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Pattern Analysis of Traditional Thai Designs.

The unique surface decorations of many Southeast Asian countries are notable for their elegance, gracefulness, and beauty as well as their attractive geometric arrangement. Close inspection of the intricate, yet geometric patterns unique to the country of Thailand leads to a detailed look at their symmetry groups, particularly the cm, cmm, pg and p4m groups and an analysis of the subtle differences among them. Attempts to replicate the motifs involve study of the family of curves known as "super ellipses", or those curves with the equation $\frac{x}{a} + \frac{y}{b} = 1$, $n > 2$. Finally, new designs are explored with a family of "straight-line" constructions (using only line segments) in the style of the original patterns. (Received September 16, 2007)