost never collaborated regardless of their research interests [10]. Physical proximity offers one of many solutions to the spaces regard as invisible in architecture. Spaces with certain functions involved within the proximity of space organization, will control to each other in regard with to keep the spaces effectively used, and visible so that easy to maintain.

Conclusion

Green building offers numerous advantages including energy and water savings, reduced waste, improved indoor environmental quality, greater comfort/ productivity, reduced health costs, and lower operations and maintenance costs. Nevertheless, yet has some disadvantages that relates to architectural design of the building other than the energy saving and quality of the environment. There is the invisible in architecture, idle parts of buildings and spaces that occurring effectively invisible. Those spaces encounter such as less function, less visible, less maintenance have confronted the green value. By taking into account architectural basic order and spatial order in tremendous way besides considering human behaviour in such order clear function, versatile space, and proximity, actually are able to decrease the invisible in architecture. Furthermore, it can be able to reduce even avoid wasting resources, inefficiency, and degradation of the green value. The simple and old theories of architecture if applied in tremendous way, actually can help to overcome the new problems particularly the invisible in architecture in regard with confrontation to the green architecture.

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