

## A Study of the Color in Persian Gabbeh Rug and Music

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### ARTICLE INFO

Received: August 24, 2021

Accepted: September 18, 2021

Published: September 28, 2021

DOI: <https://doi.org/10.48293/IJMSTA-78>

#### Keywords:

Color

Gabbeh

Interdisciplinary

Persian rug

### ABSTRACT

Interdisciplinary study is becoming increasingly important in arts such as design and music during the last decades. The color term suggests an analogy with the visual arts and an important element in both rug and music arts. However, connection and link between rug and music through the lens of color has not been studied yet. Persian rug composition is based on balance, rhythm, and use of bright colors. When listeners are engaged with music, they follow the sounds closely. Similarly, color is one of the attractive visual elements in Persian rug art at first glance, but color in music art is hidden and invisible. Considering the color element in Persian Gabbeh rug, we showed conceptual connection between musical note and Persian rug and communication language tool of aural-visual arts relationship.

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## 1 Introduction

Interdisciplinary approach is becoming important in research and education, especially understanding art in the environment that combines art and music is highlighted by researchers [e.g.,1, 2]. Furthermore, musicians and visual artists crossing the boundaries of their disciplines to create ‘visual’ music or ‘sound’ paintings [3].

The color term suggests an analogy with the visual arts, and indeed the exploration, combination of instrumental and sound qualities by performers and composers may be compared to the use of color by rug weaving art. For example, a composer may select to use different colors with different instruments. In hand-knotted rug art, the grid of knots, side by side and above one another, is predicated upon the interweaving of warp and weft. But using and selecting the color in repeated sequences create the relationships of corresponding points and highlighting them in a plane pattern of the rug [4]. These coincide with musical composition elements, and the rug weaver is responsible for deciding on how to apply these elements and principles to create a composition.

A piece of music can describe as a colorful, harmonious, or a color painting as melodic and rhythmic. Similarly, the organization of rug design include repetition, rhythm, color, and pattern. However, a few researchers worked on connection between weaving texture and music and they mainly linked pattern and repetition elements of weaving texture and music. For example, Mundry reported the significance of patterns in her musical composition [5], which was influenced by an African textile pattern and linked the concept of texture pattern to the parameter of time in her music notation. Morton Feldman, an American music composer, linking the patterns of Oriental rug in his scores and repetition and variation are the main strategies in his music pieces [6]. Javadi and Fujieda [7,8] investigated repetition and symmetry elements of Persian rug and music.

One of the characteristics of hand-knotted Persian rug is rich-hued harmony of the color which is uniquely linked with the indigenous culture and specific to an identifiable geographic area or nomadic tribe. This research therefore investigates how the organization of the sounds of music is expressed in color design of Persian Gabbeh rug which is mainly woven by Gashqai and Lur nomadic tribes in southwestern of Iran. As music and color art are two parallel arts, it is impossible to find an equal

method for connecting them; however, the imagery evoked by these two arts can be very similar. To convert music into color art, it is necessary to consider what art really is. In this study, we aim to investigate the connection and link between music and hand-knotted Persian Gabbeh rug through the lens of color element. Considering colors in Persian rug and music, we propose a language of aural-visual relationship of Persian rugs and music. In exploring this relationship and answer to the question, first we explained color in Persian rug and music. Second, we showed conceptual connection between color in Persian Gabbeh rug and musical note.

## 2 Color in Persian Rug

The hand-knotted Persian rug, a subgroup of the Oriental rugs specifically woven in Iran (Persia), is one of the oldest surviving crafts and its own unique design of work melodies intertwined with the weaving process. Persian rug composition is based on balance, rhythm, and use of bright colours. The dyes used to create the colouring are from plants and other natural substances. Subtle variations in the same colour sometimes occur, particularly in older rugs or those woven by nomadic tribes. Moreover, they are known for the uniqueness of each, and every rug produced [9].

Persian rug colors despite visual beauty have a several meanings among rural and nomadic weavers and it distinguishes special design and regions. Colors used in rugs also convey meaning and story. For example, red invoked happiness, luck, courage, and wealth life. Red is used to create exquisite designs and a wide array of visual effects and early rug weavers used red to create emphasis in their patterns. Blue symbolized honesty, loyalty and power. Blue, after red and beige/white, is one of the highly used colors in Persian rugs. Black was forceful, could edge into destructive, and was typically used for outlines and borders, to define a precise design [9] (see Table 1).

