

Spirituality enhancing into Green Design: towards a better users' performance within a green building – “HSBC processing centre”, Smart Village, Cairo, Egypt

W. H. Abbas

*Department of Architectural Engineering, Faculty of Engineering,
Alexandria University, Egypt*

Abstract

The Earth is a complex planet that has such sophisticated life processes which serve as an inspiration for the process of Green Design. Green Design deals both with natural and built environments, and concerns itself with nature, energy, and cycles as well. Energy efficiency and creating comfortable environments are the most outstanding principles which need to be met when designing particular spaces, or building spaces. The concept of contextualism is closely related to the means of respecting the individual character of a place. It basically entails appreciating the local, regional and global context of the space; in other words, it embodies this “green” concept. At the same time, it is clear that it deals with the energy and natural cycle physically. For thousands of years, as a traditional means of social regulation, Traditional Chinese Medicine (TCM) has been producing theories and philosophies that seek to connect the human body and the spirit, and Feng Shui which deals with nature and previous goals of Green Design psychologically. This is twofold: first, the energy in Green Design principles refers to the material energy which could be tested or quantitatively measured; second, Feng Shui focuses on the meanings of the material's invisible energy which can be qualitatively sensed. This paper is an attempt to reach the utopian state known as “Green Chi Design” by creating an environment integrated with the human soul; a synthesis of the two stated approaches together. Many questions arise herein about the necessity of enhancing the existing spaces to “chi” spaces, the major faces of that combination and different reflections on the human apart from health. *Keywords: Green Design, contextualism, Traditional Chinese Medicine (TCM), Feng Shui, invisible energy, utopian state, Green Chi Design.*



1 Introduction

There is no doubt that the environment is of the utmost importance for every creature; be they human, animal or plant. Through its contradicted themes from one side to the opposite side, it varies from simple complexity, mysterious obviousness or even violent pacific. Thus it can be argued that humans are closely connected to their environment, and there is an interaction between spirit and the environment. The known fundamentals of Green Design guide both users and architects to a sustainable approach that combines major elements and principles of both Green Design and a socioeconomic approach. The physical and tangible models, in architectural contextualism, produce the model of the space requirements within the surrounding conditions to achieve the optimum performance and efficiency during the design process. This raises several questions. Firstly, where is the human soul? What are the major interferences between negative and positive human energy and a space if the sustainable theme is applied? And, last but not least, what is the futuristic vision of this discussed approach?

2 Green Design

“Green,” “sustainable,” and “high performance,” are terms that, when used to describe a space, have different connotations. However, in terms of contextualism they are used interchangeably. The intention of Green Design is to eliminate negative environmental impact completely through skilful and, sensitive design. Manifestations of sustainable design require that there be no non-renewable materials used that would minimally impact the environment, as well as a connection with the natural environment [1]. Beyond the elimination of negative environmental impact, a sustainable design must create projects that are meaningful innovations and that can shift behaviour. It seeks a dynamic balance between economy and society, and intends to generate long-term relationships between the user and the object/service. Finally, it seeks to be respectful and mindful of the environmental and social context. Sustainable design seeks to reduce negative impacts on the environment, improve the therapy for the best building performance and to minimize the consumption of non-renewable energy. Besides minimizing waste and creating health, utilizing a sustainable design philosophy encourages decisions at each phase of the design process that will reduce negative impacts on the health of the occupants [1, 2], without compromising the bottom line (fig. 1). It is an integrated, holistic approach that encourages compromise and trade-offs [8]. Such an integrated approach positively impacts all phases of a building’s life cycle, from design and construction; to operation and decommissioning.

