Comparative Study of Music and Architecture from the Aesthetic View

Seyed Hesamodin Seraj

Abstract

Beauty is a mental and emotional phenomenon that has a deep connection with the sensory elements around us. Nature is the master key to feel this sense that along with our feelings and emotions, will lead to relative degrees of beauty. Architecture is formed in the material three-dimensional templates and it is more objective than the other arts; In other words, its relations with the material world are more than the other arts; however, music is only capable to form in one dimension and platform namely time and it is freed from the constraints of location. In this way, music art takes shape over time and it is more abstract than painting, and more prominent than architecture, sculpture and painting. Of course architecture, in accordance with this content, has a special connection from the material world to the spiritual world. Especially in Islamic mosques and sacred arts, architecture has a semantic meaning beyond the material world; because in the sacred arts, secrets are pure as it often does not have any outer shapes and they become a symbol of an Islamic belief and a mystical image so that the transformation is performed to adapt an image with religious beliefs. Thus, the research method, according to the examined contents in this study, is based on pure science or library resources and it is as descriptive-analytic. In this paper, some comparative aspects of aesthetics in music and architecture, which has achieved the high degree of beauty in the light of the total shares and coordination between the two arts, are examined as the goals of this transition.

Keywords: Music and architecture, Aesthetics, Arts abstract process, The visual and audio arts.

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Introduction

All the arts are cross-linked with each other, because the origin of all of them is a beautiful expression (Sadeqpour, Firoozabadi, 2011, 106). Art is one of the most mysterious aspects of human culture and civilization that always pervades human life (Mehdi Nejad, Sadeghi Habibabad, 2015).

Iranian traditional architecture is one of the most dramatic and the most supreme examples of architecture in the world that unconsciously attracts any viewer and its subtleties and secrets makes everyone to admire.

Undoubtedly, Iran is one of the trustees of the art and of course owes its beauty to ancient monuments that are the legacy of love and passion and glory of the Iranian people in the ups and downs of the history of this nation; buildings which are the description of "elegance" and "glory" of Iranian Muslim artists and evidence of the meaning manifestation in the form of matter. As any art, during its progress, affects the time and space conditions of the society and other factors, the arts are directly or indirectly affected in relation to each other and shows its reflection from each side in its own territory and add their capacity and performance (Dehlavī, 2004, 140).

In architecture, painting, sculpture and other visual arts the issue of "ratio" is very important. If we consider the most basic element for the formation of each of these arts, the level has "length" and "width". The length to width ratio has a major impact on the human psyche and among the countless ratios, that can be exist between length and width, it is only a few ratios that are pleasant for most of people. When we go beyond the two-dimensional surface, the volume comes with the dimensions of " length and height" with a variety of ratios that exist in three-dimensional architecture or sculpture between length and width, length and height, width and height, the whole complex and in every part of it, that in combination with each other determines Pleasant or beauty of the architectural work.

In the process of architecture and music creation, conceptual foundation utilities and tools are inseparable from each other and it is in separating them from each other that architecture and music separations and links can be identified (Falamaki, 2008, 311). Whether we like it or not, there is a link between architecture and music, and this is based on our mental constructs is, which is the same on these two arts (Egznakys, Y, 1990,); that's why Goethe believes that architecture is the frozen music (Minister, 1997, 3); because the creation of architecture is from the same origin and it passes through the same pathways and finally, it achieve the same destinations that the creation of music is bound to (Jamshidi, 2013).
Research process

Since the audience of the two arts is human like other arts and their producer and presenter is also human, a research, however briefly, on "human knowledge" was needed. In the next step, it is necessary to examine the relationship between human and the universe and human's relationship with nature and himself, or in other words, traversing the heavens and the human spiritual journey and the windows through which this process takes place. In general, architecture can be seen as the concrete and material aspect of geometry. That is the laws and principles of architectural are derived from the sound rules of universe geometry and hence, knowledge of geometry and its symbolic aspects of the creation are effective in nurturing the architect mind in order to effective and efficient design. Architecture is abstracted from geometry and geometric traditions; while music is abstracted from mathematics and mathematical proportions. On the other hand, when mathematical ratios drawn and transformed to line, they are geometry constructs; hence, architecture and music, in their abstract side, lead geometry and math and knowing geometry can significantly help to better understand the architecture and music, comparing them with each other and discover similarities or differences between them.

