How to Fit a Square Peg in a Round Hole  
  
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When discretizing partial differential equations in two or three space  
dimensions on a non-rectangular domain, it is often advantageous to  
define the computational grid by applying some mapping to a grid with  
nice properties on a rectangular domain.  Examples include the use of  
block-structured adaptive mesh refinement on logically rectangular  
grids, or mappings of tensor-product Chebyshev grids or Padua points  
for spectral methods.  For geometries such as a circle or the surface  
of the sphere, it is not obvious how to do this.  I will discuss some  
possibilities and applications.