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Michele Della Ventura, *editor*

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Editor

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Preface

This volume of proceedings from the conference provides an opportunity for readers to engage with a selection of refereed papers that were presented during the International Conference on New Music Concepts, Inspired Education and New Computer Science Generation. The reader will sample here reports of research on topics ranging from a diverse set of disciplines, including mathematical models in music, computer science, learning and conceptual change; teaching strategies, e-learning and innovative learning, neuroscience, engineering and machine learning.

This conference intended to provide a platform for those researchers in music, education, computer science and educational technology to share experiences of effectively applying cutting-edge technologies to learning and to further spark brightening prospects. It is hoped that the findings of each work presented at the conference have enlightened relevant researchers or education practitioners to create more effective learning environments.
This year we received 57 papers from 19 countries worldwide. After a rigorous review process, 24 paper were accepted for presentation or poster display at the conference, yelling an acceptance rate of 42%. All the submissions were reviewed on the basis of their significance, novelty, technical quality, and practical impact.

The Conferece featured three keynote speakers: Prof. **Giuditta Alessandrini** (Università degli Studi Roma TRE, Italy), Prof. **Renee Timmers** (The University of Sheffield, UK) and Prof. **Axel Roebel** (IRCAM Paris, France).
I would like to thank the Organizing Committee for their efforts and time spent to ensure the success of the conference. I would also like to express my gratitude to the program Committee members for their timely and helpful reviews. Last but not least, I would like to thank all the authors for they contribution in maintaining a high-quality conference and I hope in your continued support in playing a significant role in the Innovative Technologies and Learning community in the future.

March 2020

Michele Della Ventura

Conference Chair

Michele Della Ventura, Accademia Musicale Studio Musica, Treviso, Italy

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A Study on the Rug Patterns and Morton Feldman's Approach

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Abstract. Rug design and music are considered as arts which use symbolic language to express certain concepts with a focus on the idea of unity in multiplicity. Weaving of some Persian rugs is based on a weaver's mind map which might be close to Morton Feldman's musical approach who linked the patterns in his scores to the materiality of Oriental rugs. However, the relationship between them has not been studied in detail. We observed key elements of rug patterns and tried to create an analogy in music. Our studies reveal the relationship between repetition and symmetry in both the pattern of Persian rugs and the Feldman musical approach in his composition.

Keywords. Morton Feldman, Music, Repetition, Rug, Symmetry

1 Introduction

Rug design and music are considered as arts which use symbolic language to express certain concepts with a focus on the idea of unity in multiplicity. Musical terms such as rhythm, texture, and harmony refer both to textile pattern and to music [1, 2], and a few researchers have studied the connection and relationships between weaving texture and music elements. For example, Mundry [3], a German music composer characterized the significance of patterns in her musical composition *No One*, which was influenced by a textile pattern of the African Bakuba tribe with interweaving contours and large transformations. Mundry linked the concept of African texture pattern to the parameter of time and Western music notation. Naroditskaya [4] compared Eastern music (a specific *mugham* 'Rast') and Eastern weaving texture (a specific carpet '*Shakhnazarli*') and suggested *mugham* (classical Azerbaijani music) and rug are related structurally, semitonically, and socially in Azerbaijnai culture. Morton Feldman, an American music composer, explored the visual elements of textiles in music linking the patterns in his scores to the materiality of the Oriental rugs [5]. Feldman as a pioneer in music requiring improvisation believed "music and the designs or a repeated pattern in a rug have much in common" [6]. Repetition and variation are the main strategies in Feldman's music. These are the features he extracted from observation of a rug design and connected

