Freeing Up Architecture

Many of today's most striking buildings are nontraditional *freeform* shapes. A new field of mathematics, discrete differential geometry, makes it possible to construct these complex shapes that begin as designers' digital creations. Since it's impossible to fashion a large structure out of a single piece of glass or metal, the design is realized using smaller pieces that best fit the original smooth surface. Triangles would appear to be a natural choice to represent a shape, but it turns out that using quadrilaterals—which would seem to be more difficult—saves material and money and makes the structure easier to build.

Photo courtesy of Viceroy Hotel Group.

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