

# Design and Fabrication of Decorative Textiles through Hand Knotting: A Focus on Carpets and Wall Hangings

**PRIYANKA VERMA<sup>1\*</sup>, ANKITA YADAV<sup>1</sup>, RITU PANDEY<sup>1</sup>, ARCHANA SINGH<sup>1</sup> AND INTAKHAB AKHTAR ANSARI<sup>2</sup>**

<sup>1</sup>Department of Textiles and Clothing, CSA University of Agriculture and Technology, Kanpur (U.P.) India

<sup>2</sup>Design Department (CAD), Indian Institute of Carpet Technology, Bhadohi (U.P.) India

\*Corresponding Author

## ABSTRACT

In the present study, geometric designs for carpet tufting were developed. These designs were developed after surveying the demand and preferences of carpet buyers and users. Nedgraphics and Autotex software were used to develop carpet designs. Developed designs were evaluated based on criteria such as appearance, comfort and colour schemes etc. It was found that geometrical designs employing minimal colours and inspired from nature, were given preference over other traditional and abstract patterns, by the judges.

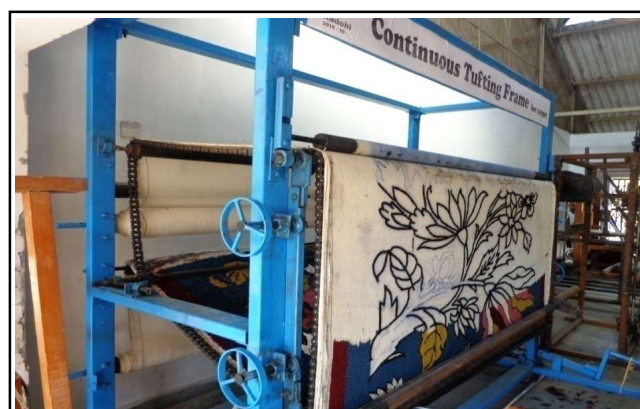
**Keywords:** Bhadohi carpet, Geometric symbols, Geometric motifs, Ornamentated textile

## INTRODUCTION

A carpet is a textile floor consisting of an upper layer of pile attached to a backing. The carpet is produced on a loom quite similar to woven fabric. The pile can be plush or Berber. Plush carpet is a cut pile and Berber carpet is a loop pile. There are new styles of carpet combining the two styles called cut and loop carpeting. Normally many colored yarns are used and this process can produce intricate patterns from predetermined designs. These carpets are usually the most expensive due to the relatively slow speed of the manufacturing process. These are very famous in India, Pakistan and Arabia (Batra, 1981).

Carpet loom has been developed and tested in many carpet-manufacturing belts in Northern India including Bhadohi, Mirzapur, Jaipur, Srinagar, etc. The metallic loom has been designed considering all aspects of carpet weaving. In Bhadohi mainly Shaggy carpet of table size is manufactured since it is economical and take less time to produce. It appears as an artificial grass. Backing

Machine Snehaba is used for backing the carpet, in which tufting of poly propylene is done. In this Sheet is fed from back, mainly polymer sheets are fed (Fig. 1).



**Fig. 1 : Bhadohi Carpet Tufting Frame**

Geometric shapes, small tokens distributed evenly in the field of the carpet and complex compositions of stylized figures, objects, plants, animals and humans, are

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typical. The carpet scheme includes main field and one to three borders, more often wider than narrow. The carpet colour range is also very wide: contrasting in color, uniform shapes are arranged on a unique colored background (red, brown, dark blue) or the background is created by colorful wide bands, on which identical figures are also linearly arranged. Red is a traditional color in the last two centuries, but pure white, shadows of yellow, green, blue and black are also frequently used.

The study was undertaken to develop geometrical designs based on existing carpet patterns of Bhadhoi.

## METHODOLOGY

### Carpet weaving technology:

The main weaving material of the carpets was wool; fleece wool and skin wool. The fleece wool is much softer and with longer fibers than the skin wool, therefore the yarns from the fleece wool have higher strength and are used to form the warp set of threads in weaving. The skin wool issued mainly for spinning yarns for weft threads, these yarns are coarser and stiffer, since during the processing of the skin the wool fibers are losing their softness.

