Aprender construyendo objetos geométricos

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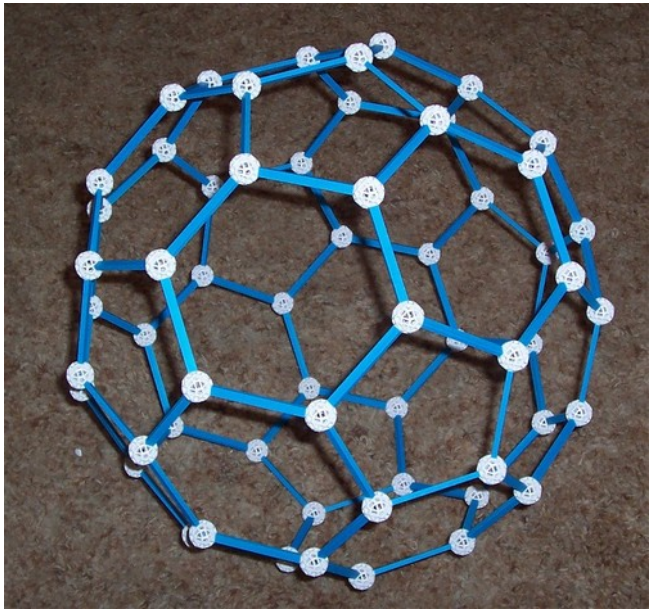
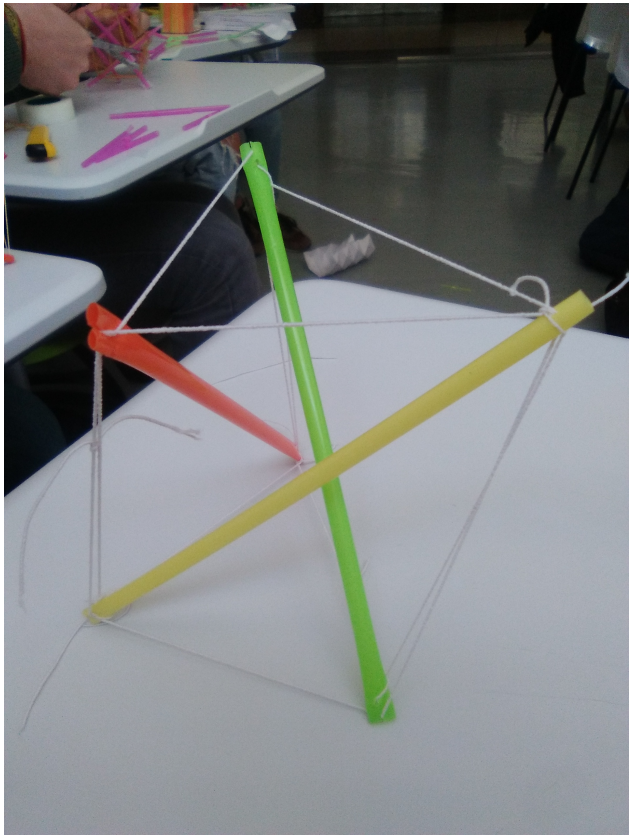
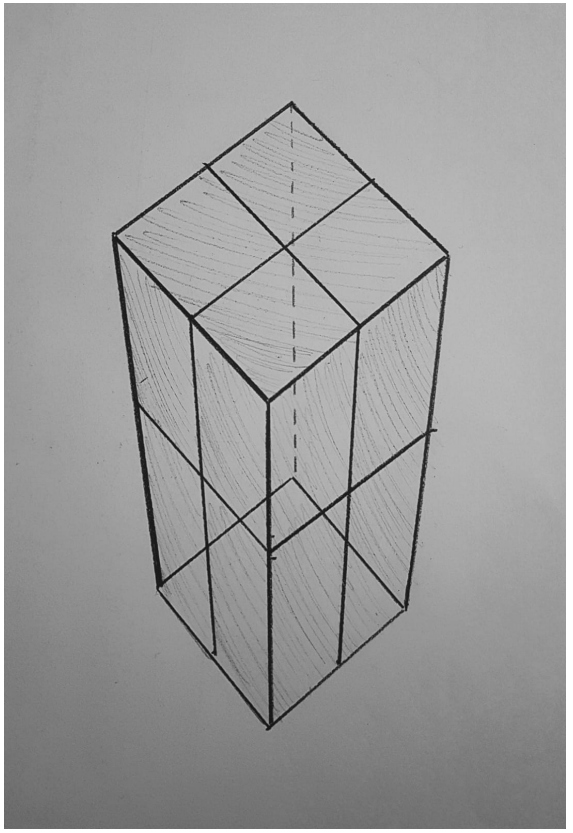
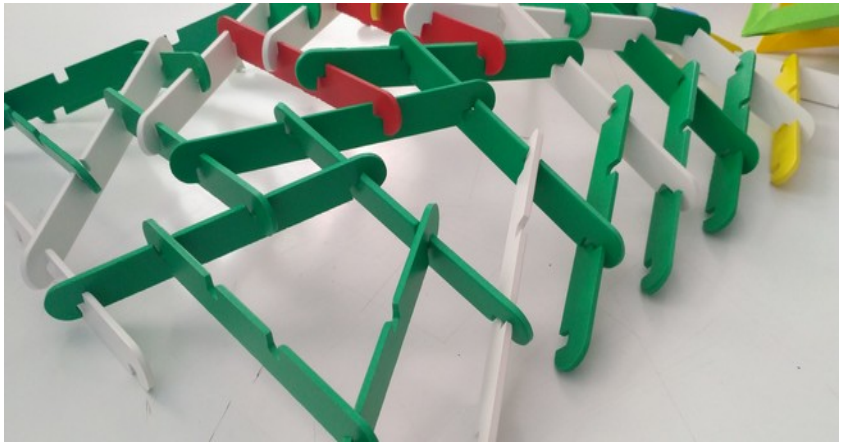
- Que no entre aquí quien no sepa geometría (Platón)
- La geometría es el arte de razonar con figuras mal hechas (H. Poincarè)
- Donde hay materia hay geometría (J. Kepler)
- La arquitectura es la geometría en forma visible en el mismo sentido que la música es el número en forma audible (C.F. Bragdon)

