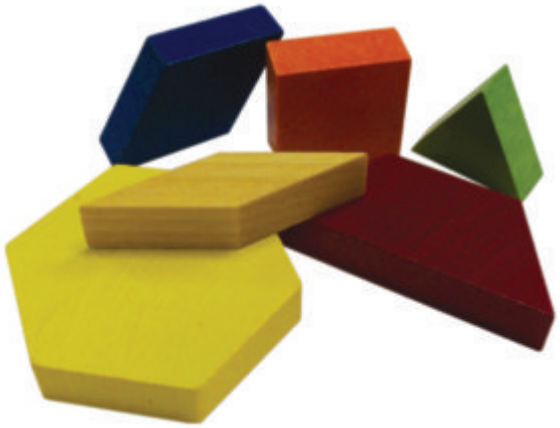
SHAPE CHANGING POLYHEDRA

“3D Thinking” Page 238**: Shape Changing Polyhedra**

The original idea for shape changing polyhedra came from studying muqarnas and playing with children’s building blocks. The featured image is of the Nasir al-Mulk Mosque Muqarnas in Shiraz, Iran. The building blocks were as in the photo:



An introduction to the logic of this geometry can be seen in a paper I delivered to the Bridges Conference this August, 2016: http://archive.bridgesmathart.org/2016/bridges2016-225.pdf.

Shape-Changing Polyhedra are three-dimensional forms composed of polygons that are flexibly connected. Of most interest are shape-changing polyhedra ‘shells’ that connect in a modular fashion to fill space – to fill space and still retain their shape-changing characteristics.

Potential applications are endless and include things like packages that expand or contract to fit their contents; super tools that change their shape based on the needed function; robots and solar panels that fold up from a single sheet; shape changing aircraft, see shape transforming furniture, and transforming architectural forms. My work on shape changers is featured in my new book **“3D Thinking in Design and Architecture,”** to be published by Thames and HudsonApril 2018 and page references are to that book: Amazon USA, Amazon UK,

Waterstones UK.

Core 1, Page 240 – Extended Shell 1

http://rogerburrowsimages.com/wp-content/uploads/2012/03/Core1.m4v
Core 1, Page 241 – Extended Shell 1 – Two Combined – Shows “Equilibrium” Positions. Equilibrium Positions are various stable positions / positions of balance for the shape changing polyhedra.

http://rogerburrowsimages.com/wp-content/uploads/2016/08/Core-1BlackBckgrnd.m4v
Core 1, Page 301 – Extended Shell 1 – Multiple Combined – Shows Various Equilibrium Positions

http://rogerburrowsimages.com/wp-content/uploads/2016/08/Mod1CompRev.m4v
Core 2 Page 245 – Extended Shell 2

http://rogerburrowsimages.com/wp-content/uploads/2012/03/Core2.m4v
Core 2, Page 246 – Extended Shell – Multiple Combined

http://rogerburrowsimages.com/wp-content/uploads/2015/03/Core2Combined.m4v
Core 3, Page 248 – Extended Shell 3

http://rogerburrowsimages.com/wp-content/uploads/2012/03/HexShapeChanger.m4v
Core 12, Page 256 – Shell 12

http://rogerburrow

simages.com/wp-content/uploads/2012/03/Core-5.m4v
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