The most commonly used in carpet weaving wool fibers are those of a white colour, as it is most easily dyed. But the use of black wool fibers sometimes reaches 20%, up to 50 %, depending on the symbols and the carpet composition. The warp set of threads is white because the pale color tires less the eyes of the weaver. Sometimes a black thread is also used in alternation with white warp yarns (IICT; 2015) (Fig. 2).



Fig. 2 : Vertical Loom

Existing geometric carpet designs of Bhadhoi were studied and observed by questionnaire-cum-interview method. The data collected were analyzed through a simple master chart to obtain the results of the study. The frequency, percentage and completely randomized design test were worked out.

Nedgraphics and Autotex carpet designing software were used to prepare carpet designs.

### Basic Geometric Patterns:

A pattern, apart from the term's use to mean "Template", is a discernible regularity in the world or in a manmade design (Angelova and Mladenova; 2016). As such, the elements of a pattern repeat in a predictable manner. A geometric pattern is a kind of pattern formed of geometric shapes and typically repeating like wallpaper (Crawshaw, 2002).

Common geometric shapes are points, lines, planes, and conic sections such as ellipses, circles, and parabolas (Yadav *et al.*, 2019). With the help of these common geometric shapes various new carpet designs as per their uses (floor carpet or wall panel) were made. Created carpet designs were based on a theme (Yadav *et al.*, 2019).

### Developed floor and wall decoration designs:

#### Design No.1: Peace of Dark

A hand tufted 2x3 ft wall decoration piece. Bikaner hand spun wool was used to make it. Wool yarn consumption was 2.5 kg/sq yard and eight colours were



Fig. 3 : Peace of drak

used including light black, dark grey and white, medium grey, dark silver, black, light grey, light silver (Fig 3).

#### **Design No. 2: Ceremonial**

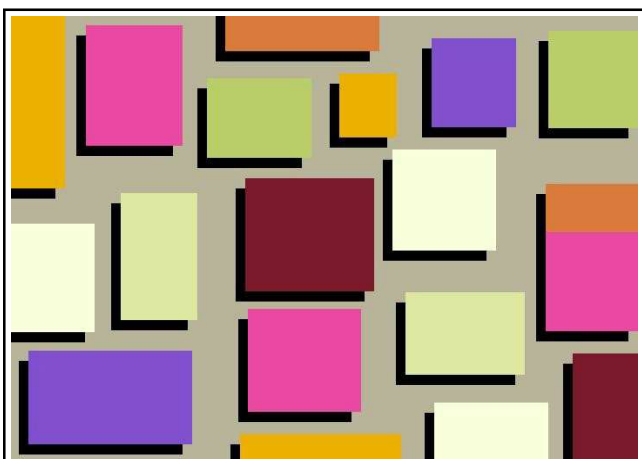
Bikaner hand spun wool was used to make this wall decoration piece measuring 2 x 3 ft. Method used was hand tufted employing 2.5 kg/square yard of wool material. It's a three colour design piece and neutral colours black, grey and white were used to prepare it (Fig. 4).



**Fig. 4 : Ceremonial**

#### **Design No. 3: Colorful Square**

A hand tufted 3x5 ft floor decoration piece. Semi NZ wool was used to make it. Using hand tufted method wool yarn consumption was 2.5kg/sqyard and nine colours were used including Grey, white, black, green, mouve, light yellow, dark yellow, red, pink (Fig 5)