Role of architecture and music in the art abstract process

Each of the multiple arts, according to its structure, has limitations and possibilities and specific features. For example, the architecture requires manifesting in the material three-dimensional form; or in other words, it is always captured in volume dimensions and is forced to use the materials. While painting can portray three-dimensional volumes of material and objects found in nature in the two-dimensional surface and it does not need the possibilities of architecture and has fewer restrictions than it.

In the field of poetry, the presenting context has not material face; that is, the lyrics is not captured as material and so, is much less restricted compared to other arts that have emerged in the field of material. (Vaziri, 1987).

Contemporary thinker, Martyr Ali Shariati, provides something interesting about the above topics in his book named "Art for the promised":

In the introduction, he describes the human and spiritual character and knows the human escape from the world and his belonging as the origin of birth of art.

Sculpture and architecture take shape in the form of material three-dimensional templates and are more objective than the other arts. In other words, their relations with the material world are more than the other arts; in terms of their historical background, they are also one of the
first forms of human artistic expression that is achieved. The first man built the first shelters of stone and their constructs take shape in three dimensions of length, width and height. Gradually, human learned painting and drew primary images on the on the walls of caves; that is, the context of his work was changed from three dimensions of length, width and height to two dimensions of length and width. One dimension removed and one degree it was closer to abstraction and was transcended one rank than its earlier art.

The only art, which can be formed in one dimension, is music. Time is the platform of music and it is freed from space constraints. The number of sound vibrations per unit of time, or the frequency of the sound of particular note is the determinant of certain note and the sequence of notes makes the tone and rhythm. In this way, the music takes place only in the context of time; it is more abstract than paintings, and it is also more privileged than architecture and sculpture and painting. (MahdiNejad, Jamal-e-Din & Sadeghi Habib Abad, 2015).

**Analysis of multiple arts and comparing them with each other**

For example if we consider the notion of materials, we find neutron in physics as the synonymous; in music as the audio quality, we can find four categories of wind, brass, string and Percussion instruments; in painting as two families of color and colored lights and in poetry as language.

<table>
<thead>
<tr>
<th>Materials (elements forming the subject)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Physics</strong></td>
</tr>
<tr>
<td><strong>Music</strong></td>
</tr>
<tr>
<td><strong>Painting</strong></td>
</tr>
<tr>
<td><strong>Architecture</strong></td>
</tr>
<tr>
<td><strong>Poetry</strong></td>
</tr>
</tbody>
</table>

And accordingly, we can consider patterns or the other factors that are effective in the structure of art and form a chart based on that. Grillo (1987) proposes an interesting table which can compare various arts, including the "architect" and "music" with each other.
Grillo's Suggested factors include:

1-material        2-unit
3-scale             4-rhythm
5-dynamics (mobility)       6-harmony

Each of them has been explains based on the table you can see as the "art" and "science".