Oriental weaving rug pattern to Western music notation, which are rarely studied by researchers.
Weaving patterns express the identity of the weaver, community, and country through esoteric designs that encode the vision of the world. The hand-knotted Persian rug, a subgroup of Oriental rugs specifically woven in Iran (Persia), is one of the oldest surviving crafts and greatest manifestations of traditional Persian art and culture, which has also received international acknowledgement for its artistic majesty [7, 8]. Weaving of some Persian rugs such as Bakhtiari rugs is based on a weaver's mind map and improvised by weavers which might be close to Feldman's approach who linked Oriental rug patterns in his scores. However, the relationship between them has not been studied in Persian rugs.
This study, therefore, focuses on the possible relationship between Persian rug weaving patterns and the music notation of Morton Feldman, by utilizing the elements and principles found in both, such as repetition and symmetry. In exploring this relationship, the following question will be addressed: Are the elements and principles in music (repetition and rhythm) related to the same elements and principles in weaving Persian rug design? To answer the question, we compare the relationship between the weaving pattern in Persian rugs and the patterns in Morton Feldman notation.

2 Persian rugs

Persian rugs are generally named after the village or town where they are woven or collected, or by the weaving tribe in the case of nomadic pieces. Each rug's particular pattern, palette, and weave are uniquely linked with the indigenous culture, and weaving techniques are specific to an identifiable geographic area or nomadic tribe. In general, the characteristics of Persian rugs are comprised of graceful, flowing lines of design, well-ordered composition, mellow, rich-hued harmony of the color, popularity of floral motives, and frequent introductions of animal, and even human forms, and the presence of a cotton 'Warp' [9, 10].
Among the many types of Persian rugs, Bakhtiari is famous for its exquisite composition and unique geometrical motifs and color combinations [11]. The Bakhtiari rug, unlike other carpet types, does not have weave maps, and it is based on the weaver's creativity, similar to the music in which the music created is based on the composer's mindset. The weavers, with their inventive and selected shapes and elements which were considered holy or valuable and are illustrated in a stylized and completely symmetrical way on the carpet, created different patterns which will be discussed in the next section.

2.1 The characteristics and patterns of Bakhtiari rugs

Bakhtiari rugs are woven in a large number of villages located in an area of Western Iran known as Chahar Mahal and Bakhtiari (Zagros Mountains of Iran). They are woven by Bakhtari tribes and nomads of the area, and the oldest rugs are some 200 years old.

The rugs produced by these formerly nomadic tribes share common designs, structures, and color palettes [11]. The combination of the nomadic tribal design containing abstract geometric motifs symbolizing the Persian garden and the urban village design of classical sophisticated Persian motifs makes the Bakhtiari rug a unique Persian oriental rug [12].

Bakhtiari rugs can be readily identified by their typical repeated rectilinear floral or garden-inspired patterns [13]. For example, the most well-known of the Bakhtiari rug designs is the "Kheshti" (Fig.1-a). In this pattern the rug field is geometrically subdivided into symmetrical squares or rectangles that feature contrasting imagery and color schemes (each compartment elegantly rendered with finely detailed portrayals of both animals and plant life) (Fig.1-a). The "Tree of Life" design is based on tree branches and leaves. In this type of design, shrubs and trees (small and large) form the main components and a number of attempts has been made to maintain a high level of similarity with nature (Fig. 1-b). The "Gol Patoo/floral bouquet" design of this type is only created by women weavers and mind maps of these weavers (Fig. 1-c). This design shows the role of a rose flower with its surrounding leaves. The "Bibibaff Bakhtiari" rugs with the highest knot density are often known as Bibibaff, and they are very special and hard to find. An old dealer story reveals that Bibi means Grandmother and Baff means knot, so a Bibibaff is a rug made by the old grandmothers who were the best weavers [14] (Fig. 1-d).

Fig. 1. Some major designs of Bakhtiari rugs [13]. a) Kheshti, b) Tree of life, and c) Gol patoo (floral bouquet), d) Bibibaff.

Persian/Iranian rugs, particularly the Bakhtiari rug in this research shows different designs, and similar to music in terms of its rhythm, distance, color, repetition, and symmetry. Morton Feldman (1926-1987) is one of the contemporary composers who worked in this field, and he was also a rugs collector. Feldman's late music - or 'Permission' for it, in his own words - came from Oriental rugs, which he collected [15, p.280]. 'A growing interest in near and middle eastern rugs has made me question notions I previously held on what is symmetrical and what is not' [16:124]. He believed that music and the designs or a repeated pattern in a rug have much in common [16:124] and linked the patterns in his scores to the materiality of Oriental rugs. On the other hand, weaving of Bakhtiari rugs is based on the mind maps of weavers, and are improvised by weavers which might be close to Feldman's approach. We therefore examined this relationship between elements (texture and form) and the principles (repetition and rhythm) in Persian Bakhtiari rugs and the contemporary composer Morton Feldman's musical works in the next section.

