Xavier
De Clippeleir
Transforming
Polyhedra

Ellipso

A closed ring of 12 rotating ‘elliptic’ elements enables continuous movement. A circle, a square and countless other shapes can be created effortlessly by hand.

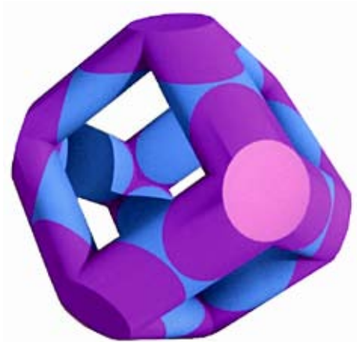
Produced by Naef Spiele AG Switserland since 1983
Material: beech wood

Cube

The 12 edges of the cube are elliptic cylinders.
The black and white parts are connected with axes of rotation, 24 in total.
The cube rotates into a solid with 24 faces (icositetrahedron).

First prototype: Royal College of Art, London 1977

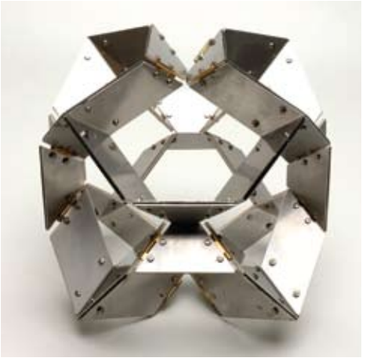
Limited edition produced by Naef Spiele AG Switserland 1990
Material: beech wood

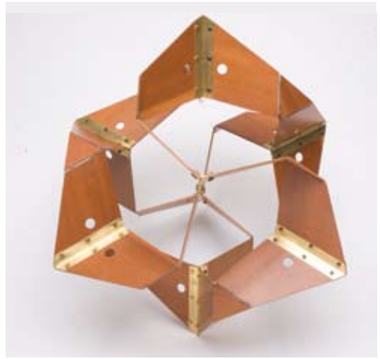


Cube

Cube with 24 flat hinges
Material: stainless steel

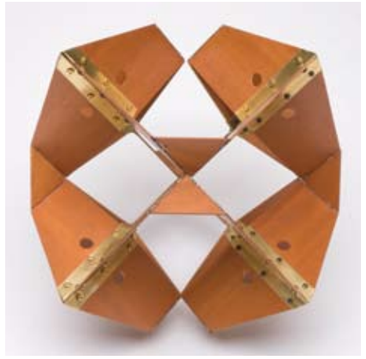
Purple cube: still from CAD animation

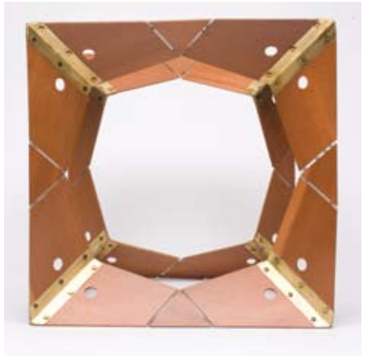




Cube

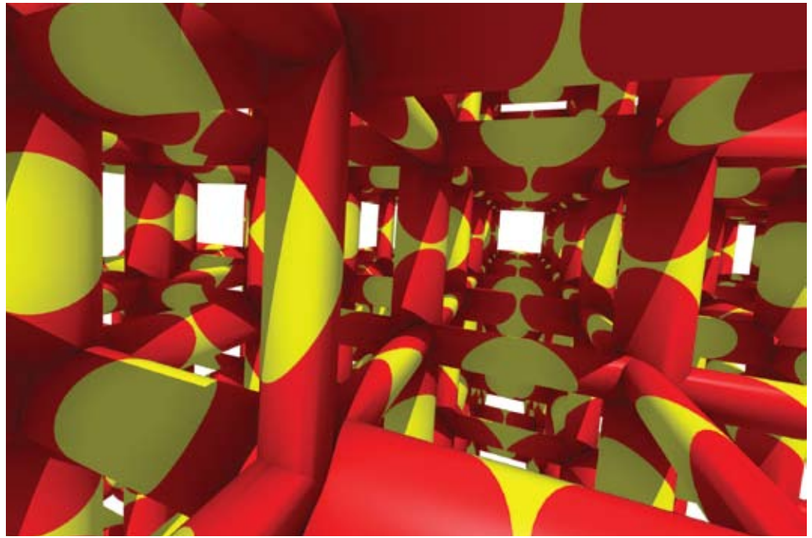
Material: pear wood, brass.