**Table 2: Comparison of arts, architecture and music suggested by Grillo (1987)**

<table>
<thead>
<tr>
<th>Unity in Science</th>
<th>Unity in Art</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>material</strong></td>
<td></td>
</tr>
<tr>
<td>- The four elements, chemical elements, materials, industrial materials</td>
<td>- The four groups of audio instruments: wind, brass, strings, percussion</td>
</tr>
<tr>
<td>- Colored light colored materials</td>
<td>- Wood, stone, clay, metal, glass etc.</td>
</tr>
<tr>
<td>- Language</td>
<td>- Live Thread</td>
</tr>
<tr>
<td><strong>unit</strong></td>
<td></td>
</tr>
<tr>
<td>- Electron</td>
<td>- Tones, half-tone, quarter tone</td>
</tr>
<tr>
<td>- The ratio of emissions</td>
<td>- Tatami modulus golden ratio</td>
</tr>
<tr>
<td>- Number / cell</td>
<td>- The three primary colors</td>
</tr>
<tr>
<td>- Syllabus and verse</td>
<td>- Syllabus and verse</td>
</tr>
<tr>
<td>- Bahr Square Dancing</td>
<td>- Bahr Square Dancing</td>
</tr>
<tr>
<td><strong>Scale</strong></td>
<td></td>
</tr>
<tr>
<td>- A series of numbers</td>
<td>- Modes: Major, Minor, Lydia, Dorian, Aywish, Chinese, etc.</td>
</tr>
<tr>
<td>- Series</td>
<td>- Styles: Doric, Ionic, and corentinan the proportions dumb</td>
</tr>
<tr>
<td>- From jewelry to mount</td>
<td>- From jewelry to mount</td>
</tr>
<tr>
<td>- Ballet Prosodic</td>
<td>- Ballet Prosodic</td>
</tr>
<tr>
<td><strong>Rhythm</strong></td>
<td></td>
</tr>
<tr>
<td>- The relationship between changes in orbital</td>
<td>- Signs, party size (when) the strong and weak beats</td>
</tr>
<tr>
<td>- Cavity frequency and volume, Kolonnade, passages</td>
<td>- Cavity frequency and volume, Kolonnade, passages</td>
</tr>
<tr>
<td>- Repeat groups with similar form in the form of a</td>
<td>- Repeat groups with similar form in the form of a</td>
</tr>
<tr>
<td>- Sequence of songs, pause, pause</td>
<td>- Sequence of songs, pause, pause</td>
</tr>
<tr>
<td>- Beat</td>
<td></td>
</tr>
</tbody>
</table>
Architecture definition:

Architecture is the science of materials, geometric shapes and volumes, static physics and the art of mix and decorating and supplying it in a way that meet physical and spiritual needs. Architecture, the art of organizing the space and sacred architecture, which is created from the meaning realm, is of course the spiritual art (Khaki and Sadeqi Habibabad, 2015).

Architecture is created within the life context for the human that spirit of God gets blown through his body (the holy Quran) and his existence is not limited to material needs; but he is a creature with different existential positions, from the physical needs such as eating and sleeping and need for shelter which are arose from material level and psychological needs that encompass a wide range of needs from security to belonging and so on and finally, spiritual levels of human existence with its own characteristics and needs related to the spirit and essence of humanity (Nazerinezhad and Sadeghi Habibabad, 2016).

Then, architecture is on the one hand as science and as an art on the other hand. The architect should on the one hand, has the knowledge on the architectural components and elements (material) and be able to serve abstract geometry to take concrete and practical atmosphere and on the other hand, should form that artistic elements in the geometric forms and volumes and finally, provide his architectural phenomenon that meet not only the physical, but also the mental needs of the human being. So here, we should have a general understanding towards the existing items in definition, including:

1. Materials and construction elements science
2. Geometry science - Geometry of surfaces-shapes - Spatial geometry-volumes

3. The knowledge on static, weighing and balancing

4. The knowledge on human physical and mental structure

5. The art of designing and combining our knowledge

Thus, as it is evident in the definition:

Like the music, the architecture has two noteworthy aspects namely science and art.

Observing ratios is required in both architecture and music; because the ratios are the cause of visual beauty in architecture and cause of audible beauty in the music.

The compatibility of these ratios is consistent with the geometry of the human spirit so that makes architecture and music beautiful and pleasant for the human's eye and ear.

**Geometric proportions of 'Fa' and 'Sol'

Renaissance writers had called the golden proportion as 'Divine Proportion'. This ratio plays an important role in art and architecture. In general, the beauty of visual form is due to their 'heavenly' proportions. It is interesting to know that the ratio of sound beauties in the music world is also based on the ratios that make music heaven behind the tones.

If we assume 'Do' as the basis of gamme, the first sound, which creates melodious voice, is 'Fa'. This ratio is of common ratios of framing forms in architecture, painting, and photography and so on. The ratio is considered as one of the basic tunings in membrane stringed instruments.

The second voice, which is melodious and pleasant with 'do', is 'sol' that is another common composition in visual form.

Interval of 'do–sol' is the most basic tune in Eastern and Western instruments.

Intervals of 'do – fa' or 'do – sol', in succession are saturated the minds and are simultaneously harmonic.

The third voice consistent with 'do1' in the next gamme is 'do2' or 'Octave' voice.