2.1 Green Design principles

The idea of “going green” has to do with the specific application of certain concepts. This leads to minimizing the sprawl of spaces and the destruction of valuable spaces, ecosystem and green space, caused by inefficient low density



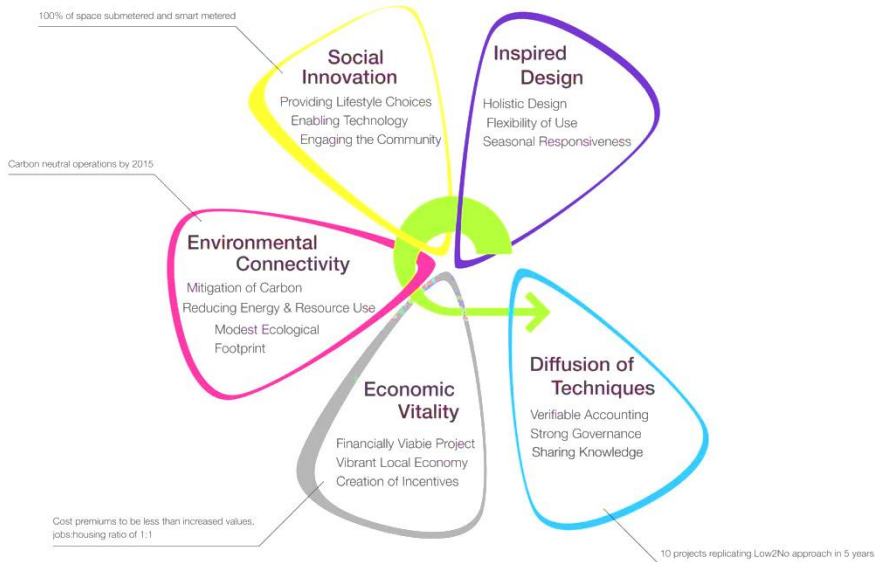


Figure 1: Design process through sustaining major aspects.

development. The idea is to preserve valuable green spaces and key environmental assets through careful simulation of each site, thus maximizing the high density of space development [3]. Further, it seeks to employ both design and construction processes that reduce site disturbance and which value the preservation and restoration or regeneration of valuable habitats, green space, and associated eco systems to sustain life [1, 8]. Thus, they are found to involve:

- Sustainable site design;
- Water quality and conservation;
- Energy and environment;
- Indoor environmental quality (IEQ);
- Materials and resources.

2.2 Green Contextualism

Despite the fact that performance and efficiency are alleged to be incompatible with functional excellence and aesthetics, these can be enhanced to improve a space's connection to its context. At the same time, an understanding of the environmental context is connected to have a healthier life style and adaptability. All the architectural forms that are created throughout the building process or those that are found in an urban space, are designed in response to their environments. These will make the best value of their site and generate natural, environmentally-friendly energy. This approach is keen on enhancing the stated elements above by all known principles for any space, i.e. orientation, daylight, etc. These fundamentals can change in the design process that forms facilities, which increases performance [7, 8]. This philosophy of 'Green Contextualism' is

predicated on the assumption that everything involved in both nature and the built environment is connected, and every element of a design should stem from an understanding of its role within that context – local, regional, and global. Thus, this approach requires a comprehensive understanding of each element of a space and its function within a larger context, within the built and natural environment [3, 7, 8]. A greater understanding of the existing conditions for any space leads to the creation of an environmentally responsive space design. This space can respond to these conditions within an inextricable connection to its context.

2.3 Beyond the physical matter/the meeting point

Due to the clear presence of the scientific approach in Green Design, it is alleged to be a physically- based approach. It did not come about abstractly, as did many things in the Western world. Its concepts were heavily discussed and researched based on facts and reasons [10]. So, many “green” designers have an affinity for the traditional views that were brought by the Eastern way of thinking, also known as Feng Shui. It is pronounced “Foong Schway” and literally means ‘wind and water’. Feng Shui originated in China thousands of years ago, and was practiced in imperial designs until the early twenty-first century [4, 9]. The triple different ideas-based comparison was held to find a way to update Feng Shui in the Green Design approach to give it a historical background by comparing western Green Design concepts with the traditional ones; respect of the human being a common factor [3]. Many ideas and concepts should be found which have the same end result in productive building performance.

