



ELSEVIER



CrossMark

Available online at www.sciencedirect.com

ScienceDirect

Procedia - Social and Behavioral Sciences 182 (2015) 395 – 401

Procedia
Social and Behavioral Sciences

4th WORLD CONFERENCE ON EDUCATIONAL TECHNOLOGY RESEARCHES, WCETR-2014

Teaching Strategies Learning through Art: Music and Basic Design Education

Nilgun Kuloglu^{a*}^aAssoc. Prof. Dr., Karadeniz Technical University, Faculty of Architecture, Department of Architecture, Trabzon, 61080, Turkey

Abstract

This paper is about the relationship of music and art which are components of the basic design applications over arts. For architectural education, to deal with art as a tool and the experience of benefiting from this tool in the design phase is considered as important. Therefore, the situations of music being used as a tool in solving design problems are exemplified in this study. Pallasma said “In the silence of a Gothic cathedral, we remember the last sound of a Gregorian melody”. He emphasized how close the relationship between the sound theme of music and architecture is. Its relationship with sound and architecture in the upper scale and its relationship with music and architecture in the lower scale, similarities, common or differing sides have been emerged as two areas which have been questioned all throughout the history. These similarities, common or differing sides host up almost infinite number of concepts and features in themselves such as rhythm, repetition, body, composer, designer... In this paper, the relationship of music and architecture are discussed in terms of the said similarities, common features and differences. Sample area of this discussion is the basic design course in Karadeniz Technical University Department of Architecture, Trabzon, Turkey.

© 2015 The Authors. Published by Elsevier Ltd. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Peer-review under responsibility of Academic World Research and Education Center.

Keywords: Art, design, architecture, music, basic design, design tools.

1. Introduction: Music and Architecture: Commonalities

This study, which examines the relationship between music and architecture through an exemplary field “basic design” studio, discusses the commonalities of the two fields mentioned in this study over an abstract spatial

* Nilgun Kuloglu. Tel.: +90-462-377-1621/ +90-533-774-0522; fax: +90-462-377-5588.

E-mail address: melek@ktu.edu.tr / nkuloglu@hotmail.com

experience. The study is carried out via the tools used by music and architecture and highlights the similarities of these tools.

Pointing out that architecture is an experience that involves multiple senses. Pallasma (2011) argues that “eyes, ears, nose, skin, tongue, skeleton and muscles, each of them have an equal share in the measurement of qualities related to space, matter and scale”. According to the author, architecture contains “a multi-sensual experience field that interact and merge with each other instead of just sight or classic five senses” (p. 52). While underlining the significance of the body within the arts, Pallasma states, “A musician plays himself/herself more than the instrument... Similarly, the architect internalizes the view, the entire concept and functional requirements together with the building he/she designs during the design process... The artefact interacts with the observer's body and at the same time the experience reflects the producer's bodily senses...” (p. 82).

The bodily senses mentioned here exist both in the fields of architecture and music. It is possible to claim that the product or the products are sensed through the body in both fields. Therefore, the body is a significant tool both in terms of music and architecture.

Le Corbusier's “Modular” system was formed through the studies conducted in relation to number groupings and the relationship between these and Egyptian wall paintings. Explaining the construction of the works of musicians like Bach and Beethoven through algebra, Corbusier claims that for spatial organization proportional systems are required (Holgate, 1991).

Due to the feelings of rhythm and proportion, music and architecture are defined as sibling arts (Aydınlı, 1993). According to Holl, while music exhibits audio rhythms, architecture creates visual rhythms (Holl, 1992).

Jencks (2013) states that architecture and music comes from the same cultural origins and they share rhythm, proportion and harmony, which are all forms of abstract art, while claiming that architecture and music are not only extremely full of emotions but they also signify meanings. According to the author, elements such as rhythm, feelings, meaning are accepted as a kind of common cliché in the fields of music and architecture. In his comments over space on the other hand, the author claims that vertical reading points both to harmony and the lack of harmony, while the horizontal lines (Jencks, 2013).