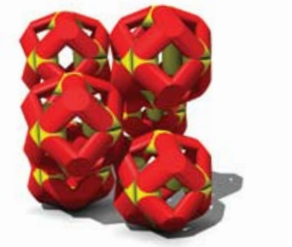
Cubes

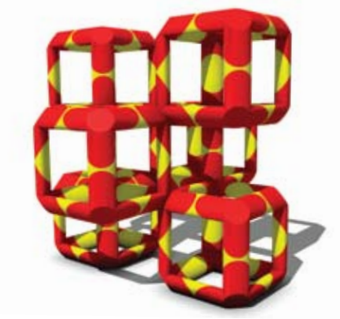
Material: cardboard
Material: steel wire, beads

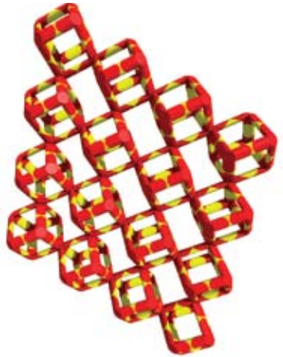


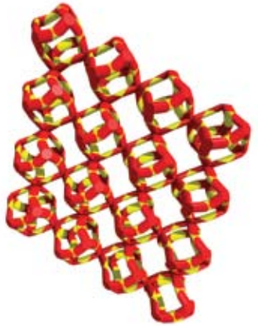
Cubical Lattice

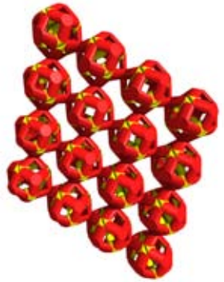
The structure is build with ‘elliptic’ cubes.
Each cube has 32 rotation axes, 2 per edge plus 8 corners.
The expansion - contraction is similar to a single cube.
The direction of rotation of a single cube in the lattice (grid) can be chosen, to the right or to the left. This results in different symmetries.
The geometry of the expanding-contracting cubical lattice (grid) has an equivalent in nature as the crystal structure of minerals named “ tilted perovskites”.