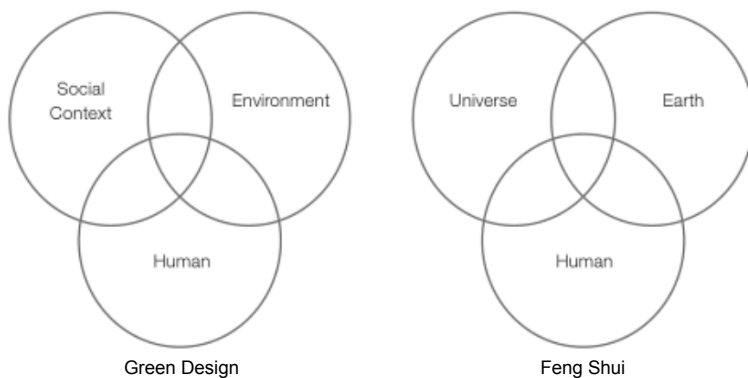


Figure 2: Fundamental concerns of Green Design and Feng Shui [3].

3 TCM and Feng Shui

For many thousands of years, Chinese medical skills have been carried out to prevent illness and promote longevity. Their success in maintaining human health has attracted the attention of the Western population. It is expected that the Chinese doctor should exploit and incorporate all the eight branches of TCM into

their clients' lives. Feng Shui is not a religion, nor is it a set of superstitions. Rather, it provides models with a reality enabling the designers to place everything within the environment to ensure harmony, prosperity, and happiness to the user's mind; it also means living harmoniously with the environment, rather than conquering it [3]. Feng Shui is considered a skeleton of an ancient Chinese knowledge, and it aims to create a harmony between the environment, the building and the users. There are many issues that arise in this relationship, due to the intersecting concepts and common areas, which provoke discussion amongst the architects, building professionals, and Feng Shui practitioners [9]. It would be a great chance to improve and give more studies about that moot point due to the lack of studies which have been carried out on the ancient theme of that topic.

3.1 Meanings of TCM

TCM practitioners use in their users' diagnosis the "big picture" of patient health to extract more details about them to ascertain health problems by using the main principles of Feng Shui, and how these principles affect the prediction of the human future health problem therapy [3]. The goal of the practitioner is to give solutions to balance and harmonise a person's "temples" i.e. their body and home. They do this by adjusting both the qualitative and quantitative means of the Feng Shui principles to ensure the users' recovery.

3.2 The main principles of Feng Shui

Feng Shui has various applications that take into consideration the harmony between the universe, the environment, and the human. The five Chinese concepts that coincide with the five concepts of Green Design are: harmony between universe, earth and human energy; the positive and negative; the five elements of Feng Shui; and the productive and deconstructive processes, as well as the different schools of Feng Shui [3, 9].

3.2.1 "Tien Ren He Yi" (unity between heaven and human)

Feng Shui is based upon the principle of harmony as stated previously. Energy is valued in both the physical and the invisible forms known as "chi" in traditional Chinese Feng Shui. Designing environments with a balance and harmony that can produce an ample amount of good "chi" and filter out bad "chi" is referred to as being energy efficient in terms of design.

3.2.2 Yin and Yang harmony

In TCM, design and philosophy, a pair of opposing forces in harmonious balance in the body is necessary for good health. These are Yin and Yang, and each of them carries its own principles that vary between both human and nature (as shown in table 1).

3.2.3 The 5 elements

Feng Shui is also based on the five elements and their cycles: fire, water, metal, wood and earth. These can provoke either destructive or productive cycles (fig. 3). Also they have various effects and outstanding forms around the users.



Table 1: Meanings of the Yin–Yang concepts.

	Yin	Yang
Principles	Passive	Active
In nature	Darkness, cold and wetness	Light, heat and dryness
Human level	Femininity and passive	Masculinity and active
Representing	Realm of dead	Realm of living



Figure 3: The five elements' meanings.

