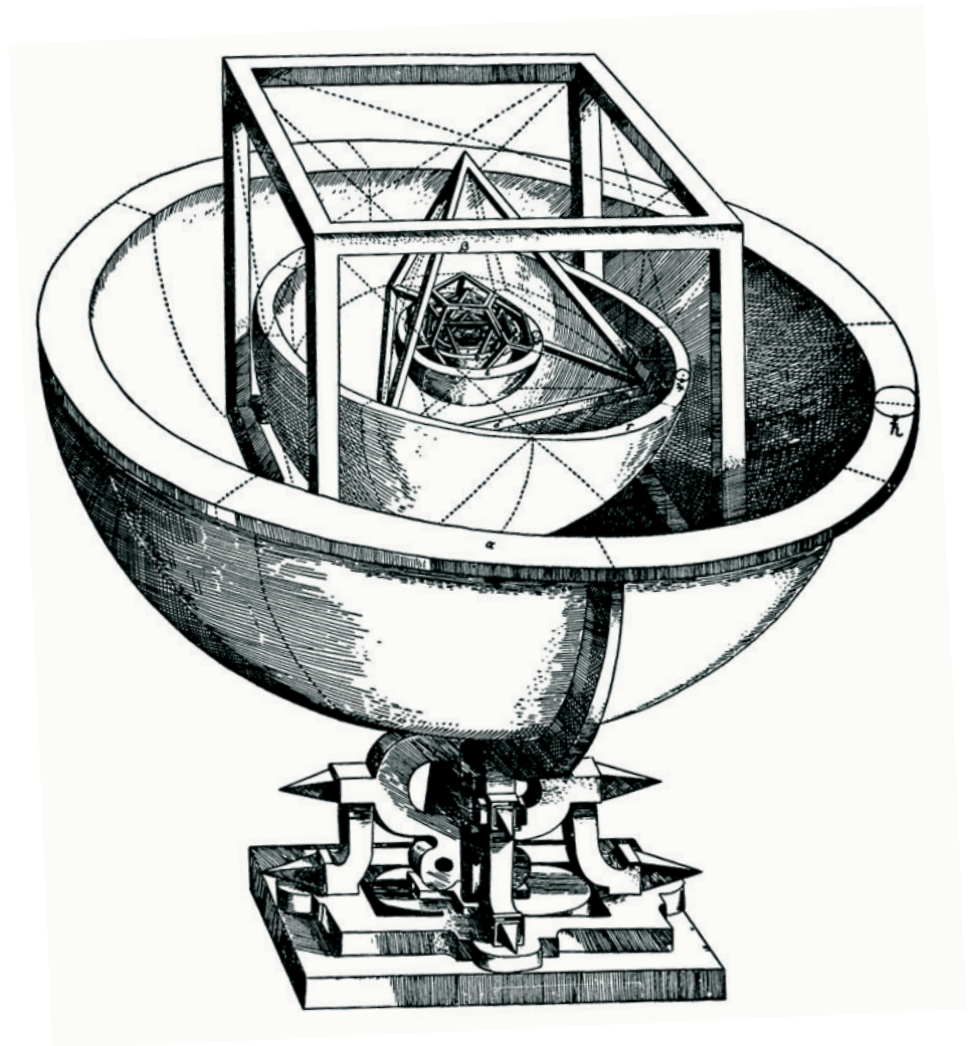


# Five in One

All the five platonic solids  
put together in one solid.



In memory of  
Johannes Kepler.

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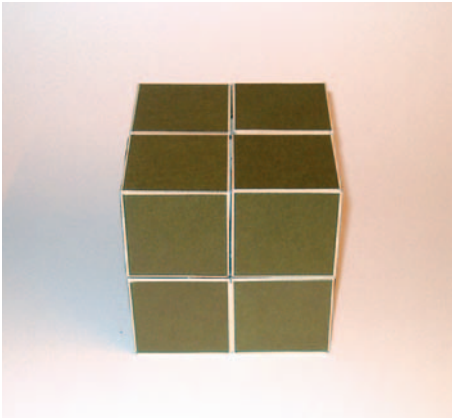


Fig. 1

Like the Yoshimoto cube the locked cube consists out of eight chained "cube-links". Like the Yoshimoto cube he can be "turned inside-out" endless.



Fig. 2

Inside the cube we find the dodecahedron. Six of his thirty edges divide the "bisecting line of the cube surfaces" in the "golden ratio" (minor - major - minor).

