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Sonic Effect on the Appreciation of Architectural Aesthetics in Architectural Design Projects

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Abstract: Appreciation of visual aesthetics is always connected with the visual experience of art objects. Yet, as the human senses are all connected and work in a comprehensive complex way, there is always a need to investigate the relationship between the visual appreciation of visual arts and other senses. Sonic effects are among the influential factors in the appreciation of visual art works. Traditionally, birds were used to convey sonic effects on impressionist painters. Claude Monet, for example, has been well known for loving to paint as a bird was singing. With the availability of modern technology, it has been possible to add different types of sonic effects in the spaces of visual art exhibitions. The basic question here is to what extent the sonic media can affect the appreciation of visual art? This question gets more importance in the field of architecture where the visual experience is more livable and complex than other visual art products. This research represents an attempt to investigate the effect of sonic on the appreciation of architectural aesthetics of architectural design presentations. A group of architecture students were asked to evaluate the architectural aesthetics of an architectural design project with and without the presence of sonic effects. It was found that, the sonic effects have an impact on their appreciation of the architectural aesthetics of the project. This directs the attention to the importance of using sonic effects to aid the appreciation of aesthetics of architectural design projects by students, architects or the general public. It also highlights the need to consider sonic effects as a means to aid the education process in the architectural design studio.

Keywords: Environmental Aesthetics, Aesthetics Appreciation, Sonic, Architecture, Visual Arts

Introduction

The appreciation of aesthetics in the environment needs to be viewed from different perspectives, taking into account its comprehensiveness and diversity (Kiestler 1997). As an important part of the environment, architecture occupies a special position in environmental aesthetics. It should be considered beyond the limits of visual design principles with more attention directed to aesthetics' theories and philosophies. Architectural theorist Paul-Alan Johnson emphasized the importance of introducing aesthetics as an important framework in architectural design education (Cho 2011). Only deep understanding of the relationship between architectural design process and aesthetic experience can help to understand the relationship between aesthetics and architecture.

When it comes to the definition of aesthetics in architecture, it is argued that although the term is well known, it is always substituted by other visual quality terms, like order, proportion, and rhythm. Cho reviewed the different definitions of aesthetics in architecture and introduced a definition for it: "Aesthetics is a quality of architecture, which resides both in the exterior and in the interior and which describes conceptual, formal, and symbolic aspects that give delight and pleasure to people" (Cho 2011, 54).

Although it is understood that architecture in the definition refers to buildings, it is also a matter of fact that architecture also has other visual products. These products also give delight and pleasure for people as much as visual beauty of the buildings. Buildings are the result of a long design process that includes sketches, drawings, models and presentations. These all are experienced by many people including the clients, users, members of the design team and other concerned persons. The appreciation of this aesthetics during the different stages of the project development is of great importance. It even can be the main factor affecting its realization. In

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schools of architecture, this aesthetics is experienced by large number of students, staff and visitors.

This means that aesthetics should be extended to include the architectural design process itself and its representation products. In this regard, it is believed that aesthetics provides a generative framework for the architectural design process (Mahdavinejad et al. 2014). The development of modern drafting and presentation technologies and the widespread of their use in the design process and its presentations introduce the question of aesthetical appreciation of the digital media in architectural design either during the design process or as presentations for built architecture. There are increasing concerns about aesthetics in these digital presentations and their role in communicating the different aspects of the design project. It has been emphasized that there is always a need for designers and visualization engineers to collaborate in this regard (Judelman 2004).

The question that arises here relates to the fact that although architecture is a visual art, architectural environment is a functional environment inhabited by people. Visual design principles and the aesthetics of visual art cannot explain all aspects of this environment. It is important to accept that although visual design values are important for the creation of aesthetics in architecture, other factors should be addressed. One important factor is sound. This is why the relationship between what is visual and what is audio is equally important in architecture and needs to be considered (Duthie 2013).

The study of sounds in the built environment has great importance not only for the creation of more comfortable spaces with less noise but also for more appreciation of its beauty. Several approaches have been trying to understand the relationship between sound and the built space. For example, the psychological and physiological effects of sound on the architectural space have been increasingly under consideration. In addition, soundscape has been used for the study of the relationship between sound and the urban environment. One direction concentrated on the effects of soundscape on the recognition and cognition of the cityscape (Karapostoli and Tsiniakas 2013). Other studies investigated the neurological connections between soundscape and the urban space. Many other fields have been also under investigation but there is little consideration for the relationship between sound and the appreciation of aesthetics in the built environment (Cho 2011) or in the representation products of the design of this environment.

This highlights the question of aesthetics in the presentations of the architectural design process. There is a need to address sound beyond its acoustic aspects but equally important as part of its aesthetic value. Sound in this regard creates a background frame aiding the appreciation of architecture visual quality. The latter is what concerns this research. Sonic factors that usually affect these presentations include two types: the narrative of the presenter and the background sound used to aid the presentations.