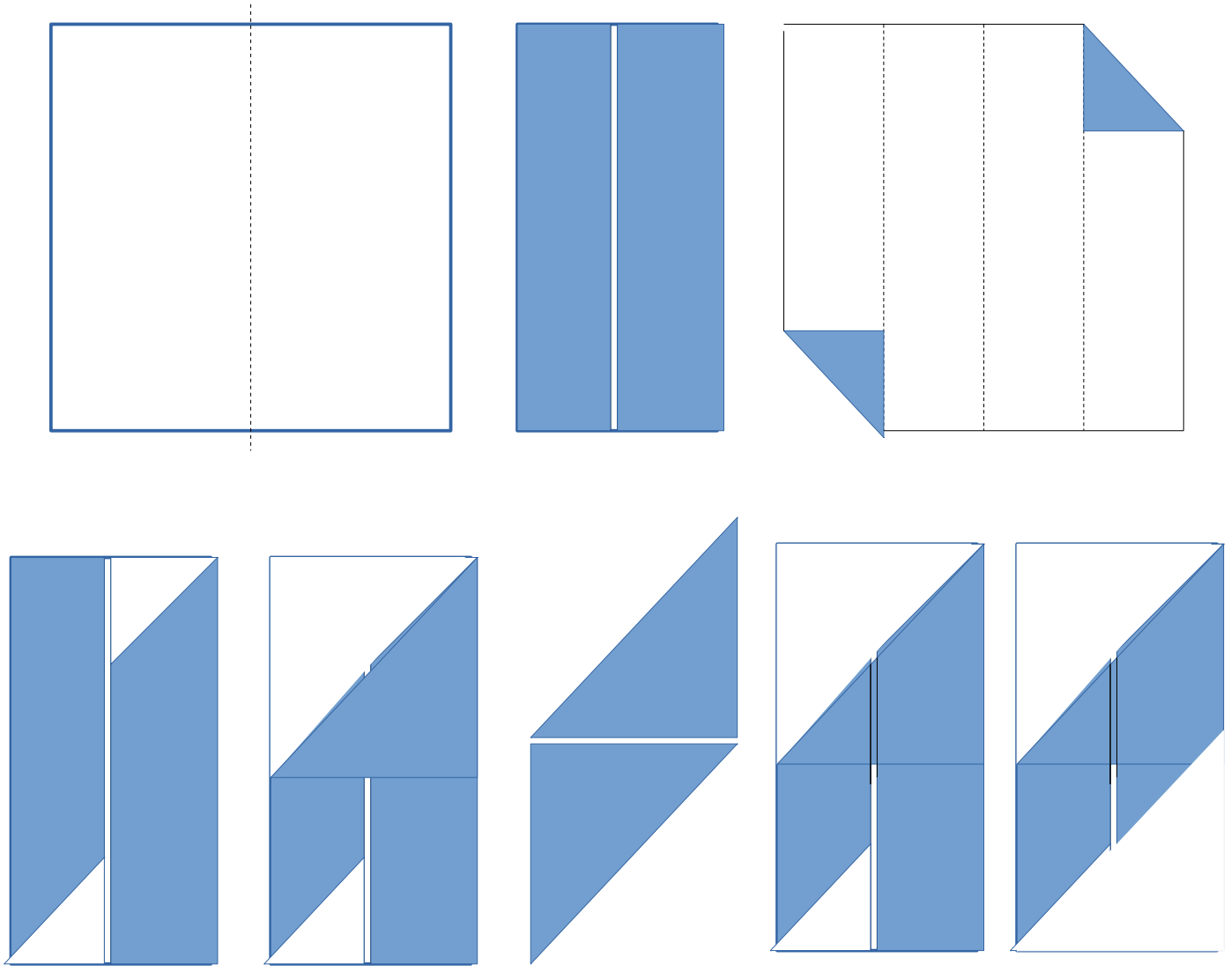


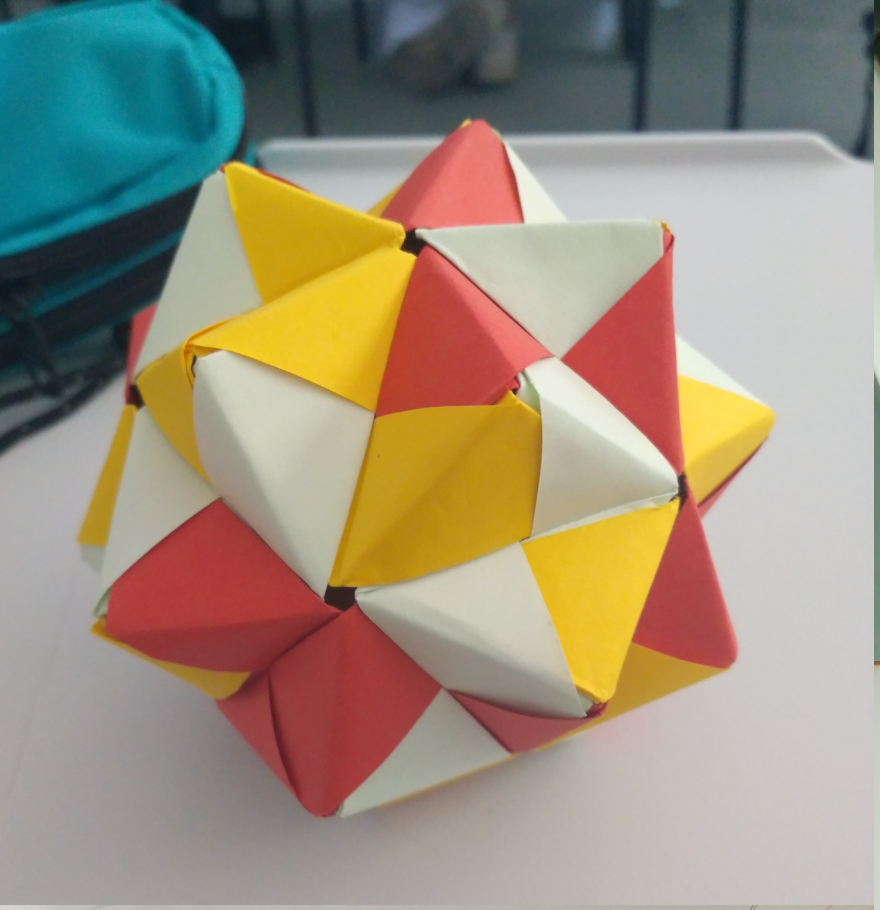






El módulo sonobe





Módulo phizz

LOS 5 POLIEDROS REGULARES

(a) Tetrahedron (two balloons).

