Adaptation as a Design Method in Architecture, Case Study: a House at Martha’s Vineyard

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ABSTRACT: Most of the designer’s use of inspiration sources for problem solving and majority of them apply nature as inspiration sources, but these sources cannot restricted to only bio-inspiration sources. Because of the complexity and multi-aspect features of design, they can use of different methods of overcoming this complexity. This paper introduces and develops a new method for architectural design that has been called “adaptation” which is rooted in literature and textual sources. This method focuses on text-inspired sources such as novels, poetry, plays, historical stories and so on which have been converted to design media. To gain an in-depth understanding of the applicability of adaptation, a case study (Martha’s Vineyard designed by Steven Holl) is discussed to reveal the process of inspiration in the form of adaptation. The adaptation method can be used to reshape other types of art media into new forms. The results show that the adaptation method is an innovative approach by which designers can reform remarkable and archetypical works into new presentations. It is believed that the other kinds of local-related arts and textual sources of a nation can serve as a platform for adaptation. Additionally, this method enables the designers to regenerate the valuable and up-to-date ideas in new forms. Also this method is a try to lead the designers for representing the various ideas with different outputs. Finally, in order to develop the adaptation as a design method, a conceptual model is provided for future study to establish a framework in the field and identify types of adaptation.

Keywords: Adaptation, Design Method, Inspiration Source, Moby-Dick, Steven Holl.

INTRODUCTION

Historically, architectural studies show that the designers and architects have made use of a wide variety of sources of inspiration. This process of generating ideas depends strongly on a designer’s background and information. Baya (1996) and Howard et al. (2006) claimed that the design process is supported by information. In fact, the majority of existing buildings demonstrate that most designers have been inspired by natural elements. Inspiration can be divided in two types: visual and verbal.

Sources of inspiration can motivate designers to generate ideas easily and make them more creative. They provide a large number of options from which designers can select a good alternative. Many designers are visually stimulated by the world around them. Historical studies on all genres of art, including painting, architecture and literature, have shown the importance and impact of visual elements on solving problems. Previous studies have acknowledged that designers are inspired by a variety of sources such as animals, plants and other phenomena. Stimuli play key roles in this process. Each source can be considered as a stimulus for an idea. For instance, a bone or a portion of a skeleton can be a source of inspiration in sculpture (Lauer & Pentak, 2011).

In the beginning, the inspiration source enables a designer to conceptualize an idea in different forms. Designs with specific purposes require the designer to discover the aesthetic and functional solutions for solving the problems. This can be accomplished by an inspiration source which proposes a suitable solution and leads a designer to a unique goal.

The inspiration source and creative thinking are two sides which can absorb each other rapidly. Both are required for innovation. A designer may be able to

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generate ideas, but this process does not guarantee the relevance of the ideas if there is no means for developing them (Dijk, 2014).

After understanding the importance of inspiration sources, this study develops a new design method through these sources. It should be clarified that this refers to how a designer can make use of personal information when using the inspiration source. This process can occur in various forms, from a sketch to a mental model. The majority of designers believe that “design” begins entirely in their minds and is finally represented in reality. This representation can be either visual (external) or verbal (internal), as will be discussed in the following sections.

RESEARCH FRAMEWORK

The aim of this study is to provide an in-depth understanding of the meaning of adaptation through an inspiration source in architectural design by exploring the role of stimuli in generating an idea. The advantages of adaptation are identified. The goal of the current study is briefly discussing how designers do apply inspiration sources in their designs through adaptation.

Gonçalves (2016) stated that data, stimuli and inspiration sources are viewed as particularly associated ideas. Consequently, two parts were added to this study: adaptation and the idea which led the authors to provide the theoretical framework of the study. In addition, to focus on the aspects of adaptation, the process of idea generation through inspiration sources by adaptation is provided in the form of the conceptual model shown in Fig. 1.

ADAPTATION

Adaptation is an arrangement that has been recast into another structure. For instance, a play can be an adaptation of a novel (American Heritage Dictionary, 2011). In other words, when something is adapted, it is changed with the goal of being displayed in another form. Adaptation is the process of converting something to fit another reason or circumstance (Merriam-Webster Learner’s Dictionary, 2016). This usage of the word dates back to 1600 CE and is of French or Latin origin. The meaning of a “state of being of adapted” is from the 1670s and the meaning of “alteration of a thing to suit a new situation” is from the 1790s (Online Etymology Dictionary, 2010).

Changing a unique design to suit another object is known as adaptation (Ambrose & Harris, 2010). In adaptation, a particular point of reference is changed into another design. Adaptation depends on earlier information about the details. It can be characterized as modification through change on a particular design. Verifiable adaptation has been viewed as a critical model of design. (Szamblen, 1982).