3 The relationship between Persian Bakhtiari rug pattern and music elements

Are the elements and principles in music (repetition and rhythm) related to the same elements and principles in weaving Persian rug design? Repetition is an important element in musical composition and is created by the repeating of various musical ideas or motifs. In music, repetition is often related to rhythm. Rhythm is comprised of regular intervals of long and short notes. This movement of notes flowing up and down the scale provides movement as it progresses across the score [17].

Repetition and rhythm in weaving are a combination of different elements. The repetition and rhythm in this body of work is achieved using pattern in the weave structure, colors and motifs as they move across the rug. The weavers, with their inventive minds, selected shapes and elements which were considered holy or valuable and illustrated them in a stylized and completely symmetrical way on the rug.

Symmetry and repetition are both basic features of a rug as can be seen in the Bakhtiari rug. For example, the Bakhtiari Kheshti design is a chess plot, in which the rug is divided into four houses (squares) which are equally divided. The squares (four houses) have a similar pattern. These squares are also weaved into intermediate rows for mirroring and reflection of the patterns and colors across both the horizontal and vertical axes (Fig. 1-a). In fact, symmetry is the main tool to establish different scales in a design by using very limited elements. Symmetry creates different relationships between simple elements in order to build new motifs on a different scale. Then these new motifs will be again subjected to new symmetrical strategies to form bigger sections of a design up to the overall structure of a rug [17]. One very intriguing fact of this procedure is using one simple element and structuring new identities out of it, while all these new figures are interconnected to the initial basic motif. This fact brings a strong coherence to the whole structure of a design.

On the other hand, one of the prominent features of a rug is its simultaneous symmetry and asymmetry. This phenomenon is called “crippled symmetry” by Morton Feldman (1983). An analogy can be seen between the method Feldman combines different musical patterns and the combination of patterns in a rug. For example, three different patterns are used together in crippled symmetry (Fig. 2-a). The vibraphone is relatively active and consists of quarter notes, dotted quarter notes, and half notes. The flute is less active compared to the vibraphone (VIB) with half notes, and the dotted quarter notes on CEL (Celesta) are the slowest ones. In fact, there are different patterns with different rates of repetition, and these can be compared to an example of the border of a rug (Fig. 3-b). We have smaller elements with higher and bigger elements with a slower rate of repetition. In Fig. 2-b, repetition can be seen in B.FL (Flute Bass) (D-flat, E-flat, A-flat, B-flat), Glock (Glockenspiel) (C-sharp, D-sharp, A-sharp, B-sharp), and PF (Piano acronym) (A-sharp, G-sharp, D-sharp, C-sharp), and Figure 5-d between D flat, E, F, G flat (four sixteenth note; sixteenth note is one of the musical notes) and mirroring in Fig. 2-b between Glock and B. FL and Figure 5-d between D flat, E, F, G flat (four sixteenth note) in the horizontal axes. Figures 5-e shows repetition and symmetry and patterns on the border of a rug.