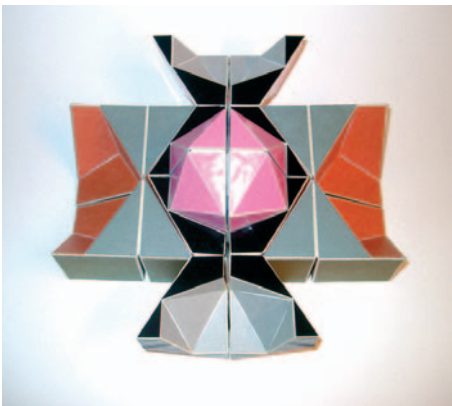


Fig. 3

Inside the dodecahedron we find the icosahedron. His twelve corners contact exact the centers of the surrounding dodecahedron-surfaces. (accurat duality!)

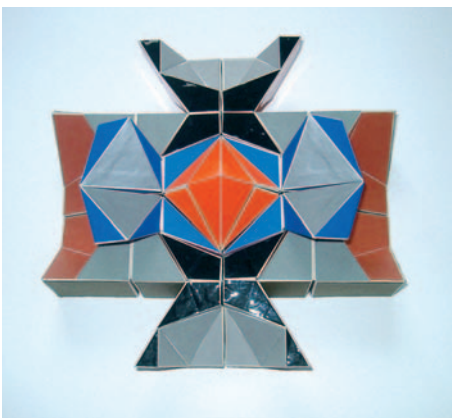


Fig. 4

Inside the icosahedron we find the octahedron. His six corners divide six icosahedron-edges in there middle.

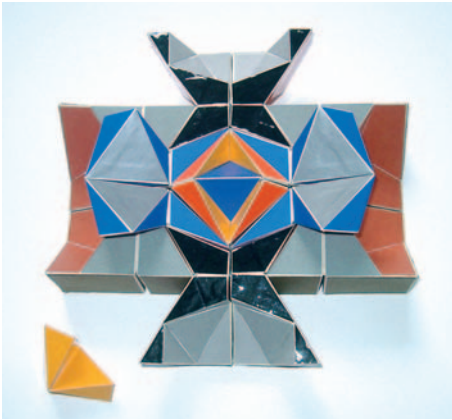


Fig. 5

Opening the octahedron we see the tetrahedron. His four corners divide four edges of the octahedron at the ratio of:  $a - (a * \sqrt{2} - a)$ . (This is the greatest tetrahedron, which can be inscribed “regularly“ (corner to edge) into an octahedron)

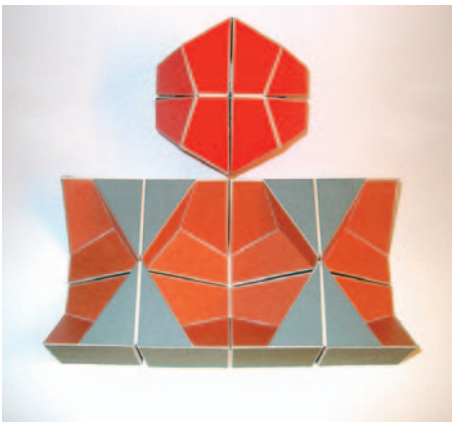


Fig. 6

The opened “cube-shell“ and the taken out dodecahedron.

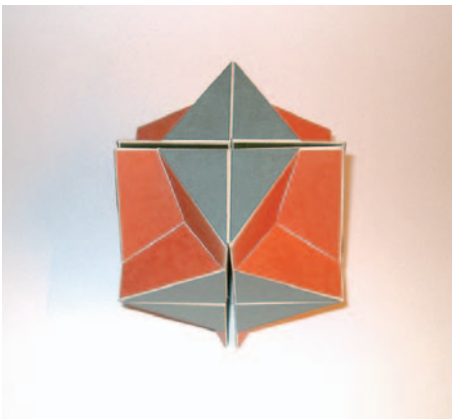


Fig. 7

The “cube-shell“ one time turned “inside-out“. All his inner-surfaces are outside, all his outside-surfaces are inside. Now he can further be turned and became again a cube.

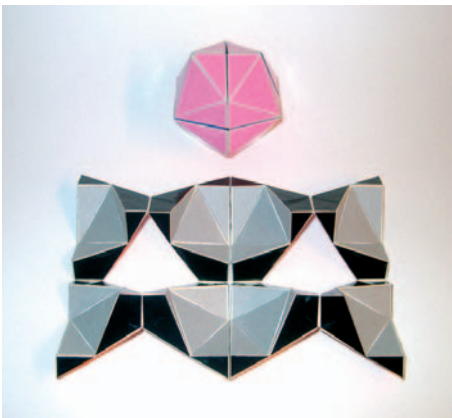


Fig. 8

The opened “dodecahedron-shell“ and the taken out icosahedron. The “dodecahedron-shell“ consists as well as the “cube-shell“ out of eight chained lids. The “dodecahedron-chain“ also can be “turned inside-out“ endless. Inside-surfaces and outside-surfaces are switching.