**Table 1.** Meaning the colors used in Persian rug (Modified from Samvat 2008).

<b>Color</b>	<b>Definition</b>
<b>Green</b>	Hope, Paradise, Renewal Life,
<b>Red</b>	Beauty, Courage, Wealth,
<b>Blue</b>	Power or Force, Solitude
<b>Orange</b>	Humility, Devotion, Piety
<b>Yellow</b>	The Sun, Joy of life, Happiness
<b>White</b>	Purity, Cleanliness
<b>Black</b>	Mourning, Destruction
<b>Gold</b>	Power, Wealth
<b>Brown</b>	Mother earth, Fertility

Persian rugs are generally named after the village or city where they are woven or collected, or by the weaving tribe in the case of nomadic pieces. Each rug's particular pattern, is uniquely linked with the indigenous culture, and weaving techniques are specific to an identifiable geographic area or nomadic tribe. In this study, we used 'Gabbeh' a hand-woven pile rug of coarse quality and medium size characterized by an abstract and simple design that relies upon open fields of colour and playfulness with geometry (Figure 1). It is traditionally woven by Gashqai and Lur nomadic tribes in southwestern of Iran. The word 'Gabbeh' comes from the Persian meaning 'raw', 'natural', and 'uncut'. This rough and primitive rug 'Gabbeh' is one of the traditional hand-knotted of Persian rugs and has different design variations but in general based on geometrical design [10].



Figure 1. Persian Gabbeh Rug [22].

### 3 Colour in Music

Colour or timbre is one of the important elements in music. Composers interested in using the color to notate sound throughout history. The music historian Stuckenschmit noted, “Eye music, or the use of compositional techniques which the ear cannot (or cannot immediately) register, is nothing new. From the canons of Netherlands Renaissance polyphony to the time of J.S. Bach, the composer’s eye was always an adjunct to his ear” [11].

Colour is a product of the sound wave, its composition, a property that signifies the quality of the overtones of an instrument. Colour music notation attempts to find the mental similarities between vision and audition, transforming them into the same audiation. Therefore, how to select an appropriate colour corresponding to a music tone is a priority for a colour music notation system, rather than notation painted by the arbitrarily assigned colorants. Colour is referred to the character and form of sound that comes from different instruments and voices in music. In a musical piece, a composer may use several voices to colour the music. Composers such as John Cage and Olivier Messiaen used coloured notation to enhance the musical content of their scores [12, 13].

Colour (timbre) in musical instruments and musical note is different. Two general hypotheses have been proposed to explain such music-to-colour associations in both synesthetes and non synesthetes: direct links and emotional mediation. The emotional mediation hypothesis suggests that colour and music are related indirectly through common, higher level, emotional associations [e.g., 14, 15, 16]. In contrast, in the direct link hypothesis, musical sounds and visual colours are related by direct correspondences between the perceived properties of the two types of stimuli [e.g., 17,18]. In music-colour synaesthesia, there is a system-mapping relation between musical pieces and colour images which we used in this study. Some artists (e.g., Kandinsky and Klee) and musicians (e.g., Scriabin and Rimsky-Korsokov) reported diverse cross-modal experiences of colour while hearing musical sounds [15, 19]. For example, Rimsky-Korsakov famously regarded as a synesthete, interpreted the major scales music in the keys of C, D, A, F and F-sharp with white, yellow, rose, green, and grayish-green, respectively. Scriabin, Russian composer and pianist, interpreted them as red, yellow, green, red, and bright blue. Recently, Hu [20] proposed a method of converting music elements into colour based on music-colour synaesthesia theory. It covers musical scale of notes and timbre of instruments that compose various sound parts as integral pieces of music (Figure 2).

In the systematic synaesthesia mechanism, music structure metaphorically represents the colour compositions, which build up the colour imagery. Music, no matter in integrated piece or minimum units, does have certain structure, by which imagery of colour composition is inspired. However, when it comes to music structure, various styles of chord, melody, tempo, rhythm, and textures, influence it. Every aspect of music structure refers to a certain composition rule, depending on how the musical piece is analysed.