Derived from this, it would not be wrong to argue that abstract and tangible concepts such as dimensions, proportions, rhythm, feelings and meaning are significant tools for both fields.

A group of researchers, who work on the similarities of architecture and music, on the other hand, point out that music is comprised of a composer, an audience and a musical piece, while architecture involves a designer, a user and an architectural work, highlighting these similarities. While claiming that music and architecture are similar in terms of their ideal foundation, they exemplify their claims via various structures (Dewidar et al., 2006).

According to Duyan (2006), the keyword that identifies the relationship between music and architecture is “seriality”. However Duyan underlines that music can be listened diachronically, while architecture has a synchronous perception.

Goethe, on the other hand, points to an interesting case while indicating years ago that architecture is the frozen form of music (Eckermann & Fuller, 1839).

The mutual relationship of music and architecture also formed the theme of certain conferences. A symposium organized in Texas-Austin in 2011 is a close example of this (<http://soa.utexas.edu/caad/mia-aim/index>).

The relationship between music and architecture and their similarities are naturally not limited to those mentioned here. The periodic similarities of music and architecture are also highly interesting. For example; Baroque period in music dates back to the years between 1600 and 1750, while Baroque period in architecture is dated as 1580-1750. Together with the Baroque period, it is designated that music met the term “contrast” and Baroque music was depicted as “fancy, untasteful and exaggerated” by the classical period artists (Turani, 1992). Similarly, as Baroque architecture rejects the rules and principles in classical architecture and takes up a place in history with exaggerated figures, these features point to the parallelism between music and architecture once again.

It is possible to increase the number of assessments conducted over the similarities and commonalities between music and architecture. Within the scope of this article, these similarities are examined over the tools of both. At this point, the common tools will be discussed.

2. Music and Architecture: Tools

Architectural action starts with design. Without the action of design as space could not be attained, it would not be possible to talk about architecture where design does not exist.

The design tools, designing methods and principles related to architecture were explained, classified and interpreted in different ways since the past and until the present by many researchers, (Hesselgren, 1972; Arnheim, 1974; Itten, 1975; Bell, 1993; Koffka, 1999; Ching, 2002).

Design tools are generally evaluated under two headings. According to Gurer (1990) design elements include points, lines, directions, dimensions, shape, value, texture and colour, while design principles can be listed as again repetition, harmony, order, hierarchy, domination, balance and union. As a methodical and theoretical proposition, Seylan categorized design tools (2005) as points, lines, surface, form, movement/motion, rhythm, balance and harmony. Dailey and Bryant, who discussed the design tools throughout the historical process, summarize design tools with the concepts of balance, unity, rhythm, proportion, colour interaction, figure/ground relationship (Daley & Bryant, 2008).

In design, the main idea is called “composition”, while all of the aforementioned concepts are elements and principles, in other terms they are tools that can be used to create this composition. The way to create a space in the field of architecture is through the act of design. Apart from the aforementioned design tools, it is true that there is a relationship between creation of space and time, movement/motion, volume, form and many more concepts.

The piece of work created in the field of music is called again a “composition”, while it is possible to say that similar tools are used to create this as well. The primary tools that are used while creating a musical composition are classified in different ways by various researchers such as rhythm, melody, harmony, form etc. For the audience, as motion is classified among the sensory components of music, it can be considered as one of the tools (Cooper, 1960; Schoenberg, 1999; Gunn, 2002; Dura, 2002; Martineau, 2008).

All kinds of musical activity are carried out in different venues such as indoors-outdoors, closed-open. In this manner, the relationship between music and space is a mutual one. Since the existence of the human kind, it is known that there are a number of spaces designed for musical activities; Amphitheatres, concert halls, opera buildings etc.