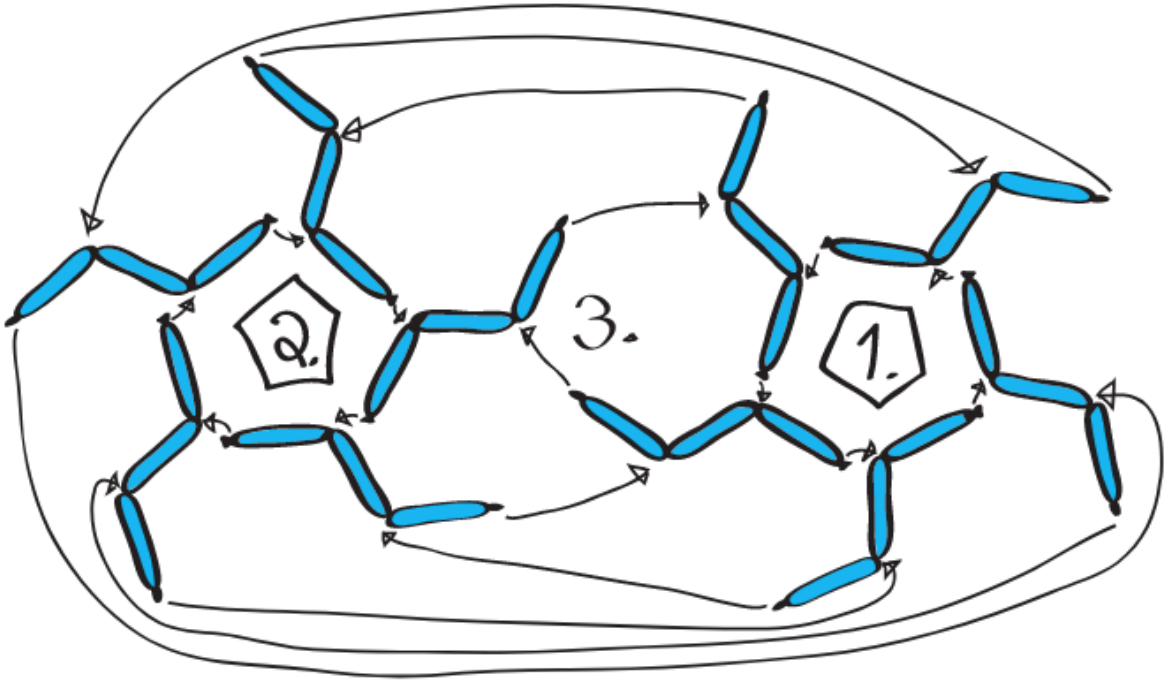
(b) Cube (four balloons).

(c) Octahedron (one balloon).

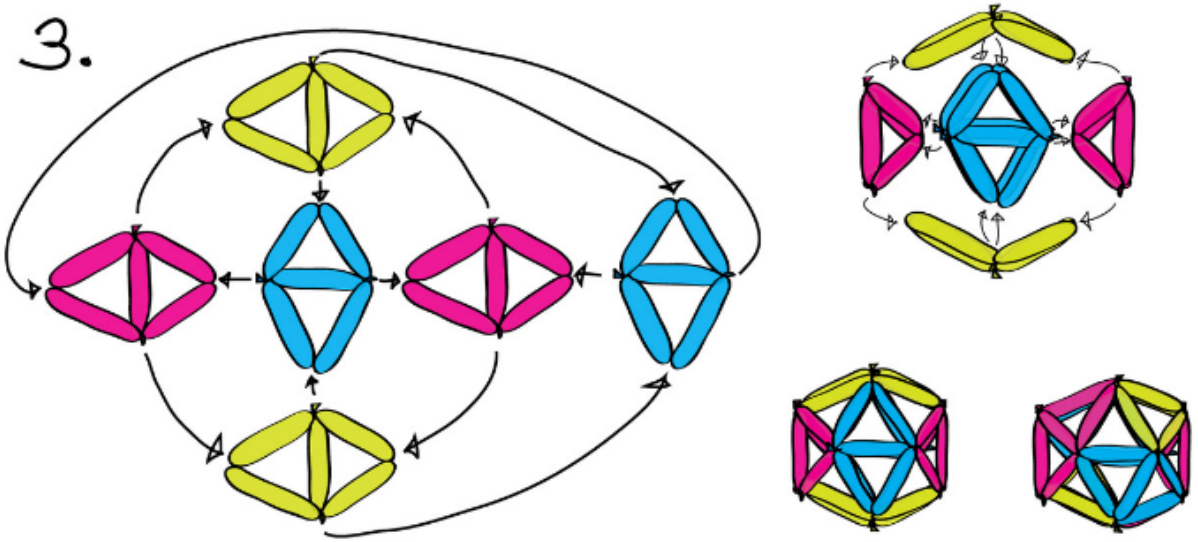
(d) Icosahedron (six balloons).

(e) Dodecahedron (ten balloons).