From a subjective perspective, adaptation is the alteration of a particularized case from past design experience. The process of adaptation, therefore, varies from particularization, which describes refinement. Case-based thinking addresses research questions which are applicable to design through the adaptation of a point of reference (Oxman & Oxman, 1992).

The best solution must be radical and new; however, changes can be very minor and unobtrusive. This does not mean designers should always set out to present an exhaustive work. Significant impacts can be accomplished by adapting existing works in straightforward courses. Architects look at existing items as well as at the works of different designers. This means gaining from the way that they work and think. What are different designers chipping away at? How have they been able to get to where they are? What are they considering? Exhibitions, design magazines, systems and gatherings are sample ways by which it is possible to achieve an effortless and successful result (Morris, 2009).

BACKGROUND

Inspiration

Studies have shown that trying to find an innovational inspiration outside of the education system motivates the mind to engage in idea generation. This can be achieved through different ways, for instance, by listing the
feelings and people that grow the knowledge. By writing down the situation, designers can easily select profitable cases that he/she would like to observe (Design Thinking for Educators, 2012).

To inspire is to invigorate the imaginative process. Inspiration can originate from numerous sources. The systems of plants and animals are a ready source that mystify, illuminate and inspire design. Designs that are straightforwardly stimulated in nature provide an exceptional one-of-a-kind perspective and often possess astonishing functions (Ashby & Johnson, 2014). Inspiration is a personal part of the innovative process (Stein, 1974) or exploratory or creative thought that occurs abruptly in the mind of a person (Stolz, 2015). It appears that when a person’s thoughts appear to be occupied in various directions or he/she is relaxing and innovative ideas form (Boden, 2004). Designers tend to have confidence in an oblivious burst of inspiration (Sawyer, 2006). In most definitions of inspiration, it is observed as an approach which originates from outside the designer, for instance, from the environment or objects (Todd & Andrew, 2003).

Consequently, the utilization of inspiration sources can include an assortment of changes that provide knowledge to parts of design thinking. Designers use sources of inspiration principally to moderately coordinate interpretations into a specific object (Petre, et al., 2006).

**Stimuli**

Understanding more about the inspiration sources which designers use in their work is a beneficial step towards aiding designers in the generation of creative and unique solutions. In addition, although the majority of designers tend to use a certain stimuli, like visual sources, other kinds of sources might also have the potential for use as motivational material for idea generation. Therefore, designers can learn how they will be able to benefit from existing stimuli (Gonçalves, 2016).

According to Paivio & Rogers (1968), processing information can occur verbally and visually. This indicates that both ways can work independently or interconnectedly. Paivo (1968) once stated that people remember pictures much better than words they have seen and a combination of these is better than one modality alone. Exterior pictures and written words can be mixed in different ways. In addition, pictures are prepared using a pattern system and by perception, which includes visual experiences. By contrast, verbal experiences are perceived through knowledge of a particular context, which includes the use of a complex system of symbols. Such representations enable one to explore the relationship and structure between objects. On the other hand, verbal stimuli can provide a complex logical connection between various abstract ideas (Cardoso et al., 2012).

Nagai and Noguchi (2002) argued that visual sources are considered as low-level information and verbal as high-level information. Logically, in order to create a visual representation from a verbal input, a high-level of abstraction and knowledge is required. This is a major reason why most designers tend to work with visual stimuli during the process of idea generation. Gonçalves et al. (2012) mentioned that, when designers face a problem or challenge, they frequently look for similar solutions in the context of what has already been done.

A review of the literature has revealed various types of inspiration sources in the field of design. As mentioned, this study focuses on adaptation as the method of using an inspiration source.

**METHOD**

This study used the case study method. This method was carried out to gain an understanding of how designers can use other forms of art (in this study, the novel as literature) as an inspiration source and, through adaptation, convert it to design outputs. In order to introduce and develop the capacity of adaptation and analyze the process of this method in architectural design, examination of the specific design case is useful.

**IDEA**

Philosophically, an idea is a mental image of something (Audi, 1995). Ideation can be explained as a matter of developing and generating ideas. With this regard, an idea is understood as an aspect of thought that can present in both visual and abstract modalities (Jonson, 2005). Looking for an idea is a multi-aspect process and requires all the human senses. For instance, idea generation can be a regular process of listening, watching and touching. The sight and hearing senses are critical tools, but one can easily look and not see, and also hear and not listen. In this way, inspiration is almost everywhere and everything can be considered as a source of inspiration (Bramston, 2009). Generating and developing the idea occurs in the mind, but exploiting the various motivations outside of the mind can provide a range of opportunities (Goldschmidt & Tatsa, 2005).