Following the brief examination provided above, it can be claimed that some of the tools being common in terms of creating architectural and musical compositions is an interesting aspect. The design products exemplified in this article are evaluated via the determination of common tools in compositions.

3. Music-Architecture-Space: Basic Design Studio

This mutual relationship between music and architecture, and therefore space, also brings along the idea that music can be used as a tool in design education. “Can music be used as a tool in creating space?” This question serves as the justification of the workshop studies in basic design studio, which is one of the primary courses in architectural training. Within the scope of the studio, basic design elements and principles are described, the issues of plane/surface, form and space are included. The studio, which is the subject matter of this article, is presented to the students as an application of the plane/surface object.

The problem, which forms the subject of the studio, is provided to the students as can be seen in table 1. †

After the problem is given, the students listened to the piece entitled “Nocturne no 20” by Chopin. Frederic Francois Chopin was a Polish composer and virtuoso pianist of the Romantic era, lived 1810-1849, who wrote primarily for the solo piano, (http://en.wikipedia.org/wiki/Fr%C3%A9d%C3%A9ric_Chopin & <https://www.youtube.com/watch?v=Lo41kkt-vsw>).

† The studio offered as part of the scope of this article and the examples included in the table are realized with freshman year students of Karadeniz Technical University, Department of Architecture during the academic year 2012-2013.

The products obtained as a result of the workshop, are demonstrated in figure 1. The products that were designed are evaluated within the scope of common tools used in both fields. As a result of the first elimination among approximately 100 studies, 69 works were classified based on the design tools that were used. Following this, 12 works were selected in terms of sampling to demonstrate the common design tools, for this article.

Table 1. Basic Design Problematic Investigating the Relationship between Music and Space

Theme:	SPACE OF A MUSIC	Field of Study:	A cube composed of at least three planes, of which one is a basal plane. 25x25x25
Objectives:	Knowing a composer. Knowing music. Describing music. Interpreting music with the help of basic design elements. Comprehending the relationship between music and space. Designing an abstract space.	Materials:	Materials that would allow us to create a place/surface such as colored, black, gray background cardboards, model cardboards...
Problem:	Please create an original design that includes the theme SPACE OF A MUSIC by using the vertical and horizontal PLANE or SURFACE types within your own field of work. Place the article that describes the effect music has on you and the ways you compose this effect, behind your design.		

When the design elements, principles and tools that were used and are seen in all of the abstract spaces that were produced, are examined, those that were repeated most are determined as “rhythm/repetition, scale/proportion, movement/motion” and the examples selected in the table that was formed pointed to which elements first were coded. Within the examples, the tool that stands out most among rhythm/repetition, scale/proportion, movement/motion (R/R-S/P-M/M) was classified with the colour grey, and the rest were coded accordingly.

In order to better understand the common tools in the fields of architecture and music, the concepts included in table 2 have to be explained. Therefore, it would be possible to explain why these concepts were selected for the assessments and discussions.

Rhythm/repetition in architecture: Rhythm is the order determined by consecutive time and space intervals that the elements included in a piece of art form among them (Sozen & Tanyeli, 1992). Repetition is a prerequisite for rhythm to recur (Seylan, 2005). Rhythm/repetition in music: Rhythm is the regular repetition of strong and weak moments in a musical sentence or the continuation of time values in a certain order (Vural, 1986). Rhythm/repetition is directly related to architectural activity and therefore space and points to the concept of order. As it can be understood for the definitions, rhythm/repetition in music again points to order.

Scale/proportion in architecture; the union of the quality and quantity that represent an object are called scale. Together with scale, the concept of proportion comes along. The equivalent of this in architecture is proportion, which relates to the relationship between the pieces that make it and the entire composition (Gurer, 1990). Scale/proportion in music; the division of a musical piece into equal pieces in terms of time is called scale, (Anonymous, 2007). Scale is the secondary layer of the rhythmic structure in musical pieces (Atalay, 2009). In both of the fields of architecture and music, when the concepts of scale/proportion are considered, the relationship between the piece and the whole is highlighted.