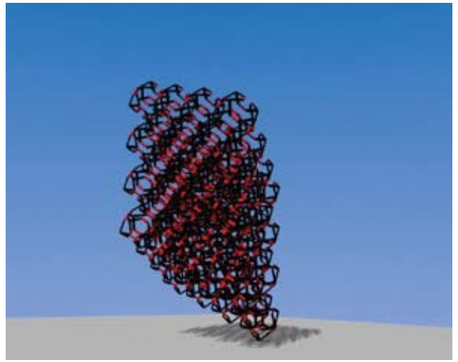


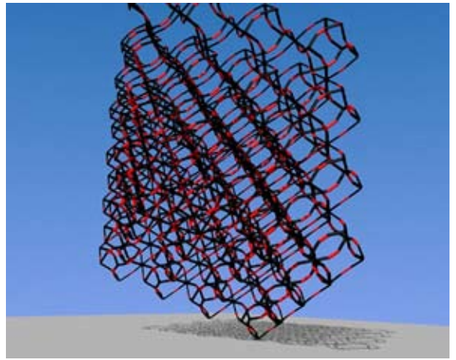






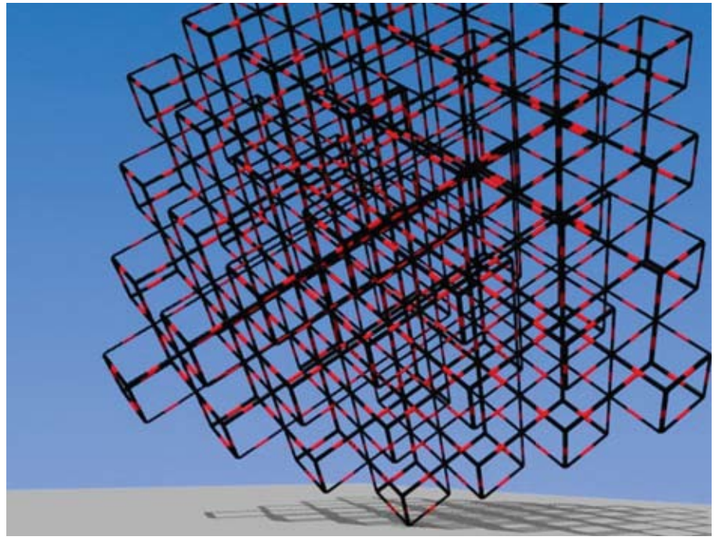


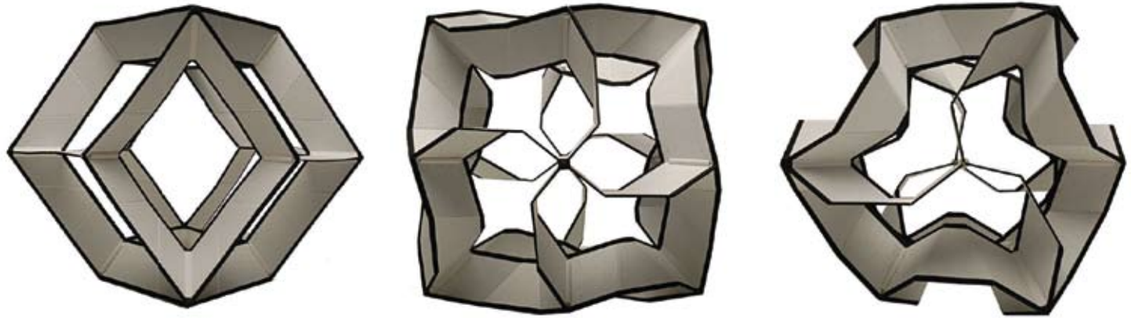




Computer Generated Animation of a Transforming Cubical Lattice of 60 Cubes

Stills: open, medium and closed positions





Rhombic Dodecahedron

The polyhedron has 12 faces, 14 vertices and 24 edges.
The 24 edges are provided with 2 rotation axes, 48 in total.
The dodecahedron rotates into a cube.
The Rhombic Dodecahedron is a space filling solid. Its lattice is transformable in analogy to the cubical lattice (3D model in progress)
.
Material: canvas, cardboard, aluminium.

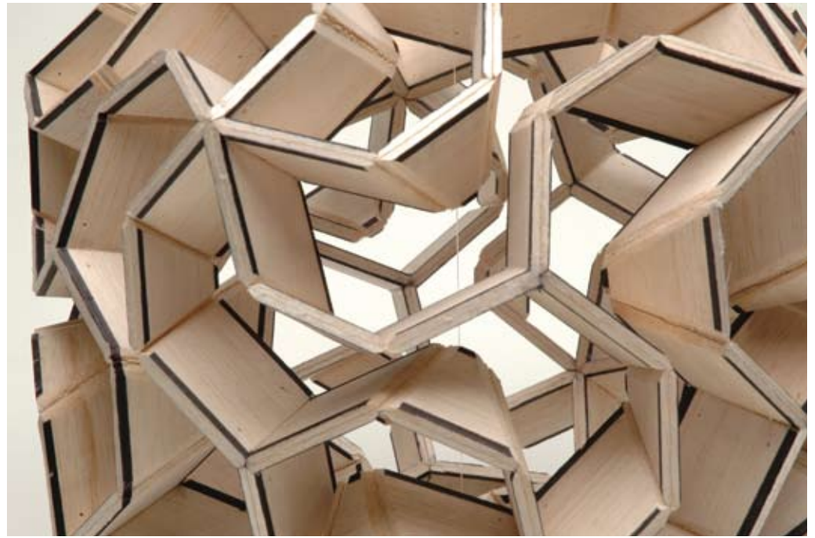
Rhombic Dodecahedra

Material: stainless steel, wood

Rhombic Triacontahedron

The polyhedron has 30 faces, 32 vertices and 60 edges.
The edges are provided with 2 rotation axes, 120 in total.
The triacontahedron rotates into a dodecahedron.

Material: striped cardboard



Rhombic Triacontahedra

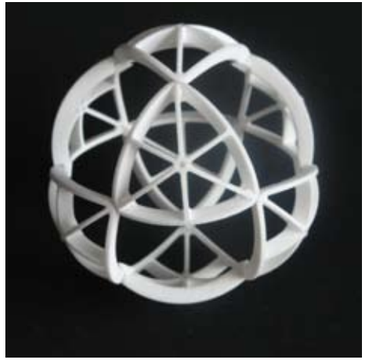
Material: wood, canvas

Sphere and Spherical Lattice

The spheres are divided in 8 parts and connected with 24 rotation axes.
The structure opens and closes.

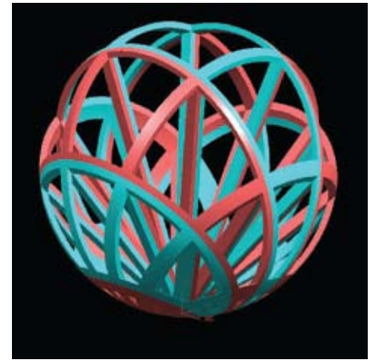
Sphere

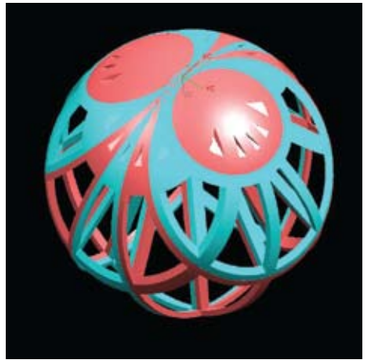
1.CAD Drawing to produce a transforming sphere with rapid prototyping technology out of one piece, with integrated hinges.
2. Three views of printed model



Sphere with Rotating Sections

By rotating the sections different patterns emerge.





Colofon

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