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Digitization and archiving of Turkish motives by photogrammetric methods

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Abstract

Individuals bear significant responsibility in carrying out the essential and selfless work that ensures an increased level of knowledge and culture within Turkish society. Additionally, they strive to preserve cultural values that have been harmed or are at risk of disappearing due to various factors. These efforts include documenting and passing along such values to future generations. At this stage, individuals communicated their thoughts through cave art, rock art and woven textiles. Within this context, individuals consider, design, and weave together the events and situations they wish to convey. At this point, motifs play a crucial role and are comparable to the constituent words of a sentence. Understanding the meaning of the motifs allows for grasping and interpretation of the essence of the woven textiles. Carpet and rugs possess artistic characteristics and unravel the socio-cultural context of their era and their makers. Hence, they offer a historical reflection. The patterns on carpets and rugs unveil a spiritual depth and convey meaning by integrating its symbolism with the object on which it is exhibited, through formal connotations, bestowing a unique identity upon it. It could be argued that the symbols and motifs found in traditional carpet and rug weaving are representative of the attitudes and behaviors of their weavers.

1. Introduction

The weaving industry brought to life the natural lifestyle, social, economic, and cultural accumulation of Turkish tribes living across a broad region spanning from East Turkestan to Anatolia. This situation may serve as a means of self-expression or an expression of society. The motifs and colors in textiles are indicative of the differences between tribes and have persevered to the present day. By using dyes inherent to their geography, the weaver showcases the beauty found in objects, situations, and events that have impressed and inspired them. The Turkmen weaver depicts the cultural heritage, traditions, and customs of his tribe by intricately coloring an object, situation, or event that he finds aesthetically pleasing with dyes distinctive to his geographic location. Such weaving is representative of the influence of social constructs and cultural values on aesthetic expression. The symbols and hues expressed in carpets and rugs reveal the culture of the weavers' society (Kayipmaz, 2006). Given the wide geography inhabited by Turks and

their historical migrations for various reasons, it can be argued that their ancient culture has been transmitted to different regions. Accordingly, numerous carpets and rugs in Central Asia and Anatolia bear witness to the unique features of Turkish cultural heritage. These artefacts are invaluable resources for illuminating historical developments. Non-verbal communication is an invaluable social tool, complementing verbal communication. Traditional textiles, such as rugs and carpets, hold particular significance as key bearers of nonverbal communication. They achieve this through two factors. Firstly, the motifs use a silent language that conveys meaning. Secondly, rich colours enhance this silent language, further enriching the communication. Overall, traditional textiles silently transport historical stories into the present day. Today, these customary documents, often perceived as mere placemats, actually reflect a vast and intricate cultural, social, and historical process incorporating the anonymous Yoruk aesthetics and Anatolian Turkish ethnography, as pointed out by Okça et al. (2015).

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Therefore, it is crucial to research them as they provide insight into various periods of our ancient history and are a significant cultural legacy.

Eos Systems Inc. was established as a result of technological advancements in the study's thesis. The Photomodeler (PM) software was utilized to model Turkish motifs, with the objective of documenting these cultural heritage artifacts for preservation and future generations. This was done with consideration to maintaining a balance between protection and use.

2. Material and Methods

The motif can be regarded as a system of cultural values. However, motifs serve multiple functions, notably defining and reflecting cultures, revealing identities, and preserving tradition. Abbreviations for technical terms will be explained upon their initial use. Use high-level, standard language with a formal register, avoiding colloquialisms, jargon and biased language. Avoiding spelling, grammar, and punctuation errors is also crucial for clarity and effectively communicating the written message. Furthermore, it creates a strong connection between art and everyday life. The formation of motifs is shaped by important factors such as geography, social structure, cultural level, animals, and vegetation. It is essential to adhere to consistent citation and formatting features in line with the established style guide. Logical structure is vital to enable information flow and causal connections between statements. Precision in word choice helps to convey the intended meaning, notably by using subject-specific vocabulary where necessary. As anticipated, the designs of societies inhabiting varied geographical regions throughout history are indicative of their cultures. Each textile motif possesses a distinct significance and preserves remnants of the past (Luhmann et al., 2006). Motifs hold a crucial role in the art of weaving Turkish carpets and rugs. According to the Turkish Language Association (TDK), a motif is described as a group of elements that work together to form a decorative piece and provide unity independently. Symbols from everyday life were utilized while weaving motifs in Turkish textiles. For instance, the scorpion, which represents freedom, is the most commonly used pattern. In contrast, the camel's foot symbolizes transportation. Turks living in a vast region encompassing Central and Western Asia portrayed in their woven creations the climate and living conditions of each locale. The woven works are given names based on the motifs and their recounted tales.

- **Elibelinde Motif**

It is the motif that mainly symbolizes femininity. It represents not only maternity or fertility, but also abundance, fortune and joy.



Ram's Horn Motif

As its name suggests, this motif, which resembles a ram, is an expression of heroism, staying strong and masculinity in Turkish history. The ram's horn motif, a symbol of masculinity, symbolizes the male god.



Hairband Motif

It represents the request for marriage. It characterizes birth and reproduction. Young girls who want to get married cut zuluf and make a single braid, while newly married young women make double braids and decorate the ends of their hair with threads of different colors.



Some colours have significant meaning when embroidered onto motifs in weavings.

Red, commonly used in Turkish carpet and rug weaving motifs, is the symbol of life and power. The text does not provide enough context for improvement. It also expresses emotions such as love, passion, and war. Blue, Blue is a symbol of peace, trust and this colour, utilized in motifs for carpet and rug weaving in Turkey, is also associated with the sea and sky. Green: The colour green symbolizes nature and growth, frequently loyalty, often used in Turkish carpet and rug weaving motifs to represent hope, freshness and abundance. Yellow: Although less commonly used in Turkish carpet and rug motifs, yellow is considered a symbol of the sun and light. Therefore, it connotes both opulence and joy, as well as grandeur and prosperity. For these reasons, it is associated with affluence, grandeur, and joy. White: The colour white symbolizes purity, innocence, and sanitation. The colour white symbolizes purity, innocence, and cleanliness. In Turkish carpet and rug weaving motifs, the use of white also signifies death and everlastingness.

2.1. Workflow

Initially, we identified the sources to procure hand-embroidered carpets and rugs for the study. Especially given the observation that Turkmen houses uphold ancient traditions, various designs and motifs are derived from different residences. The aim was to capture textiles with maximum capacity through photography. Sufficient photos were taken to enable 3D modelling and drawing, followed by camera calibration in the PM, and finally automatic balancing was conducted.



Photogrammetric methods have been very efficient in the protection of cultural heritage studies (Kanun et al. 2022; Karataş et al. 2022).

3. Conclusion

As a result of the study, the use of terrestrial photogrammetric techniques in documenting the transfer of cultural patterns to the next generations has provided great benefits in digitalization.

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