Movement/motion in architecture; Movement refers to the consecutiveness of the change that occurs in our sensuous data entries in terms of perception and as required by the nature of perception it can be evaluated together with the factor of time and space as a process (Seylan, 2005). Movement/motion in music; Movement, beat and rhythm give a musical piece its life and strength. Each piece of dance music has a special beat movement that is determined by its scale and the note values used in it (Kirnberger, 1982). Movement in music can be considered through its terminological meaning and can be evaluated via the impact it has on the audience. It is seen that the concepts of movement/motion in architecture and music are mostly related to the process and/or time.

4. Discussions

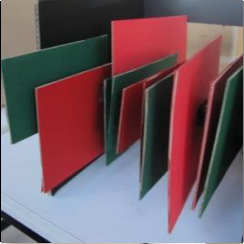


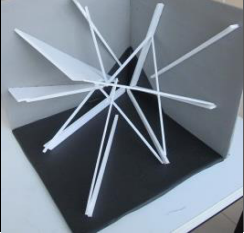






It can be apparently seen that the 12 examples shown in figure 1 are designed as abstract spaces that directly

point to the three headings determined as “rhythm/repetition, scale/proportion, and movement/motion”. It is possible to say that the designers use the common tools of architecture and music to reveal the spatial projections of the impressions they gather from the music they listen to. It is also possible to observe the same situation in other studies that are not included here. The tools envisaged for spatial creations are selected among those that are used in both fields. It is unlikely for this to be a coincidence.

While the problem was prepared for the workshop, this assumption was used as a starting point. The fact that the elements that will be preferred in creating the abstract space that is described in the problem, will be selected among the common tools used by both fields is a hidden assumption of this application. When the coding's carried out for the selected studies are examined, within the abstract space designs created by the designers in connection with the problem provided, it is seen that the tool/tools that are mostly highlighted are respectively “scale/proportion”, “rhythm/repetition” and “movement/motion”. Naturally, these assessments are relative. Different results may be attained in recurring studies. However, what is significant here is that all of the products have reached a common language and the tools used in spatial design are selected among those that stand out in both fields. During assessment, it has been particularly easy to determine and group these tools.

Here, it would not be wrong to claim that the designers point to the aspects of “order”, “piece-whole relationship”, “process-time”, which are all important for both fields with the assistance of these tools. As a result, the assumption envisaged for the workshop that “music can be used as a tool in spatial design” is verified within the scope of this study. Almost all of the abstract spaces that were produced using the common tools of both fields is an indicator of this. Similar assumptions and applications can be tested for other fields of art and their results can be discussed.

Figure 1. Abstract Space Examples from “Music and Space” Studio.

N	Example	R/R	S/P	M/M	N	Example	R/R	S/P	M/M
1					7				
2					8				
3					9				
4					10				
5					11				
6					12				