Based on the above ratios, the overall proportions are as follows:
Table 3: general gamme proportions

<table>
<thead>
<tr>
<th></th>
<th>do</th>
<th>Fa</th>
<th>Sol</th>
<th>do</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1/3</td>
<td>3/2</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

If the base note 'do' is considered as equal to (6), we have:


do 
6

\[
\begin{array}{cccc}
\text{do} & \text{Fa} & \text{Sol} & \text{do} \\
6 & 8 & 9 & \frac{9}{2} \\
\end{array}
\]

Here, the other interesting proportions will be obtained as follows:

\[
\frac{\text{Fa}}{\text{do}} = \frac{\text{do}}{\text{Sol}} \rightarrow \frac{8}{6} = \frac{12}{9} = \frac{4}{3}
\]

\[
\frac{\text{Sol}}{\text{do}} = \frac{\text{do}}{\text{Fa}} \rightarrow \frac{9}{6} = \frac{12}{8} = \frac{3}{2}
\]

And this ratio is always true: sol.Fa = 2 (do)²

The beauty factors in the visual and audio arts

1. Symmetry

It is evident in the most beautiful way in God's creation and nature. Symmetry is one of the features, which has been widely used in the world's architecture art, especially in the past (Dehlavi, 2004, 227-249).
2. **Contrasts**

It is evident in God's creation, night and day, male and female, light and darkness, good and evil and so on:

In the arts, such as the contrast in visual arts; like silence at music aranzhmane intervals; like full and empty spaces in architecture; like forte and piano in music; like Nuance differences; like Change of plectrum to tensile or vice versa, etc.

3. **Harmony**

It is evident in God's creation, the nature such as divine (Golden) proportions, $\phi$ number, $\sqrt{2}$ and so on; in the arts as framing and painting in graphics and so on; golden proportions used in architecture; the ration of gamme notes in music.

\[
\frac{Sol}{do} = \frac{3}{2} \quad \text{and} \quad \frac{fa}{do} = \frac{4}{3}
\]

Such as harmonic pleasant intervals in Musical Polyphonic opus
The beauty in music and comparing it with architecture

1. Gamme

In general, any piece of music is based on certain gammes. In Western music, it is based on major and minor, minor theoretic, minor harmonic scales, etc; based on Shour, Mahour, Homayoun, Segah and Chahargah gammes in the Iranian music; based on pentatonic scales (five-note) intervals in the Chinese music; and based on the specific dynamics and ethnic music with special gammes in Hindi music.

Beauty lays in every gamme sounds leads to a special flavor in each of the aforementioned gammes. For example, the major gamme which intervals are based on natural gamme has a moderate, balanced and stable mode due to its natural state.

Therefore, it is very successful the expression of epic scenarios that shows its inner strength.
The beauty of gamme

Symmetry

Classical Greek architecture have taken a lot of advantages of the features of symmetry, which is followed by "equilibrium, balance, stability" and in general, the important feature has been used in any classical building.

Another secret of the natural gamme beauty is to create the right variety in distances, which means that this does never lead to boring repetitive work for mind. When we started the first two notes, the first interval is "tone" which leads to 'Re'. After performing 'Re', the second open interval (a tone), is still new to listeners. After this interval, 'Mi' is performed. Next interval is performed to create diversity and in the western interpretation, "surprise" from 'a tone' to 'semitone'.

And this diversity makes it pleasant to hear note 'Fa' for the listener.

After hearing 'Fa', the next interval is open (a tone), that due to the distance (half-tone) before it, is again interesting for the listener.

From 'sol' onwards, namely from "sol" to octave "do", the first pitch intervals means "do" to "Fa" is repeated and because of its predictability namely adjustment with first gamme intervals and yet, that it is not the same notes, namely the frequencies has been increased and nature of "association" of the first dengue intervals, and the feature is completed in the last note namely the octave 'do' gamme and we hear the homonymous and non- assonant note of 'do' with doubled frequency and the listener feels 'satisfied'. This feature that can be called "diversity" or "association" and "suspension", is the second natural feature of natural gamme which is evident in many other arts such as "architect", "Fiction" and "Cinema".