Fig. 9

The “turned inside-out dodecahedron-shell“. Amazingly we see now a “cubic basic-form“. The open rhombuses are formed out of two equilateral triangles. The short diagonal and the edges of the rhombuses are conform to the length of the altitude of the dodecahedron-pentagons.

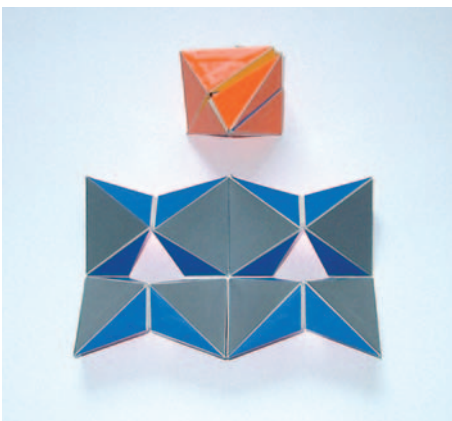


Fig. 10

The opened “icosahedron-shell“ and the taken out octahedron. The “icosahedron-shell“ consists as well as the “cube-shell“ and the “dodecahedron-shell“ out of eight chained lids. She can also be “turned inside-out“ endless. Inside-surfaces and outside-surfaces are switching



Fig. 11

The “turned inside-out icosahedron-shell“. Now the basic-form is a cube-octahedron. The two catheti of the inside blue triangles stay together in the proportion of radical 3.



Fig. 12

The opened “octahedron-shell“ and the taken out tetrahedron. The “octahedron-shell“ consists out of a “lock“ and a “eight-lid-chain“ which can also be “turned inside-out“ endless.



Fig. 13

The opened octahedron-kaleidozycclus, the octahedron-  
“lock“ and the tetrahedron.



Fig. 14

The four shell-solids “turned inside-out“ and the tetrahe-  
dron.



Fig. 15

The five platonic solids and their proportion.



Fig. 16

The open octahedron and inside the  
“radical 2 tetrahedron“.

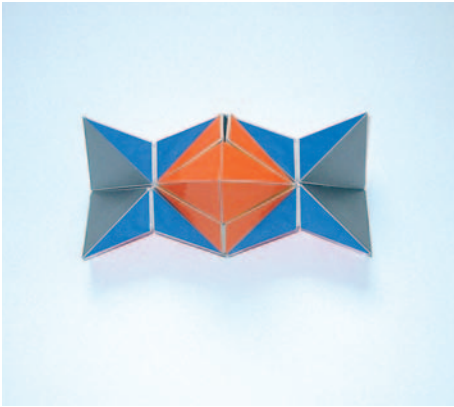


Fig. 16

The open icosahedron and inside the octahedron.

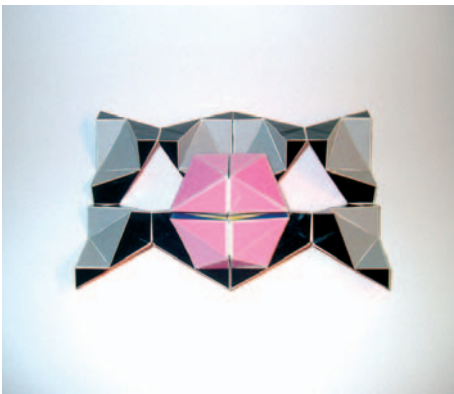


Fig. 17

The open dodecahedron and inside the icosahedron.

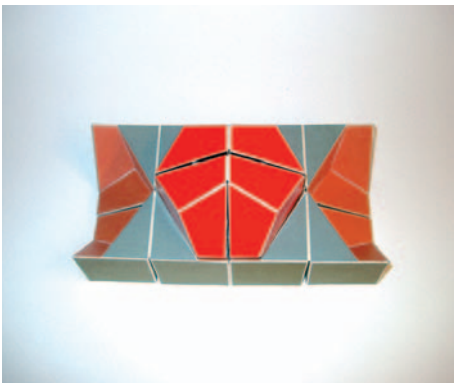


Fig. 17

The open cube and inside the dodecahedron.



Fig. 18

The half-open cube and inside the dodecahedron.