**Fig. 5 : Colorful Square**

#### **Design No.4: Abstract sunrise**

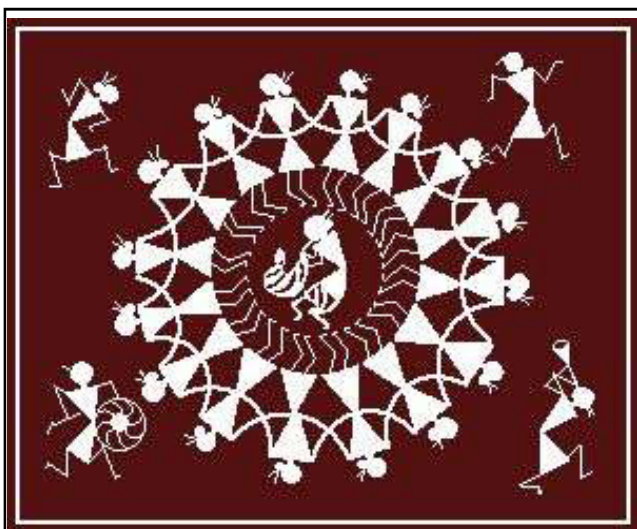
Semi NZ wool was used to make this wall hanging piece measuring 1 x 1.5 ft. Indo nepali knots were used employing 9/25 quality of knots. It's a six colour design piece and white, black light yellow, red, blue and orange were used to prepare it (Fig.6).



**Fig. 6 : Abstract Sunrise**

#### **Design No.5: Joyful**

A hand tufted 2.5x2 ft floor decoration piece. Semi NZ wool was used to make it. Using hand tufted method wool yarn consumption was 2.5kg/square and two colors were used including white and red (Fig. 7).

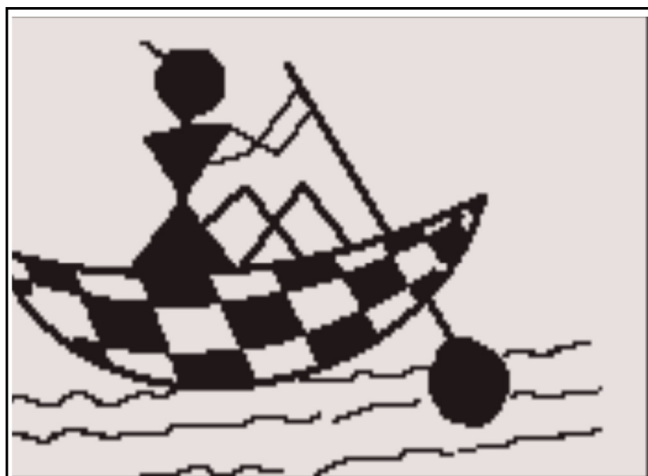


**Fig. 7 : Joyful**



**Table 1 : Evaluation of the developed geometric floor and wall decoration designs**

Sr. No.	Design Name	Selection of Design	Colour Combination	Suitability of Design	Overall Appearance	Mean	SE (Diff)	CD at 5%	Rank
1.	Peace of dark	3.71	3.43	3.29	3.71	14.14	0.50	1.02	1 <sup>st</sup>
2.	Ceremonial	3.71	3.29	3.29	3.29	13.57	0.47	0.95	5 <sup>th</sup>
3.	Colorful Square	3.71	3.29	3.29	3.57	13.86	0.48	0.99	3 <sup>rd</sup>
4.	Abstract Sunrise	3.71	3.29	3.15	3.57	13.71	0.47	0.96	4 <sup>rd</sup>
5.	Joyful	3.71	3.29	3.29	3.71	14.00	0.47	0.96	2 <sup>nd</sup>
6.	Shade over water	3.71	3.29	3.29	3.43	13.71	0.48	0.97	4 <sup>th</sup>

**Fig. 8: Shade over Water****Design No.6: Shade over water**

Bikaner wool was used to make this wall hanging piece measuring 1 x 1.5 ft. Using hand tufted method wool yarn consumption was 2.5kg/square and two colors were used including white and black (Fig. 8).

**RESULTS AND DISCUSSION****Evaluation of the developed carpet and wall decoration designs:**

Table 1 indicates that peace of dark ranked first followed by joyful and colored square designs of carpet by the judges. Rank I and II both are wall carpet whereas Colored Square was a floor carpet.

**Conclusion**

The study revealed that the geometric designs for carpet making were highly used with the use of wool, silk and cotton yarn. Cotton was used for warp and weft while wool and silk were used to make the pile of the carpet.

With the help of common geometric shapes like; circle and line various new carpet designs as per their uses (floor carpet or wall panel) were made. Through the study it was found that geometric designs are much easier to draw as compared to natural or stylized designs while a little bit difficult during production in comparison to natural or stylized designs.

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