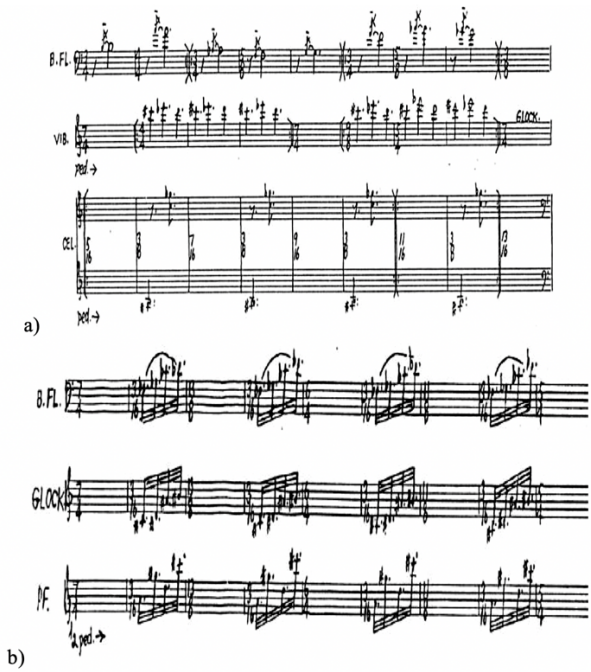

Fig. 2. Crippled symmetry (Feldman 1983). a) Combination of three different patterns. b) Repetition and Mirroring in Crippled symmetry (Feldman 1983). B.FL. (Flute Bass). Glock (Glockenspiel), PF (Piano acronym).

A symmetrical effect of the second palindrome is observed in Fig. 3-a. The groups of two small rectangles disrupt the symmetrical pattern of the rug (Fig. 3-a). The two palindromes are similar to each other. In each, the pitch material, as well as the level of repetition, gradually increases toward the middle of the palindrome, and then decreases to the end of the palindrome. Further, the pitch material itself is essentially the same between the two palindromes

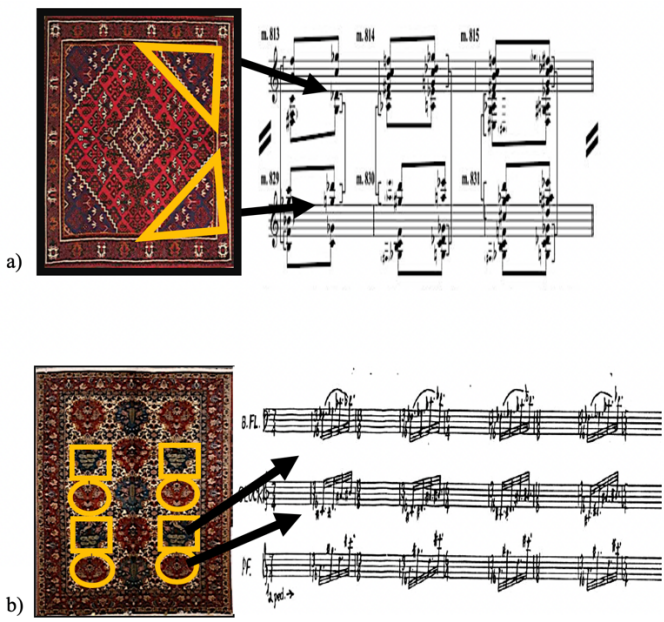

Fig. 3. Patterns in Musical composition of Feldman and Bakhtiari Persian rugs. a) Symmetry in Bakhtiari rug and Feldman composition (Arrow keys indicate symmetry and repetition in rug and composition). b) Repetition in Feldman composition (B.Fl., Glock and PF) and Bakhtiari rug (Arrow keys indicate repetition in rug and composition). B.FL. (Flute Bass). Glock (Glockenspiel), PF (Piano acronym), VIb (the vibraphone).

4 Discussion and Conclusion

The purpose of this research has been to explore the repetition, rhythm, and symmetry in music compared to that of Persian rugs, and also to acquire a deeper understanding of Persian rug weaving and Feldman compositional methods and how each are interrelated. We observed a close relationship between the music approach of Feldman and the weaving of Bakhtiari rugs in terms of elements such as rhythm, pattern, repetition and symmetry.