References

- Anonymous, (2007) MEGEP: Mesleki Eğitim ve Öğretim Sisteminin Güçlendirilmesi Projesi, Müzik Aletleri Yapımı Alanı, Müzik İsaletleri, T.C. Milli Eğitim Bakanlığı, Ankara. Retrieved from http://hbogm.meb.gov.tr/modulerprogramlar/kursprogramlari/muzik_aletleri/moduller/
- Arnheim, R. (1974). *Art and Visual Perception*, University of California Press, Los Angeles.
- Atalay, A., (2009). Müzik Eğitiminde Ölçü Gruplamaları ve Tanımlamalarına Yeni Bir Bakış, *Bildiriler. 8. Ulusal Müzik Eğitimi Sempozyumu* 23–25 Eylül 2009, ÖMU.
- Aydınlı, S. (1993). *Mimarlıkta Estetik Degerler*, İTÜ Kutuphanesi, 62.
- Bell, S. (1993). *Elements of Visual Design in Landscape*, E&FN Spon, London.
- Ching, F. D. K. (2002). *Mimarlık: Bicim, Mekan ve Düzen*, Translated by Sevgi Lökçe, YEM Yayınları, İstanbul.
- Cooper, G. (1960). *The Rhythmic Structure of Music*, The University of Chicago Press.
- Daley, K. & Bryant H. (2008). A Brief History of the Elements and Principles of Design p.7-25, AP Studio Art 2007–2008, Professional Development Workshop Materials. Retrieved from http://borsvoldapstudioart.weebly.com/uploads/2/1/5/2/21526604/elements_and_principles_brief_history.pdf
- Dewidar, K. M., El-Gohary, A. F., Aly, M. N., Salama, H. A. (2006). Mutual Relation Role between Music and Architecture, “Architecture, Urbanism & Culture”, ARUP 2006. Retrieved from https://www.academia.edu/667434/MUTUAL_RELATION_BETWEEN_MUSIC_AND_ARCHITECTURE
- Dura, M. T. (2002). Movement and Music: The Kinesthetic Dimensions of the Music Listening Experience, In B. Hanley & T. W. Goolsb (Eds.), *Musical Understanding: Perspectives in Theory and Practice*, (pp. 119-136). The Canadian Music Educators Association.
- Duyan, E. (2006, January 26). Müzikten Mimarlığa: Dizisel Düşünmek. Retrieved from http://www.yapi.com.tr/haberler/muzikten-mimarliga-dizisel-dusunmek_40685.html
- Eckermann, J. P. & Fuller, M. (1839) *Conversations with Goethe in the Last Years of His Life* by Johann Wolfgang von Goethe, Translated by Margaret Fuller. Published of Hilliard, Gray, and company, 414. Retrieved from <http://en.wikiquote.org/wiki/Architecture>.
- Gunn, J. (2002). *The Big Three: Melody, Harmony, and Rhythm Musical Elements*, Colorado Summer Writing Institute.
- Gurer, L. (1990). *Temel Tasarım*, İTÜ Matbaası, Gumussuyu, İstanbul.
- Hesseltren, S. (1972). *The Language of Architecture*, Applied Science Publishers Ltd., London.
- Holgate, A. (1991). *Aesthetics of Built Form*, Oxford University Press.
- Holl, S. (1992). Fenomenolojik Yaklaşım, *Arradomento Dekorasyon Dergisi*, 7.
- Itten, J. (1975). *Design and Form: The Basic Course at the Bauhaus and Later*, John Wiley and Sons.
- Jencks, C. (2013, May 6). Architecture Becomes Music, *The Architectural Review*. Retrieved from <http://www.architectural-review.com/essays/architecture-becomes-music/8647050.article>
- Kirnberger, J. P. (1982). *Die Kunst Des Reinen Satzes In Der Musik*, Translated by David Beach, *The Art of Strict Musical Composition*, Yale University Press, New Haven.
- Koffka, K. (1999). *Principles of Gestalt Psychology*, Routledge.
- Martineau J. (2008). *The Elements of Music: Melody, Rhythm, and Harmony*, Published October, Walker & Company. [muzik_isaretleri.pdf](#)
- Pallasma, J. (2011). *Tenin Gözleri*, Translated by Aziz Ufuk Kılıç, YEM Yayın.
- Schoenberg A. (1999). *Fundamentals of Musical Composition*, Gerald Strang & Leonard Stein (Eds.).
- Seylan, A. (2005). *Temel Tasarım*, Dagdelen Basın Yayın Ltd. Sti., Samsun.
- Sozen, M., Tanyeli, U. (1992). *Sanat Kavramları ve Terimleri Sözlüğü*, Remzi Kitabevi, İstanbul.
- Turani, A. (1992). *Dünya Sanat Tarihi*, Remzi Kitabevi.
- Vural, S. (1986). *Müzik ve Müzisyenler Ansiklopedisi*, Remzi Kitabevi, İstanbul.