3.2.4 Balance between interior and exterior spaces

The reflections of Feng Shui depend greatly on the balance between external and internal space, which stem from the integrity with all the four design modules (as shown in table 2).

Table 2: Reflections of Feng Shui on the four design modules.

Surrounding environment	External layout	Internal layout	Interior arrangement
Topography	Shape of site	Layout	Door opening
Front of site	Entrance	Doors	Bedroom
Rear of site	Shape of building	Windows	Kitchen
Sides of site	Orientation	Shape of rooms	Living room
Street location	Trees	Staircase	Bathroom
Water view	Pond	Ceiling	
Wind direction			

3.3 Feng Shui influences and impacts

Feng Shui has no specific look or tangible theme. Rather, it gives the adjustments and spiritual feeling to a space to be a successful one, so that it is environmentally friendly, aesthetically pleasing, healthy, and prosperous. It is thus considered that Feng Shui can be a complex subject and a challenge, as it passes through both science and art [3]. This explains why many schools formed their own distinct school of thought.

3.3.1 Form School

The Form School is the oldest school of Feng Shui. It was originally concerned with the location and orientation of tombs (Yin House Feng Shui). The school then progressed to involve the design of homes and other buildings. The “form” in Form School refers to the shape of the environment, i.e. mountains, buildings, and general surroundings. It considers the five celestial animals, the yin–yang concept and the traditional five elements [9]. It also analyses the shape of the land and the flow of the wind and water to find a place with ideal chi (fig. 4). Finally, it considers the timing of important events such as the birth of the user and the date of construction [3, 9]. The Form School is influenced by the following:

- Physical configurations;
- Understanding the landscape;
- Location and orientation of buildings.

3.3.2 Compass School

The Compass School approach is analysed and reviewed from various perspectives by Wong Fook Tsan. His analysis is based on the tabulations of full cycle of faith, “Kua”, calculations. He concluded that the distribution of faith is not logically represented. For males and females born in the same year, some have different Kua, and some have the same. It is a collection of more recent Feng Shui techniques based on the eight cardinal directions, each of which is said to have unique chi [3, 9]. It uses the Luopan, a disc marked with formulas in concentric rings around a magnetic compass. The Compass School is influenced by the following:

- Metaphysics;
- Astrology;
- Time in space.

3.4 The psychological matter and Kua number

The eight trigrams are also called “Pa Kua”. In fact, “Pa” means eight and “Kua” means suspending or hanging. It is like hanging a picture on the wall to observe it. Practically, Pa Kua encompasses eight phenomena (fig. 5). These eight phenomena (images) are: sky, earth, thunder, wind, fire, water, mountain, and marsh (body of water/lake). These phenomena can be interpreted into the following eight aspects of a user’s life: wealth, career, fame, children, friends, knowledge, education, and marriage [5].



The Kua number of a person is determined by their year of birth in the Chinese Hsia calendar and their gender. This number (also called Gua) is an integral part of the eight Feng Shui mansions. It gives the knowledge of auspicious and inauspicious directions for a person. Accordingly, each person has four good directions and four bad directions that are based on one's number [3–5]. To know the Kua number the following simple method can be used (as shown in table 3). Firstly, take the last two digits of the user's birth year and add them together. Then reduce them down to a single digit.