In Feldman's music approach and Persian rug design, balance and symmetry result from the repetition of musical and visual motifs. When viewing a Bakhtiari rug, the eye immediately recognizes the same figures, lines, and colors repeated and reflected; the left

side repeats the right, and the upper part mirrors the lower. The same symmetry seems to define the form of every small motif, pattern and element of the rug, each element having its own 'tonal' center and cadence. The repetitions in Feldman's works are rarely exact, using inflections in rhythm, register, and timbre to create a subtle transformation of timbre and harmony over the duration of the piece as a whole.
Goldstein [18] found that Feldman 'often arranges sound so that repetitions are recognizable as repetitions, but the patterns of those repetitions are not discernible' [18, 19]. Feldman's transformation process relies on a more intuitive/creative approach when transforming textile patterns into sound. In Persian rug design, harmony is balance among colors. The rug is a set of muteness and silence. We can conclude that compositions based on the rug involve the conceptual relationship between the set of sounds, with its frequency and specific features and a collection of materials and colors which are designed together. The relationship between rug design and music is like a cross-disciplinary connection between muteness (rug) and silent / non-consonant (music) arts. Examining Feldman's sketches through the lens of rugs allows us to parse these pieces of music in a way that taps into the composer's organizational process. American composer, Morton Feldman interpreted traditional rug design elements (mainly symmetry and repetition) in terms of Western contemporary musical notes. In other words, Feldman connects Eastern and Western, as well as tradition and modernity in his improvisation approach. Further analysis on these lines will help to reveal further organizational principles behind the improvisation approach in music, weaving rugs and design.

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References

[1] A. Dalvandi, P.A. Behbahani, and S. DiPaola. Exploring Persian rug design using a computational evolutionary approach. London, EVA London Conference, 2010.
[2] N. Kuloglu. Teaching strategies learning through srt: music and basic design education. Procedia - Social and Behavioral Sciences, 2015, 182. 395- 401.
[3] I. Mundry. Regular irregular – on the fleeting quality of pattern in contemporary music. In Gleiniger A., Vrachliotis G. (eds). Pattern: ornament, structure, and behavior (Context Architecture) [Elektronisk resurs]. Birkhäuser, 2009, 85-96.
[4] I. Naroditskaya. Azerbaijani mugham and carpet: cross-domain mapping. Ethnomusicology Forum, 2005, 14. 25-55.
[5] S.T. de Zepetnek, A. López-Varela, H. Saussy, and J. Mieszkowsky. Introduction to new perspectives on material culture and intermedial practice CLCWeb: Comparative Literature and Culture, 2011, 13.1-14.
[6] S. Whittington. Triadic memories, Adelaide, South Australia., 2008.

[7] M.L. Eiland. Oriental carpet: A complete guide, The classic reference, bulfinch press, 1998, 64–80.
[8] Herbert J. S. Oriental rugs: The Illustrated handbook for buyers and collectors. New York: Macmillan Publishing Co. 1982.
[9] Breck, J. and Morris F. The James F. Ballard collection of Oriental rugs. New York: Metropolitan Museum of Art, 1923.
[10] May C.J.D. How to identify Persian rugs and other Oriental rugs. Alcester: United Kingdom, 2009.
[11] Nassir M. J. The Persian carpets. Tehran: Farhangsara Mirdashti, 2010.
[12] Talebian H. The Persian garden, UNESCO WORLD HERITAGE. 2010.
[13] Jouleh T., Research in Iranian carpet/rug (in Persian) Usavoli Publications, Tehran, Iran, 2002.
[14] Bakhtiari S. The Last of the Khans: The Life of Morteza Quli Kah Samsam Bakhtiari. iUniverse, Inc., 2006.
[15] Griffiths P. Modern music and after, 3rd edition, Oxford University press, 2010.
[16] Feldman M. Crippled symmetry, Morton Feldman essays, Walter Zimmermann, Beginner Press,1983
[17] Anvari S. Composing music based on carpet. Institute of Sonology Royal Conservatoire in The Hague, The Netherlands, [Master's Thesis], 2014.
[18] Goldstein L. 'Morton Feldman and the Shape of Time', in Heintze J.R. and Saffle M. (eds.) Perspectives on American music since 1950. New York: Garland publishing, Inc., 1999.
[19] Wilhoite, M. Coptic symmetry and conceptual continuation in Morton Feldman's for John Cage, Thesis. Florida State University, 2004.

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