When the note "do" start and every gamme is successively rings, and in all the way, there is a sense of uncertainty (suspension) in the listener's mind. (Sinai, Dehlavî, Falamaki, Nami, 2008).

\[
\begin{align*}
\text{do} & \quad \text{re} & \quad \text{mi} & \quad \text{fa} & \quad \text{sol} & \quad \text{la} & \quad \text{si} & \quad \text{do} \\
\text{Suspension} & \quad \text{diversity} & \quad \text{Assocations}
\end{align*}
\]

Until finally "by ranging" octave 'do' note, we reaches saturation from suspension.
This mode is used as the original attractor in most of the arts. "Urban Design" in architecture is to avoid monotony in applying this principle. In the fiction, the psychological suspense is used to create a state of "waiting" for the audience. Also in composition, musician takes listener from garden to garden a while to reach the bottom of the garden, new outlet is opened and the listener is delighted until the end of the piece. At the end, he will be mentally saturated.

In summary, architecture and music can be compared in this way:

**Table 4: Summary of comparison between architecture and music (writer)**

<table>
<thead>
<tr>
<th>Music is audible.</th>
<th>Architecture is visual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Music is the time architecture.</td>
<td>Architecture is the place music</td>
</tr>
<tr>
<td>Music is animated.</td>
<td>Architecture is fixed and static.</td>
</tr>
<tr>
<td>Music: just creates a spiritual atmosphere.</td>
<td>Architecture: Creating an atmosphere of spiritual material.</td>
</tr>
<tr>
<td>Music is the audio aspect of mathematical abstraction.</td>
<td>Architecture: is the objective aspect of abstract geometry.</td>
</tr>
<tr>
<td>Music is the application of proportion over time</td>
<td>Architecture is the application of proportion in the location volume</td>
</tr>
</tbody>
</table>

**Geometry in architecture as mode in music**

**The role of mode in music and architecture:**

In general, as the music is always based on specific gammes, classical architecture is always based on specific geometry. For example, when we say a certain piece in Homayoun, This means that certain musical intervals and form is ruled and violation of this makes the piece out of the device and makes it unseemly, uncouth and ugly.

In classical architecture, the special geometry of the design, function, form and plans must be respected; otherwise, forms are not anymore in eye-catching and melodic shape.

Arts can be translated into each other because of a unique natural origin; although each of them in their own words has the greater strength and power, however, many similarities exist between them (Siraj, 2010).
For example, perspective in architecture is similar to fade out in music, namely in the case of rhythm is repeated and becomes weak with each repetition to reach the silent; or symmetry in architecture is similar to mirror symmetry in music. This means that the ascending notes, the previous motif, as downward and reference to the witness note complete the music sentence; or facade composition in classes is similar to aranzheman or Polyphony set up in music.

**Image music or architecture melodic translation**

If each arc represents a measure, and assume the arch of the notes as ascending with the crouch Cheng, at the foot of each arch we have silent to the size of a crouch Cheng. Each measure is 2/4 beat for the first beat of crouch Cheng as upward and the second beat is three crouch Cheng notes downward along with a crouch Cheng silence.

There are two perspectives of distant to close and close to distant. The first mode is the mode of Fade in and the second mode is Fade out.

![Figure 5: The architecture melodic interpreter (the first mode Fade in and the second mode fade out)](image-url)
The above image of Persepolis evokes rising rhythm notes in the music.

In the following, architectural symbols have been translated into melodic and harmonic classes.

- Khajoo bridge view in five lines of harmonics in Mahour gamme
- Mogharnas view of the Grand Mosque of Isfahan in Chahargah gamme, each of them is based on the intervals, heights and induce moods so that induces the viewer that he is selected.
Analysis and Conclusion

After reviewing the ratio and finding that architecture is the objective aspect of geometry and music is the objective aspect of math and comparison of the two arts together, ultimately, the results is that the cause of beauty in these two arts, is return to the elegant proportions in geometry and number in the architecture of length, width and height and note frequency in music. Architecture Platform is place and music platform is time.

Where these ratios are consistent with each other, the beauty of the arts will be reconciled.

Architecture gets its palace of love ratio from the sweetheart eyebrow arch.