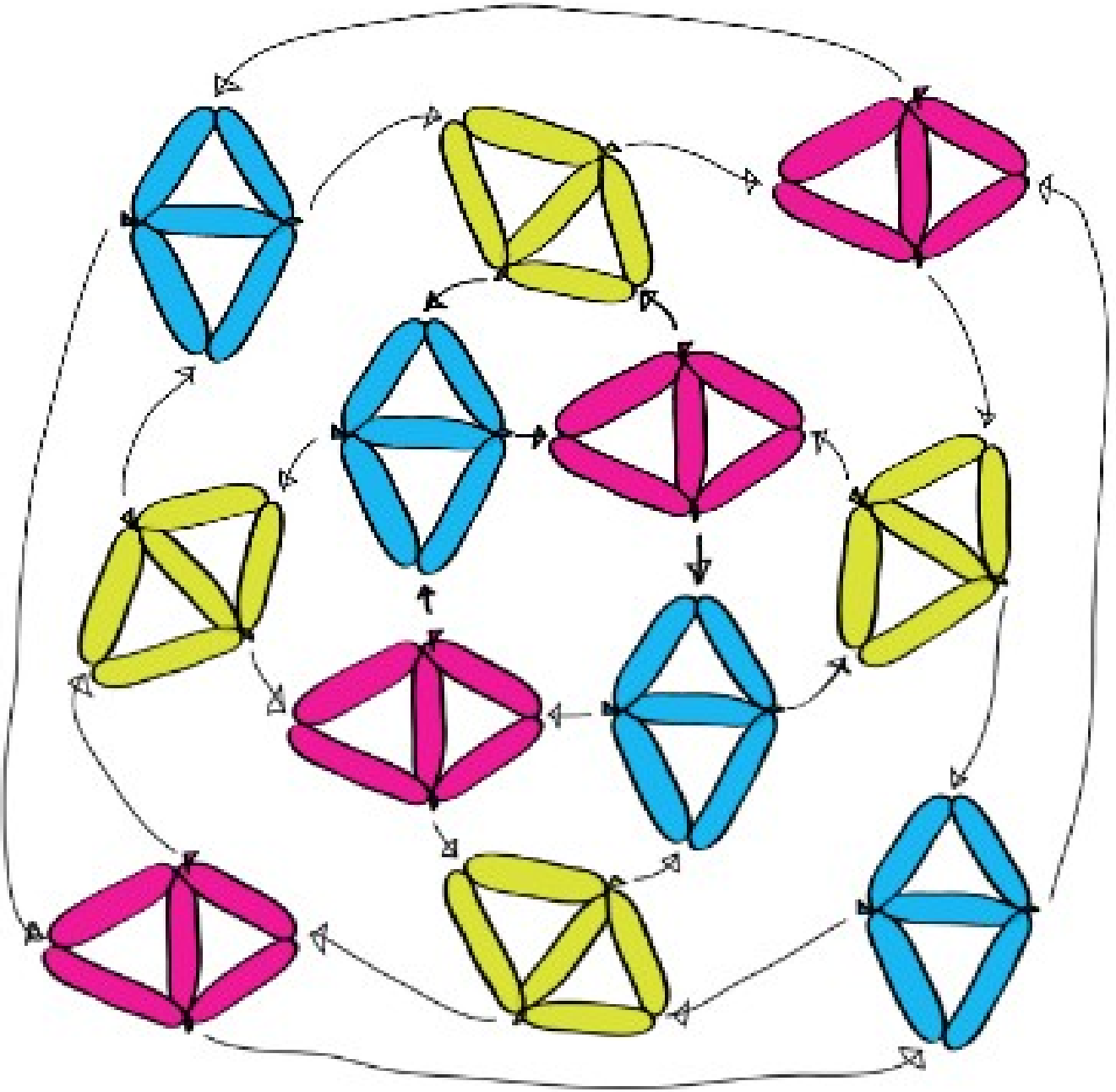
dodecaedro



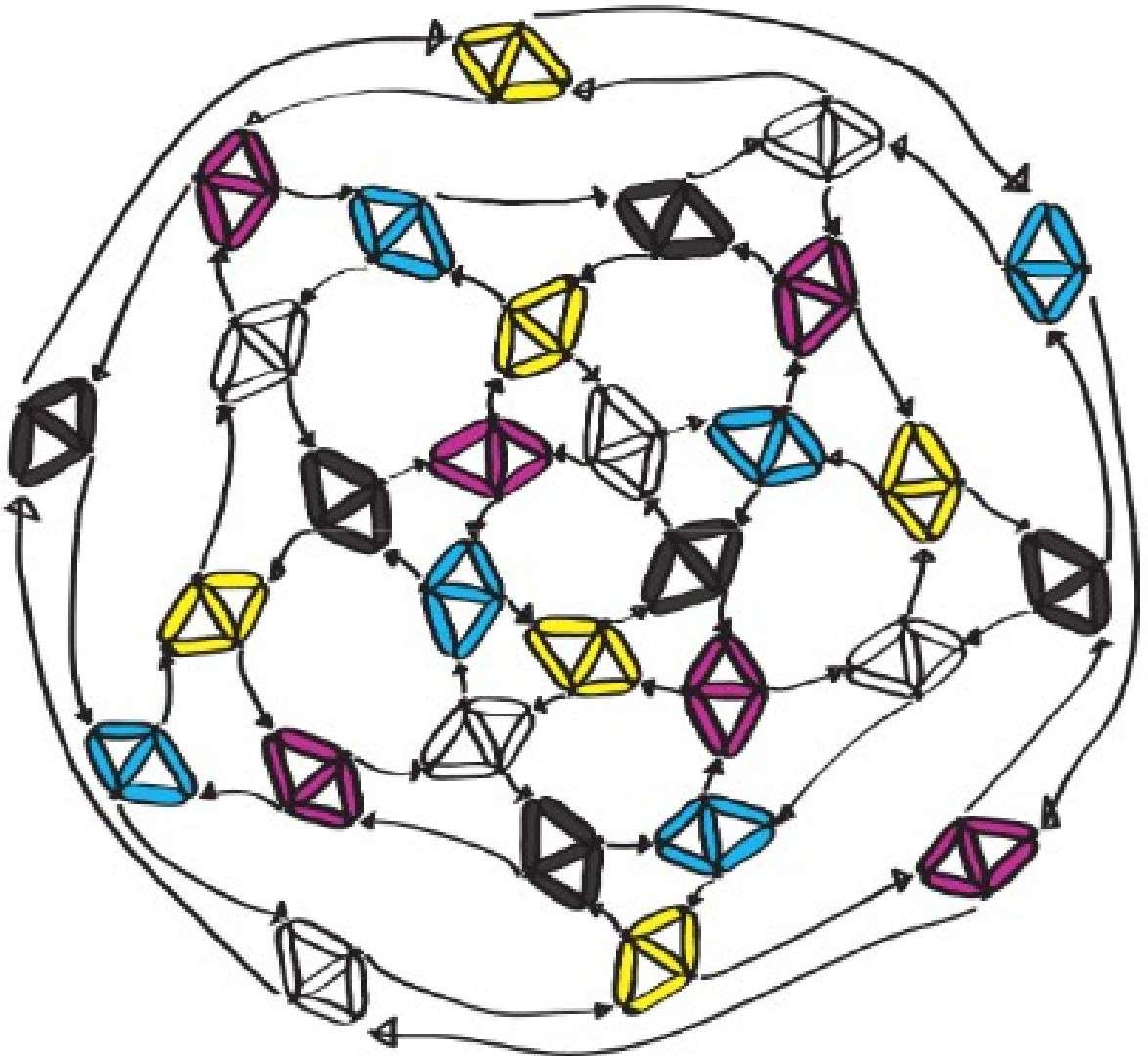
icosaedro



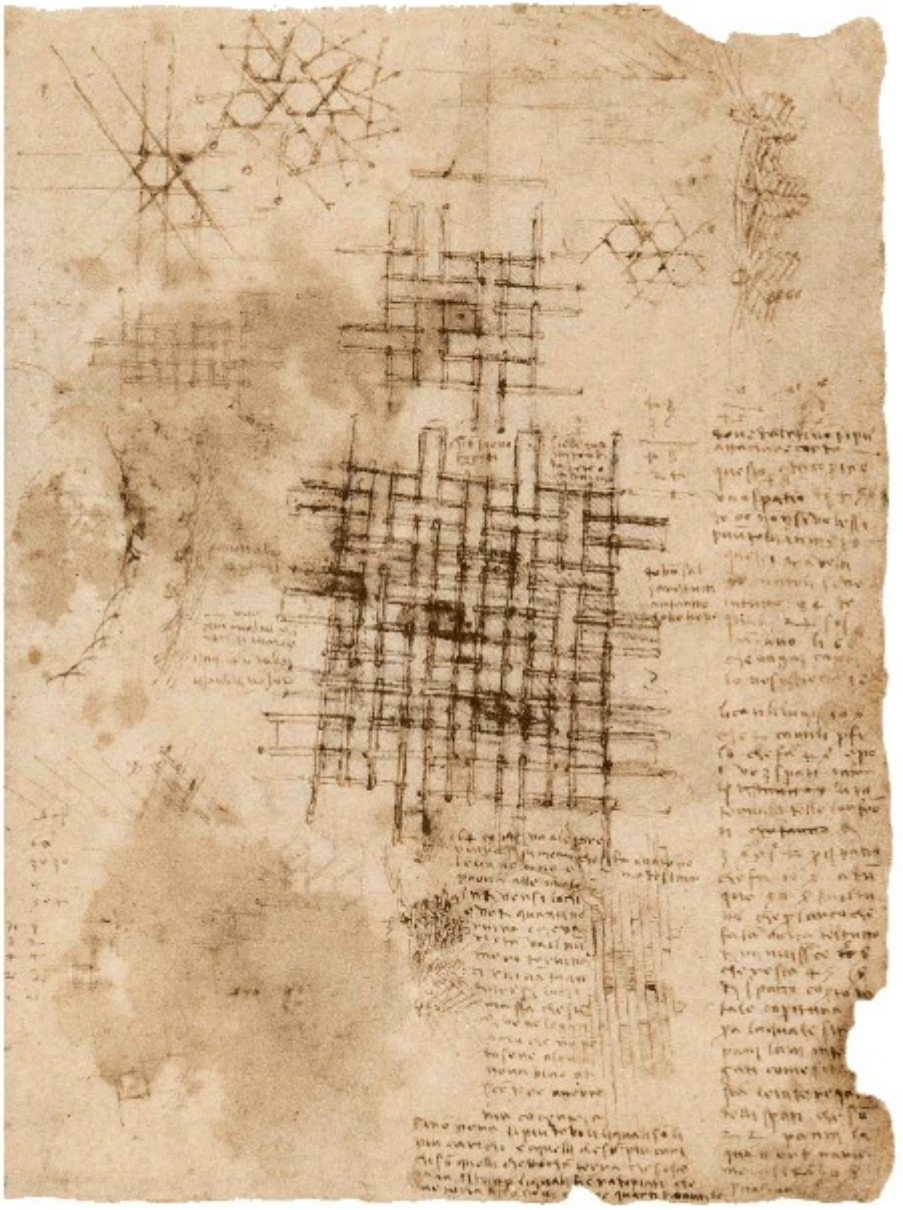
Cubo chato