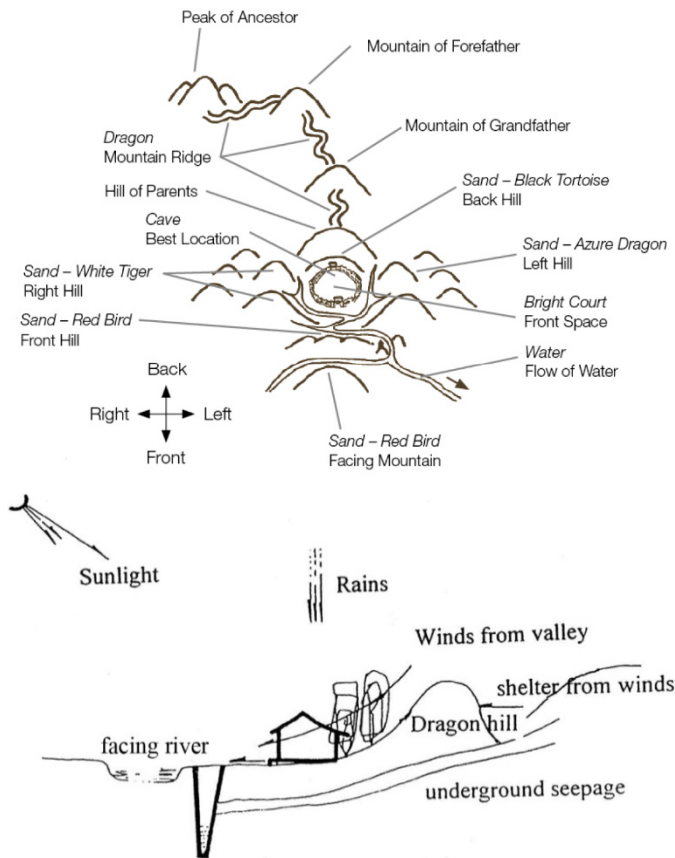


Figure 4: Form School typology and the environmental manifestation of the five celestial animals' (phoenix, green dragon, white tiger, black turtle, and the yellow snake) effect within the building context.

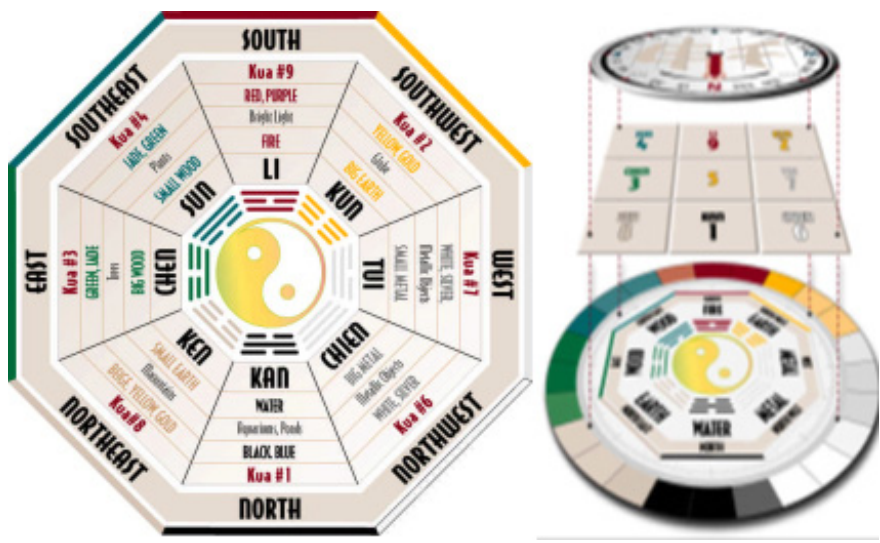


Figure 5: The Pa Kua Groups' effects and colours and Yin–Yang aspect [5].

Table 3: The probabilities of calculating the Kua number.

Assume that your birthdate is (19xy)			
Kua =	If $x+y=z<10$	♂	$z-10$
		♀	$z+5$
	If $x+y=mn>10$	♂	$m+n-10$
		♀	$m+n+5$

4 Applications

Before going on the application explanation, some points should be clearly defined.

4.1 Green Design vs. Feng Shui

There are no contradictions between them; it can be easily described within an integrated system to achieve the maximum use of both benefits (as shown in table 4). In addition, it involves retrieving the human's soul and own spirit's effects through the spaces [3].



Table 4: Comparison between Green Contextualism and Feng Shui [3].