The research problem at this point of argument arises as how to study the relationship between the aesthetics of architectural design projects and sonic during their presentations. Several issues have special importance here. It is important to determine the audience that will be engaged in this study. The level or levels of engagement of the audience in the audio-visual environment also needs to be determined. Moreover, there are the tools and the procedures that will be used to explore this relationship. These issues are discussed in the coming paragraphs.

This research has been trying to investigate the relationship between the aesthetics of architecture as it is presented in architectural design projects and sonic in the form of narrative and background music during the presentation. This investigation was delineated to the study of aesthetics appreciation of architecture students for an architectural design project presented to them digitally with and without narrative and music. This research has special importance because it is one of the few attempts to deal with this kind of investigation. It raises the awareness not only towards the importance of environmental aesthetics in the field of architecture but also to the need to consider sonic as part of architectural aesthetics. It also directs the attention to the need to introduce a wider perspective of environmental aesthetics

during the architectural design process especially in architectural design education. It also opens the door for future research to investigate more issues on the relationship between sonic and the aesthetics of architectural design presentations in both academia and the profession.

Methodology

The methodology mainly depended on presenting a video for an architectural design project to a group of students of architecture in the Department of Architecture and Interior Design, University of Bahrain. The video was shown to the students four times in four separate sessions. The first one was without any sounds. The second session was with narrative. The third session was with music. And the last session was with narrative and music. The video was presented to the participating students in the same spatial, visual and sonic environment simultaneously. This was planned carefully in order to avoid any change in the settings of the experiment or in the factors affecting the participants' appreciation of the aesthetics of the project.

A questionnaire was introduced to the students after each session of the experiment to examine their appreciation of the architectural aesthetics of the project through the evaluation of some of its visual design qualities. It was also considered that all the participating students had studied the courses on visual design principles to ensure that all of them are familiar with the visual design terminologies used in the questionnaire.

The Participants

The research targeted students of architecture from all five years of the architecture program. Several reasons were behind this choice. First, students of architecture usually use the term aesthetics many times a day without real understanding of its meaning despite its great importance for the understanding of architecture. This experiment was a chance to highlight this fact and to raise the students' awareness. Second, students of other specializations have less understanding of esthetics as a term and philosophy. Finally, it was easier to conduct the experiment in the university campus and in the spaces of the Department of Architecture and Interior design in specific.

The sample was obtained through cluster random sampling of the available students with consideration of gender. To ensuring the equality in the results, the selection of the students from each level was based on the average number of the total sum (total number of students in each level (Wiseman 1999)).

The Project

The architectural design project was an Islamic Cultural Center. It was designed by one of the assistant students during an architectural design course. Figures 1 to 3 show some features of the project. They were reproduced from the video used in the experiment.



Figure 1: The Presented Project

Source: Shadi Mohammed—Member of the Research Team



Figure 2: The Presented Project

Source: Shadi Mohammed—Member of the Research Team



Figure 3: The Presented Project

Source: Shadi Mohammed—Member of the Research Team

Several points were taken into consideration in choosing the project. First, the participants had no previous experience with the architectural design of the project. This was important to guarantee that their appreciation of its architectural aesthetics will not be affected by previous experiences. This also was important to ensure disinterestedness and spontaneousness of the participants' aesthetic appreciation. Second, the participants needed to easily understand the project in terms of scope and function. It was intended that the participants waste no time or effort in understanding the function and components of the project and direct all their energy to the appreciation of its architectural aesthetics.

The Narrative

Not only architecture provides the spaces for the events and their narratives, it can be by itself a narrative (Tseng 2016). The relationship between words and visual media is strong enough to affect people's attitudes towards this media. This relationship has been well studied and different approaches have been developed ((Duthie 2013).

This research is limited to study the relationship between the narrative as a description of the architectural design project and the appreciation of its architectural aesthetics. It was a neutral description of the project. The narrative was recorded by one assistant student. The

narrative was made as neutral as possible in order to eliminate any preference towards the words and meanings of the narrative that might divert concentration off the architectural design of the project. Simple vocabulary was deliberately used that can be understood easily by all the participants. Both the tone and method of reading the narrative or its vocabulary were not considered as factors that might affect the appreciation of the listeners in this experiment. This is for practical and temporal limitations of the experiment and also for delineating the scope of the research.

It should be acknowledged that there is a need to study the relationship between different types and qualities of narrative and the appreciation of the aesthetics of architecture and visual art in future research.