_Now, became prosperous the joy of the palace of love_

_When, its geometrician, the arch of my beloved's eye brow became. "Hafez"_

The beauty and glory effects of God are manifest on the walls of life and they are observable in different ways and God will ask on them in another world:

_And do not pursue that of which you have no knowledge. Indeed, the hearing, the sight and the heart - about all those [one] will be questioned._

The God's hands have made the nature as the symbol of divine intuition for the human eyes and ears and have molded our inner nature homogeneous with nature, so that says:

It is Allah, the Originator of the heavens and earth.

What is from human in the 'nature', has an origin in the creation of the human spirit, and it is why nature is pleasant for the human.
O breeze the perfume of that musk - scented tress thou hast

As the token, thou stayest for its perfume thou hast (Hafez)

Each imaginary that make me seem * is good and beauty and glory (Shah Nemat-o-llah valy)

In the world of plurality, beauty and glory is repeatedly observable and if we have pure eye and heart, beauty will be manifested in the creator effects.

Man, who seeks beauty and glory because of his divine nature, following the continuous need, tries any creation of beauty and glory in the art forms.

Sometimes depict a corner of the absolute beauty and sometimes provide it in the form of sounds to be heard. Sometimes try to show a manifestation of god beauty in architecture and sometimes provides mystic themes for attracting witness. All of the creatures in heavens and the earth remember God like the other manifestations of nature in the love and glorify.

But meanwhile, sometimes the veils of ignorance prevent human beings to understand the true source of light. Any attempt of human being ranging from art or non-art comes from the human willingness to be infinite, and on Hafez words:

> From the true Beloved, is my pain and my remedy, also
> A sacrifice for Him, became my heart, and my life, also
> Friends within the veil, we utter speech
> It will be uttered with tales, also.
> Only one splendor of His face is the glory of both worlds,
> 'To thee, I uttered this matter evident and hidden, also

It is from him, whatever is hidden and evident, throughout the kingdom.

According to the above context, the arts also originate from a single source and perhaps unified laws form them.

(Not one of the beings in the heavens and the earth but must come to (Allah) Most Gracious as a servant. He does take an account of them (all), and hath numbered them (all) exactly.)

"Maryam / 92 and 93"

Inner beauty lies behind the secret curtain and you cannot hear until you understand the curtain and dropping the curtain is not possible except by intuition.

> Now, within the screen, many a calamity happens
> At that time, when the screen falls down, let us see what they make (Hafez)
During turning plurality to unity, visual beauty to inner beauty, relative beauty to absolute and discovering beauty similarities in different forms.

Needless to say that the main cause for creating art works is "love" and maybe "love" is the crystallization of "separation", "spiritual need," "painful separation", "eagerness", "spiritual enjoyment” and so on and the creation of art is conceived as follows:

Absolute glory and beauty: surprise > Love
Creation of formal beauty and glory > art
Perhaps, the secret of Hafez's word:

*Without the drawback of this appointment, is no skill But
More disappointed than I, a beggar when was*

Is that the deprivation of achieving true love is the origin of the birth of art and in this way, the more demanding is the person, the more genius will be; or elsewhere, he knows love as synonymous to art.

*I teach love and hence my hope, that this noble art of love*
Like other arts, not becomes the cause of disappointment in the attainment of my object

That relative and formal beauty origins from the beauty of God, although formal beauty disappears in time periods or places but because such a beautiful building is based on the beauty of God, it will never decline.

*Know People as water clean and clear / in that we can see the God traits
Fairness is from her good/ their love is the image of his favorability
Centuries passed/the meaning are maintained
The river water is transformed several times/moon and stars are still in place
Then, the basis in not on the water/ but it is on the highest heaven*

"Rumi"

Perhaps the notion that only humans have consciousness, perception and sense of receiving the beauty and it is only the human that can swim in the ocean of infinite power is not true; but we can see that other creatures have in turn pray God. As Hafez said:

*Not alone is my eye the splendor-place of His cheek
Revolving this very mirror, the sun and the moon are."

Or in the words of Qur'an: Each (just) swims along its own orbit (according to Law).

But, human being, who is superior to the other creatures, can create their formal beauty this is where the debate begins. Art is the human efforts and expression of love to the source of creation and all the elements of the universe are tools in the service of him to make it possible to see the friend allure.
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