Issue	Green Contextualism	Feng Shui
Emphasis	Observing, sensual perception of the place	Assembling chi and being in the place
Position of man	Outside, separated from place or building	Man is part the situation alternating between both inside and the outside
Reference point	The physical presence of a place or a building	Man and his being in the place or building
Meaning of context	Context in term of spatial aspects, context as “background”	Context in terms of spatial, social and temporal aspects, context is seen as interactive component
Analysis	Combination of individual observation and personal feelings	Systematic examination using rational and intuitive thinking based on Feng Shui principles and structure
Solution	Creation of individual building or place, independent of the environment	Developing of a building or a place as a part of an dynamic, interactive process with the environment
Practical examples	Roman courtyard house, Peter Zumthor, thermal bath in Vals	Chinese courtyard house Chinese Master of the Nets Garden in Suzho

4.1.1 Effects and process methodology

The effects and methodology of spirituality enhancement as a process is shown in Figure 6.

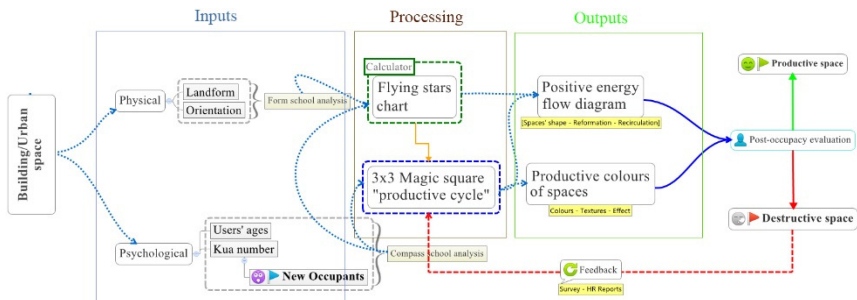


Figure 6: Spirituality enhancement as a process.

4.2 Building space towards better performance in a green building: “HSBC Bank Processing Centre” Smart village, Cairo, Egypt

LEED BD+C: New Construction (v2.2) Gold, awarded January 2010 [10, 11].



Figure 7: Master plan of smart village and the building context.



Figure 8: The four celestial representations around a building.

The four celestial creatures determine the chi range and the effects of the elements in each direction. Thus, the following illustrations show the maximum exploitation of its flow inside a building based on the shown process (fig. 5).

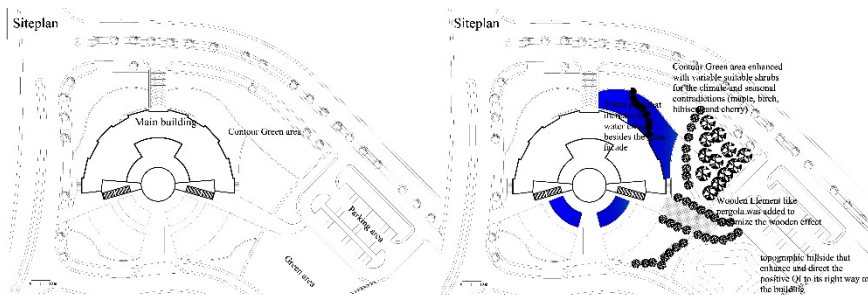


Figure 9: Site plan before and after the enhancing process on the leakage elements founded according to the site survey.

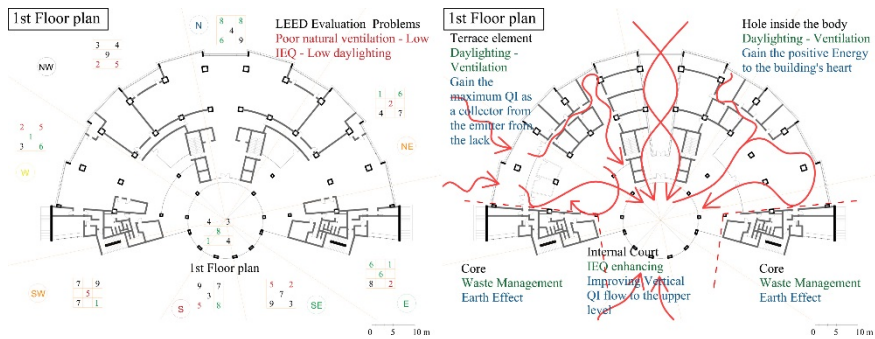


Figure 10: The building before and after the enhancing process shows the major effects and weaknesses by LEED evaluation.