The Music

The relationship between music and visual arts is a very deep and historical one. For centuries artists of visual arts have been using music as inspiration for their paintings and sculptures (Duthie 2013). On the other hand, the effects of music on people's appreciation of visual art have also been studied. Ercegovac, Dobrota, and Kušević (2015) prove that normal people usually associate different types of music with different types of visual arts. They found that landscape art motifs for example are preferred to be associated with classical, jazz and popular music. It is worth mentioning here that the relationship between music and architecture especially architectural presentation is a complex one and need future research efforts. Hosny (2001, 379) argues that "computer-generated architecture and music are mutating and challenging one another, and looks to a future of further reinvention."

The music chosen for the research experiment was taken from The Classical FM Digital Radio.² The piece was Air on a G string by J. S. Bach which came from Bach's Orchestral Suite No. 3. It is considered one of the finest Baroque melodies. The name and source of the piece were not declared to the participants to avoid any reactions towards the music. The aim was to provide background music while the participants followed the presentation of the project. Gyenes (2019) developed a special approach called visual music for studying the relationship between music and visual art. This approach was not considered in this research.

The Questionnaire

Architectural aesthetics have been considered early in history to be part of the most famous elements of architecture written by Vitruvius in the first century BC. These are beauty, firmness, and commodity (Dahabreh 2014). Beauty, which is the main factor of aesthetics, can only be perceived and appreciated by looking at the firmness and commodity of architecture. Many theorists have been trying to define what firmness and commodity are and their relationship with beauty. Among these are Walter Gropius, Norberg-Schulz, and James Steele. Trying to arrive at a more comprehensive framework defining more accurately what is architecture; Dahabreh (2014) developed a new quadruple framework consisting of four types of architectural elements: perceptual, conceptual, spatial, and structural. It is noticeable that the beauty element of Vitruvius is missing here. This can be understood as an attempt to consider beauty as an integral-internal component of each one of these four elements. By defining the components and principles of design of each one of these four types, the appreciation of their aesthetics will give them a degree of beauty or ugliness.

The questionnaire concentrated on the spatial and structural forms that constitute the physical body-form of the building (Ching 2007). It was assumed that perceptual and conceptual aesthetics can be indirectly assessed by the mere judgment of the participants.

² <https://www.classicfm.com/discover-music/mood/relaxing/music-relaxation/>

Ching (2007, 34) defines form in architecture as the “internal structure and external outline and the principle that gives unity to the whole. While form often includes a sense of three-dimensional mass or volume, shape refers more specifically to the essential aspect of form that governs its appearance—the configuration or relative disposition of the lines or contours that delimit a figure or form.” He then determined several elements for this form: shape, size, color, texture, position, orientation, and visual inertia. Based on this configuration, the questionnaire used some form aspects that can easily be perceived during the presentation of the project’s video. It also used simple vocabulary that can easily be understood by all levels of the students participated in the experiment. Architectural form elements used in the questionnaire included: shape, proportions of solid and void, details of the facades, building materials, colours, overall exterior, and overall experience of the project.

Students’ appreciation of architectural aesthetics in the design project was measured through several visual values based on the above framework using written questionnaire as the main tool. The questionnaire measured the student’s appreciation of these elements using a scale from 1 to 5 where 1 is the least appreciation and 5 is the highest. For the limitations of this research, the questionnaire did not try to consider any measurement of the perceptual and conceptual aesthetics of the project. The use of questionnaire in this research was limited in both time and scale. It was not possible to conduct the experiment with different types of music and narrative or different types of presentations for the architectural design project. It was also limited to a small number of architecture students. The questionnaire measured the students’ appreciation of architectural aesthetics in the design project during the digital presentation of the project’s video. The questionnaire did not consider any preferences of the students for the type of narrative or the type of music.

Results

The general results of the experiment are shown in Figures 4 and 5 (see Appendix). The results of both male and female students show that the aesthetical appreciation of the architectural design of the project by year one and year three students reached its peak with music-narrative together. On the contrary, year two and year four students showed the best appreciation of the project’s aesthetics with narrative without music. Finally, year five students showed their highest aesthetical appreciation of the architectural design of the project with music.

With regard to gender differences, the aesthetical appreciation of the architectural design of the project by both male and female students was the highest with music-narrative combination. Yet it was interesting to notice that female students showed the least appreciation with music while the least male appreciation was for no-sonic presentation.

Conclusions

These results show clearly that sonic affects the aesthetical appreciation of architectural design projects by students of architecture both male and female. This implies that teaching aesthetics in architecture needs to consider the environmental side with sound as an aesthetical design factor. This points out to the need to introduce aesthetic-audio design principles in side with visual design principles in architectural education. It is therefore necessary to consider the theoretical and philosophical frameworks of aesthetics in addition to theory and history of architecture to provide the base for the use of aesthetic-audio design principles in architecture. It is also implied that teaching visual design can be enhanced when accompanied with sonic effects. This also can be introduced in the field of profession where the effect of the architectural design presentations can be enhanced with the use of suitable sonic effects.