An innovative thought is a mix of existing information and objects in memory. To understand an idea, it is necessary to have the ability of extracting and utilizing
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it in a particular situation, which requires the aptitude of changing the setting of the source to the objective thought. Generally, designers make use of data stored in their memory such as feelings, forms, shapes, hues and materials. Therefore, a skilled-designer utilizes the information to make new outputs (Goldsmith, 2011).

Sources can be extracted from a wide variety forms, from basic geometrical shapes, conceptual and abstract objects, to pictures and art work and natural phenomena (Cai & Do, 2007). Because the design process is considered as the evolution of an idea, the idea plays a significant role and performs an essential function in generating various ideas through the conceptual design stage. In addition, ideas can be generated by linking long-term memories and knowledge in different contexts. Consequently, these ideas can lead the designer to develop potential alternatives in the design process (Petrovic, 1997).

THE ROLE OF CONCEPT IN DEVELOPING AN IDEA

According to the physicalist theory of mind, a concept is a mental illustration which the brain make use of to express the meaning of a phenomenon (Murphy, 2002; Carey, 2009). A concept is a representation that allows the designer to draw suitable inferences about the form of entities which exist in daily life and also about concepts (Carey, 2009). Concepts can take widely diverse forms. They can be visual or verbal, created or found. They can be extracted from a tale, newspaper, images, a poem, a film or whatever grabs the imagination (Dodsworth, 2009). Logically, all designs are products of entities such as art work, objects or buildings designed based on a concept which has been an idea. Although making a pattern from visual stimuli is not very simple, it is a suitable source for designers, particularly novices seeking to gain a new and innovative concept (Goldschmidt & Sever, 2011).

CASE DESCRIPTION

In order to observe the implementation of adaptation method in design, the following case has been selected. This case highlights the process of adaptation and idea generation using inspirational sources. In order to understand how this process works, the related data from the primary stages will be first gathered. Next, the adaptation method in architecture and types of adaptation are explained.

HERMAN MELVILLE

Herman Melville (1819–1891; NY, USA) was an American writer during the American renaissance. He is well-known for his novel about Polynesia, Typee (1846) and his whaling novel, Moby-Dick (1851). Melville’s compositions draw on his involvement with the sea as a mariner, investigation of writing and rationality and engagement in the inconsistencies of American culture in a time of fast change (Williams, 1956).

MOBY-DICK

Moby-Dick (1851) is a novel by Herman Melville and is considered an extraordinary work of romanticism and the American renaissance. A mariner called Ishmael narrates the obsessive quest of Ahab, captain of the whaler Pequod, for retribution against Moby-Dick, a white whale which on a past voyage pulverized Ahab’s boat (Figs. 2 and 3) and separated his leg at the knee. William Faulkner admitted he wished he had written it himself (Faulkner, 2001) and D. H. Lawrence called it “one of the weirdest and most superb books in the world”, and “the best book of the sea ever written” (Lawrence, 1923).

Fig. 2. The Moment of Hunting the Whale in the Passage (Lilian Pham, 2016)

Fig. 3. Hunted Whale in Beach (Ricardo Salamanca, 2016)
HOUSE AT MARTHA'S VINEYARD, MA, USA, 1984-1988

The site of the house is on a slope sitting above the Atlantic Ocean as it meets Vineyard Sound. In the novel Moby-Dick (Fig. 4), Melville portrays an Indian tribe which made a type of harpoon on the island. Upon finding a stranded whale skeleton (Fig. 5), they would pull it to dry land and stretch skins over it, transforming it into a house. This house is a back to front inflatable edge structure (Fig. 6) lifted over the scene (Figs. 7 and 8). The wooden “bones” of the edge form a surrounding veranda with sea views (Figs. 9 and 10) (Steven Holl, 2016).

Fig. 4. Schematic Drawing Based on Idea Source (Steven Holl, 2016)

Fig. 5. An Example of Beached Whale Skeleton (Whale Skeleton, 2016)

Fig. 6. Entrance of the House, Inspired from a Passage Describing Beached Whale Bones Used as Structure (Thomas Fisher, 2016)

Fig. 7. A Two-Story Tower at the End of the House Included an Exercise Room and the Master Bedroom (Steven Holl, 2016)

Fig. 8. An Inside-Out Balloon Frame of the House (Thomas Fisher, 2016)

Fig. 9. Structure of the House (Thomas Fisher, 2016)

