

the more recent influence of the crystallographer's output as applied to the design of textiles and other products. Some speculation about possible future trends will conclude the presentation [3].

[1] Jackson, L. *From Atoms to Patterns*. Richard Dennis, Somerset, UK, 2008. [2] McGill, T. *Decorative Arts Society Journal*, #31, 92-115; 2007. [3] Sawyer, L. *Acta Cryst. A.*, submitted, 2009.

FA2-MS03-O4

Multi-Grids Method Construction of Moroccan Geometric Patterns. Abdelmalek Thalal^a, Youssef Aboufadi^a, Jamal Benatia^a, Abdelaziz Jali^a, My Ahmed Elidrissi Raghni^a. *Department of physics, LSM, Faculty of Sciences- Semlalia-Marrakech-Morocco.*

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The rise and spread of Islamic culture from the seventh century onward has provided us with history's great artistic and decorative traditions. In a broad swath of Islamic rule, at one time extending across Europe, Africa, and Asia, we find artistic treasures of unrivalled beauty. Islamic art encompasses great achievements in calligraphy, stylized floral designs, architecture, and abstract geometric patterns.

In this presentation we are interested in the plane ornamental art, particularly in the geometric drawing or "Tastir". These patterns adorn buildings, particularly mosques and tombs, throughout the Islamic world. They are perhaps best known to Americans and Europeans through the Alhambra palace in Granada, Spain, one of the jewels of Islamic. Broadly speaking, an Islamic star pattern is a periodic arrangement of motifs, many of which are star-shaped.

Little is known about how the patterns were originally constructed. The design methods were the private domain of the artisans who practiced them. The knowledge was passed down from master to apprentice over generations and ultimately was lost as the practice of Islamic star patterns declined during the fifteenth century.

We describe here and analysis the multi-grids method construction of the geometric patterns encountered in the Moroccan art (Fig2). This method is widely adopted by the master craftsmen ("Maâlam") and handed over to their disciples. It is based on rigorous geometric rules and the concept of symmetry. It can be adapted to any material shape (plaster, wood, metal, marble,...). It consists in tracing a grid with precise criteria of measurement within a framework; the complete grid is defined by the intersection of four sets of parallel lines. It allows the construction of several kinds of patterns. In a large number of Moroccan patterns, the underlying grids contain 4-fold axis and mirrors m. The unit motif is then obtained by performing reflections and rotations on the template motif (Fig 1) which can be thought as the heart of the repeat pattern.

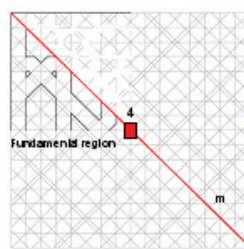


Fig1

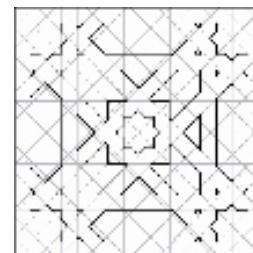


Fig2

[1] Bourgoin, J. 1973 *Arabic Geometrical Pattern and Design*, Dover Publications. [2] Abbas, S.J. and Salman, A. *Symmetries of Islamic Patterns*, World Scientific, 1995. [3] Craig S. Kaplan. Computer generated islamic star patterns. In Reza Sarhangi, editor, *Bridges* 2000.

Keywords: multi-grids; symmetry; geometric pattern

FA2-MS03-O5

The Javanese Colleagues of Karagöz and Their Dress. Annegret Haake. *Jaminstr. 11B, D-61476 Kronberg.*

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The shadow-puppet Karagöz is known by everybody in Turkey. His stories teach the people "to behave better". In Java, the characters of a shadow play have a similar commission, but the stories tell about kings, priests, and other noble people. The tradition of these shadow-plays leads back to prehistoric times, when the ancestors were called in and asked for help. There are several meanings of the word "wayang": shadow, spirit, ghost, and ancestor. Nowadays "wayang" is also used for many kinds of traditional theatres and dancing performances. But for the inspection of typical dresses due to their social status it is useful to investigate the figures of the most traditional form "wayang purwa" (purwa means original). The stories are based on the old Indian legends Ramayana and Mahabharata, which were modified by the Javanese [1]. Former characters from Pre-Hindu times play the jokers Semar and his sons, at midnight. Their discussion of the latest events in the neighbourhood is enjoyed by old and young [2]. After that, the story of the noble heroes continues until the early morning. Due to "larangan" [3] (the law effecting the dress by the Royal courts of Central Java) the characters of the "wayang purwa"-play show typical dress designs according to their social status. Mostly the "larangan" contained designs which are based on batik patterns, but there were silk weaving patterns as well, which were reserved for the nobility. The jokers who have a servant status, mostly wear patterns typical for commoners or the lower nobility [4].

[1] Kats, J.: *Het Javaanse Tooneel. I. Wajang Poerwa (Dutch)*. – Commissie voor de Volkslektuur, Weltefreden, 1923. [2] Angst, W.: *Wayang Indonesia (German/English)*. – Stadler Verlagsgesellschaft, Konstanz 2007. [3] Alit Veldhuisen-Djajasoebrata: *Bloemen van het Heelal*. - Museum voor Land- en Volkenkunde te Rotterdam/Sijthoff, Amsterdam 1984. [4] Haake, A.: *Shadows of Dresses – Textile Patterns on Wayang Kulit Purwa*. – International Seminar "Indonesian and other Textiles", Jakarta, September 12-14, 1994

Keywords: plane symmetry; teaching aid; symmetric art