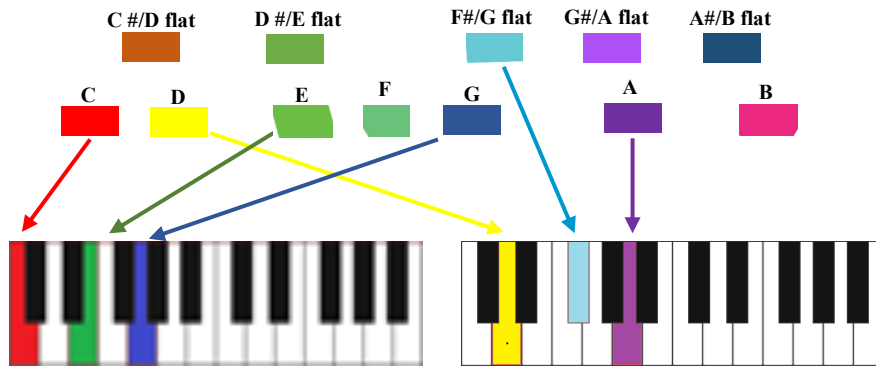


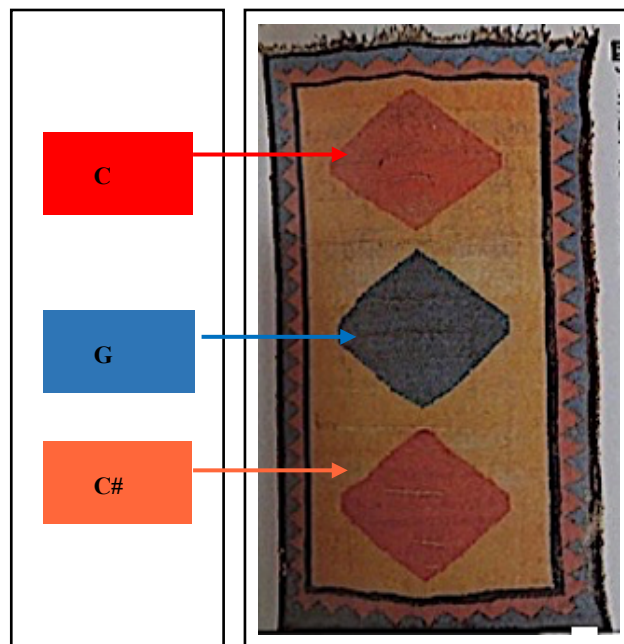
Figure 2. Color chord structure. Color chord relation in hue wheel (Modified from Hu 2020).

#### 4 Connection between Persian Gabbeh Rug and Music through the Colour

Vision and audition are two major human perceptions. Music received by ears and colors perceived by eyes are recognized by the human brain, which interprets them by certain similar mechanics. When listeners are engaged with music, they follow the sounds closely. Similarly, color is one of the attractive elements in rug design at first glance.

Color is the quality of a musical note or sound that comes from different musical instruments or voices and distinguishes musical instruments and sound production. A composer may use different musical instruments or voices to color the music in the piece. Similarly, using the color in repeated sequences create fascinating relationship between patterns during the weaving process of rug. In Persian rug, a harmony of the color uniquely linked to an identifiable geographic area or nomadic tribe and convey the meaning in rug.

Color-art association with music is different for each artist. In this study, considering both colors and image composition in rug and music-color synesthesia approach of Hu [20], we conceptually link and show rug color (or 'rug colored-sound') and musical note. Figure 2 shows Persian Gabbeh rug with four main colors: red, orange, blue and black. By connecting the color in Gabbeh and musical note using Hu's approach [14], we can hear the sound of color because each musical note has a different sound and color musical notes: C for red and G for blue, C (red) + G (blue) = Black, C# for orange (Figure 3). In other words, we can listen to the 'rug colored-sound' through the conceptual connection and link with the color of musical note.





**Figure 3.** Connection color notes in Gabbeh rug [22] and music note. Colored box indicates musical notes C for red and G for blue, C (red) + G (blue) = Black, C# for orange.

## 5 Discussion and Conclusion

The purpose of this interdisciplinary study was to investigate the relationship between music and Persian Gabbeh rug through the lens of color. We illustrated and showed conceptual link between two arts: visual art ‘rug’ and auditory art ‘music’ using color element. Interdisciplinary study involves bridging traditional academic boundaries to investigate the relationship between disciplines through the common elements. In discussing the relationship between Persian rug design and music, there are musical elements which are referred to how music has been implemented in rug design. When the elements have musical nature, they may have little application in rug. While the elements are reflecting in music and rug design separately, we indicated color as a bridge between two arts and also as one of the important elements in rug design and music. Color is hidden in music, it is visual and integral part in Persian Gabbeh rug. In music, color is referred to the character and form of sound that comes from different instruments and voices [21].

Music-color synesthesia has been proposed for a long time and it may be different for each artist. In other words, fixed quantifications of both color and music are personal expression. Although the musical expression is contained in a fixed form within the piece, each musician must find their elucidation through own thinking (color notation). In this research, we used color as one of the connecting elements between rug and music using music-color synesthesia approach of Hu [20]. By connecting the color in music and rug, we not only can hear the sound and visualize the color of the sound, but also see the color and visualize sound of the color in rug design. When we develop a musical note or making a rug, we use notation to explore and clarify the research project. In traditional approach, this process will lead to a completed musical score or a rug. However, these completed documents do not constitute the work itself. Rather, these completed documents are the intermediary and connection between the rug and music.

Rug design and music are based on creativity and design principles such as symmetry, repetition, and colors elements. They share art relationship through performance and visual techniques to create alternative innovative design proposals. There are similarities between music and textile rug design, where the music can be regarded as a source of innovative textile design ideas. We found communication between rug design and music using the color and can define and interpret the sound of rug color. This study suggests an innovative approach to create new conceptual ideas in rug design based on the color in music and Persian rug design.

In conclusion, this interdisciplinary approach makes a connection between contemporary music and traditional art (rug) and indicates potentials of music both in education and design art and the comparison between rug weaving and music will reveal that the rug design has similar components and elements. This study demonstrated that the choice of color as the common elements in rug and music may provide the new approach in connection between the music and rug. Further research on musical instruments color and also different elements in rug and music will be opened the door of relationship and connection between two arts ‘rug’ and ‘music’.

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