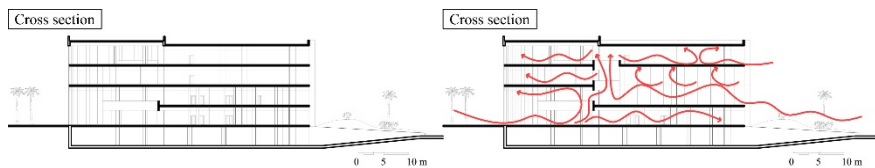


Figure 11: Cross section before and after the enhancing process and the modification of floors to allow the chi to flow all around the building.

5 Conclusion

Green Design aims to create an interactive and enjoyable space, a harmonious theme between both the natural and built environment. It can be identified with the Feng Shui concept of the harmony between heaven and humanity. However, Green Design focuses specifically on the harmony between nature and humanity. The harmony between Green Design and Feng Shui can emphasize and achieve a balance between the human, the spirit, and the environment. The Form School of Feng Shui imposes many ways of thinking to modulate spaces cooperatively to the human soul and the context of space, while the Compass School of Feng Shui through the Kua number, can easily create a productive space as well as enhance aspects of life, such as life wealth, career, fame, children, friends, knowledge, education, and marriage. There are no contradictions between the physical manifestation of Green Design and the psychological aspect of Feng Shui-based design. The integration between these sides will guide the human's mind towards emphasizing productivity. This paper is just a first step in understanding the harmony between humans and their surroundings, aiming to let it pass deeply into the various architectural fields, as well as, environmental psychology, GIS model of cities, and making the correct decisions to serve the human soul within the city context, emphasizing human performance within interior design.

References

- [1] McDonough, William & Michael Braungart, *Cradle to Cradle: Remaking the Way We Make Things*, North Point Press: USA, PP. all, 2002.
- [2] Reader L, *Guide to Green Building Rating system*, John Wiley and Sons: USA, pp. 203-215, 2010.
- [3] So, M. Y M. & Albert T. *Scientific Feng Shui for the Built Environment*, City University of Hong Kong: Hong Kong, pp. 4-225, 2011.
- [4] McCandless C., *Feng Shui that Makes Sense*, Two Harbors Press: USA, pp. 10-45, 2011.
- [5] Helm E., *26 Secrets from the Orient*, Aquarian Publications: California, pp. 26-35, 2002.
- [6] Jung-Sup U., Feng-Shui Theory and Practice Investigated (chapter 4). *Application of Geographic Information Systems*, ed. B. M. Alam, InTech, Ohio, pp. 65-82, 2012.
- [7] Adrian Smith, Gordon Gill, & Robert Forest, Global Environmental contextualism. *CTBUH 8th World Congress*, Council on Tall Buildings and Urban Habitat, Dubai, pp. 1-8, 2008.
- [8] Chris Hendrickson, Noelle Conway-Schempf, Lester Lave & Francis McMichael. *Introduction to Green Design*. Pittsburgh: Carnegie Mellon University, 1999.
- [9] Lam, Kelly Wai Ying. "Recovering the Sense and Essence of Place: The Eastern Practice of Feng Shui." Waterloo, 2008.
- [10] Ingels, Bjarke. *3 warp-speed architecture tales*. 12 July 2009. https://www.ted.com/talks/bjarke_ingels_3_warp_speed_architecture_tales
- [11] USGBC, <http://www.usgbc.org/projects/hsbc-bank-egypt-cairo-processing-centre>
- [12] Ibraheem, Moustafa, interview by The Researcher. *Technical Supporting in HSBC Building: green handling and conservation* (10 4 2014).
- [13] HSBC, <http://www.hsbc.com.eg/1/2/eg/hsbc-premier>

