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Generating the symmetries of medieval Islamic ornaments.

For better part of a century there have been frequent discussions regarding the number of crystallographic groups that can be found in medieval Islamic decorations. While this may be of some interest to present day mathematicians, this is largely irrelevant to the understanding of the Islamic decorative arts. Two questions that may be more relevant are: (i) What were the motivations for the artists and artisans in widely separated lands to create this specific type of ornament? (ii) How did they actually do it? There seems to be more information available on the second question than on the first, and my intention is to contribute to understanding the possible methods used in practice. In particular, for tilings or interlace ornaments that have 4-fold or 6-fold symmetries it is easy to show a construction method that would have been appropriate for the creators of these kinds of ornaments. The construction is based on repeated reflections of the design given in a triangle in the sides of the triangle. Mathematically, this triangle is a fundamental region for the corresponding reflection group. (Received September 17, 2015)