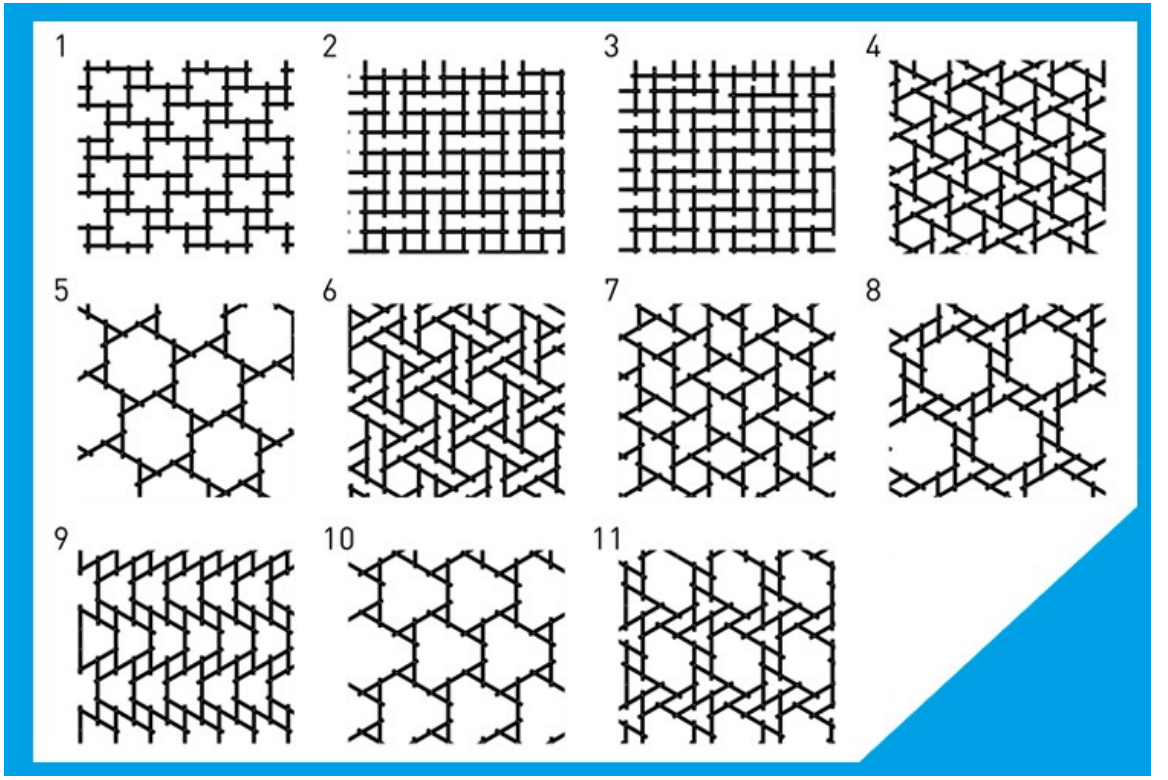


Icosaedro chato



REFERENCIAS
- Vi Hart. Mathematical Balloon Twisting for Education. Proceedings Bridges 2010: Mathematics, Music, Art, Architecture, Culture, 2010.
- Erik D. Demaine, Martin D. Demaine, Vi Hart. Computational Balloon Twisting:The Theory of Balloon Polyhedra. CCCG Montreal, 2008.