Fig. 10. A Total View of the House (Steven Holl, 2016)
Steven Holl was inspired by a novel which described beached whale bones utilized to shape a structure. Mentioned in the 1986 P/An Awards and finished in 1988, the house additionally won an Institute Honor Award for Architecture from the AIA in 1989. At that time, while planning a house at Martha’s Vineyard, he drew on a section of Moby-Dick in which the mariner recounts how Americans on Nantucket utilized the bones of stranded whales as the frameworks for their homes. He transformed this splendidly into the “back-to-front inflatable edge” of the shoreline house for users. A ladder from a second-floor deck to a third-floor crow’s nest brings out Melville’s nautical impact and gives a commanding view. The wooden “bones” encase the veranda and hoist the 2,800 square-foot, three-room structure over the moving ridges with a two-story tower at the back containing an activity room, main room and shower (Thomas Fisher, 2016).

DISCUSSION

This study describes and expands the process of adaptation in design while explaining its application in architectural design. An appropriate and unique case has been selected for study. In order to analyze this case, it is necessary to build a framework. The types of adaptation presented in the following from Eckert (1998) and Petre et al. (2006), who categorized types of adaptation executed by designers as:

- Literal: No adaptation is expected. The source component is duplicated as straightforwardly as could be allowed in the design.
- Simplification: Deliberate simplification to reduce the number of colors or the complexity of detail by selection of some details and omission of others.
- Abstraction: Prompting a design which embodied the source, yet not the particular components. The reflection may keep the key visual properties of the source or may just hold abstract properties.
- Modification: Reshaping of action, recombination or substitution of components or presentation of other material.
- Association: Relationship of different components or thoughts which are outwardly comparable and start with a comparative connection and have comparable properties in an alternate setting or which help the creator to remember related thoughts.
- Deviation: Totally distinctive sources which are in the designer’s present connection.

Due to the lack of studies in this domain, this categorization was useful for assessing the cases.

In general, adaptation occurs in two main forms (visual and verbal), but might occur in diverse forms as listed above (although most designers tend to make use of an inspiration source visually). Some designers prefer to make use of an inspiration source from a highly abstract form with no visual similarity between source and output. The selected case is significantly unique and different to those mentioned. In the case study, the designer was inspired by a novel (a textual, nonvisual source), but the final output is visual and rooted in the content of the idea source. Note that the meaning of visual and textual are different. In this study, the term “visual” means all the things, such as objects and phenomena, which have formal shapes—not printed sources like books and magazines.

Although the printed source like a novel is classed as a textual source, it is a textual source that has no external or real form. Any type of story, such as a novel, short story or play can mentally shape the visual world in the mind of readers. After reading a text, each reader creates an individual visual world from that text, with no one world being the same as another. It can be said that all kinds of textual sources involve the visual world. There is a distinction between these two sources (visual and textual). For example, the features of a particular car such as form, size, color and materials are the same for everyone, but each has its own character. In conclusion, all stories can shape the visual world in the minds of readers, but this will be unique in the mind of each person.

The opportunities of the textual source which can be provided by adaptation is to inspire and convert from one source to a variety of forms with no repetition. An evaluation of the case indicates that the designer made use of a textual source and was inspired through the visual world of the text independently in his mind before attempting to transform this visual world into real form. This case is a combination of a variety of types of adaptation, from textual sources and the visual world (dependent on the individual designer) to the final output. It is a combination of multiple adaptations method. This process (inspiration by the same source) can be used repeatedly with regard to the project/location situations.

In order to clarify these issues for the selected case, the process and type of adaptation are presented in the form of a conceptual model as shown below:
CONCLUSION

This study has built a theoretical and practical framework for the adaptation method in architectural design. Introducing and explaining an appropriate case study showed that the use of textual sources as a source of inspiration can be considered as a design method. Most of the time, designers look for idea sources to solve problems which they face during the design process. Logically, this is the first stage to finding a solution. Frequently, the solution is right under the noses of the designers and they must look more carefully in their environment. Many designers have demonstrated that solutions existing in their surrounding environment enabled them to solve highly-complex problems; thus, designers need to be more familiar with existing and related phenomena and look at them as a source of inspiration. In general, familiar and local objects such as sculptures, paintings, poetry, literature, music and drama are essential as inspiration sources.

RECOMMENDATION

Based on the findings, in order to develop adaptation as a new method of design, this study suggests useful recommendations which could be provided by adaptation. The beauty of the use of adaptation in design is as following:

- Nonvisual (verbal) sources provide more innovative opportunities and flexibility of ideas. In other words, verbal sources have the capacity and diverse stimuli to allow the designer to choose the best one.
- Designers can make use of existing art work by considering the merits and the level of familiarity of these works to the people.
REFERENCES

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