Future Research

The differences among students either regarding gender or the level of study need to be explored in future research. Changing the type of narrative or music also need to be studied. Similarly, it is important to study the effect of sonic on the aesthetical appreciation of architectural design projects through different media of presentation. The effect of sonic on the aesthetical appreciation of architectural design projects by other types of participants is also important. All these types of studies would shed more light on the relationship between sonic and the aesthetical appreciation of architectural design projects. The relationship between what is audio and what is visual in aesthetics in general and in architectural aesthetics in particular also needs to be clarified.

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Appendix

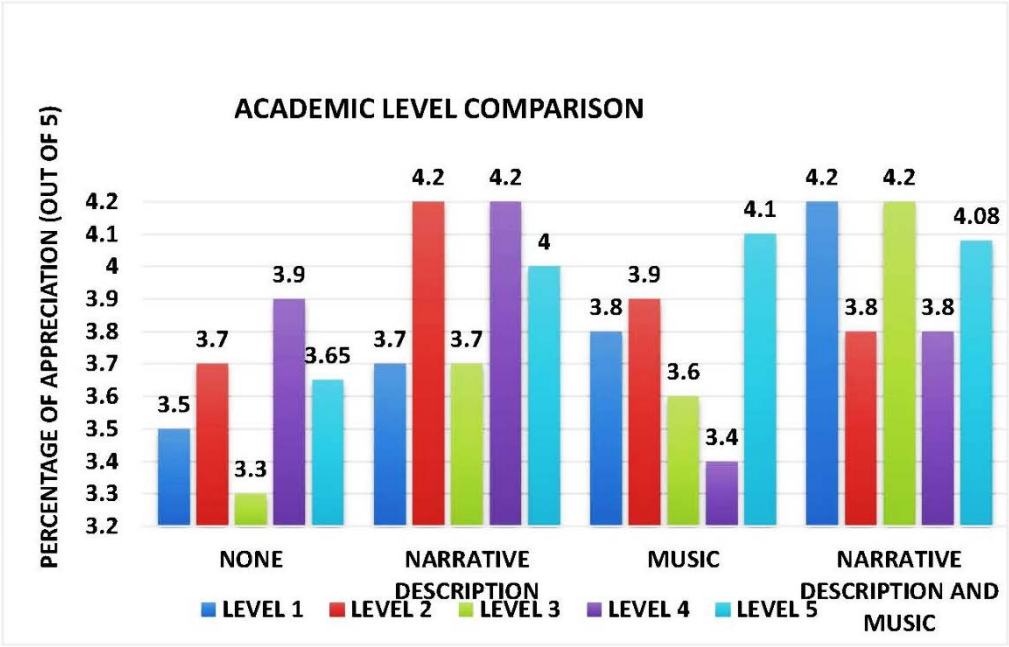


Figure 4: Students' Appreciation of Architecture Aesthetics of the Project by Level of Study
Source: Mohamed

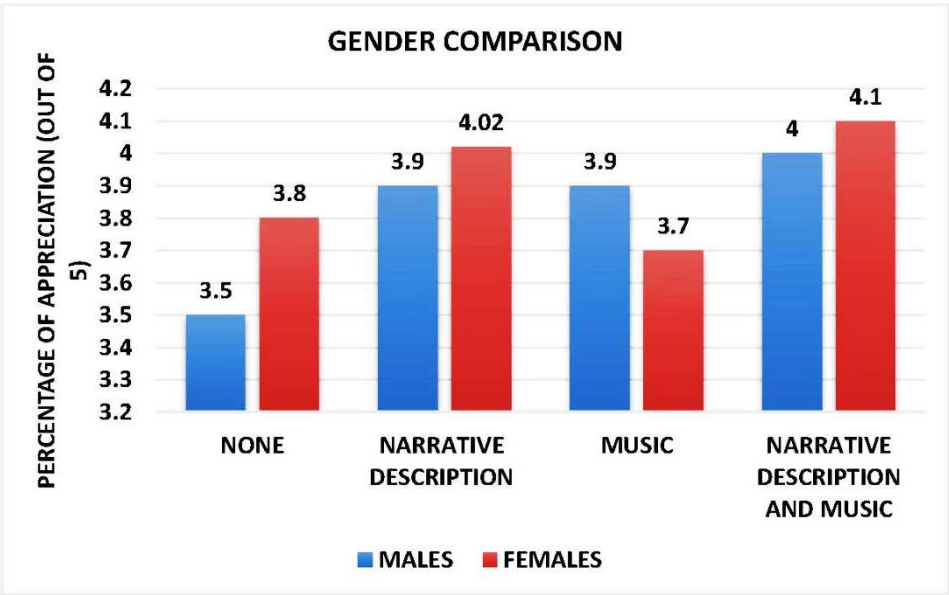


Figure 5: Students' Appreciation of Architecture Aesthetics of the Project by Gender
Source: Mohamed

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