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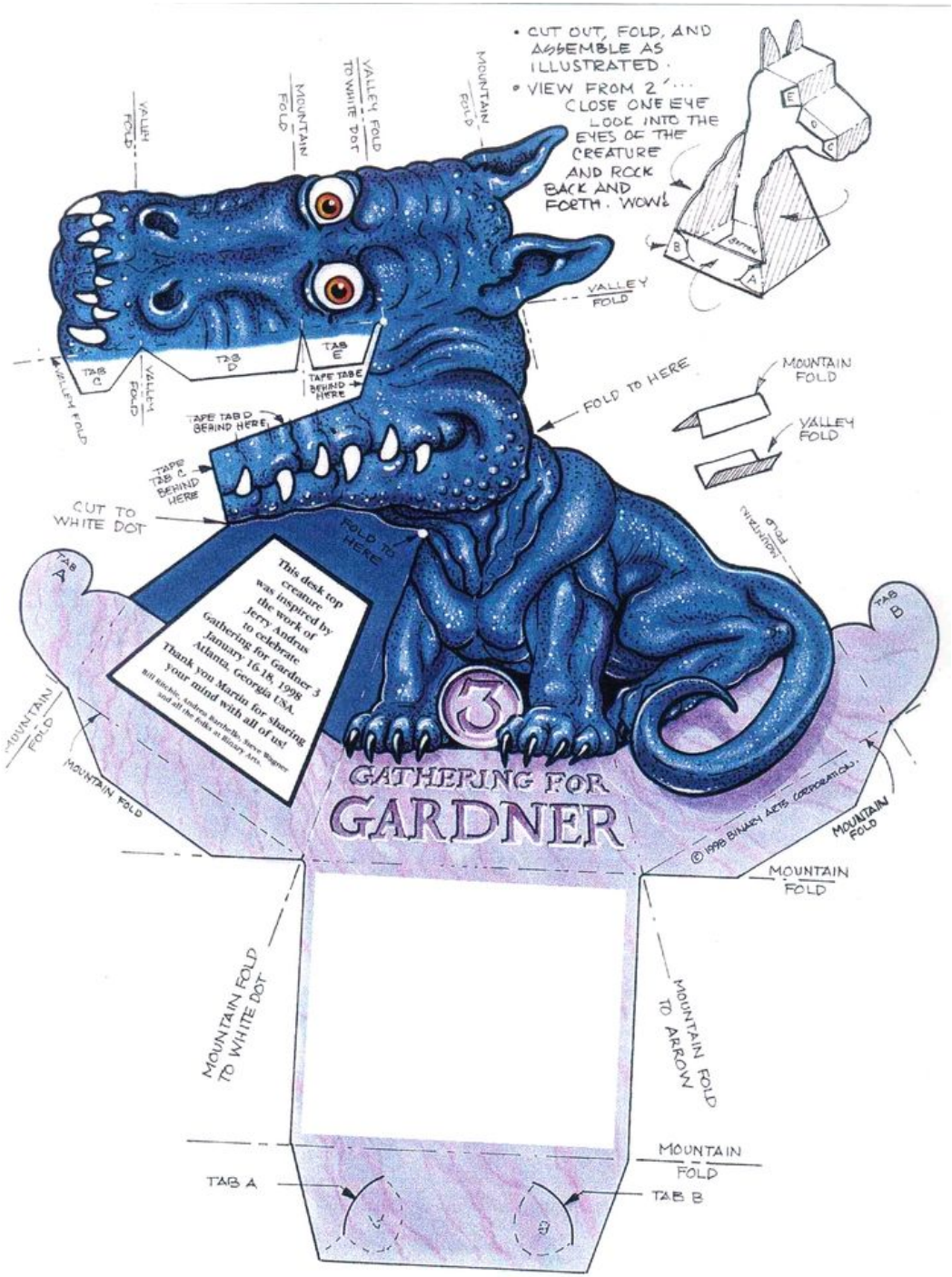
• CUT OUT, FOLD, AND ASSEMBLE AS ILLUSTRATED.
• VIEW FROM 2'... CLOSE ONE EYE LOOK INTO THE EYES OF THE CREATURE AND ROCK BACK AND FORTH. WOW!
VALLEY FOLD
MOUNTAIN FOLD
VALLEY FOLD TO WHITE DOT
MOUNTAIN FOLD
TAB C
TAB D
TAB E
TAPE TAB E BEHIND HERE
TAPE TAB D BEHIND HERE
TAPE TAB C BEHIND HERE
FOLD TO HERE
CUT TO WHITE DOT
FOLD TO HERE
MOUNTAIN FOLD
VALLEY FOLD
TAB A
TAB B
This desk top creature was inspired by the work of Jerry Andrus to celebrate Gathering for Gardner 3 January 16-18, 1998 Atlanta, Georgia USA. Thank you Martin for sharing your mind with all of us!
Bill Ritchie, Andrew Barbarello, Steve Wagner and all the folks at Binary Arts.
3
GATHERING FOR GARDNER
© 1998 BINARY ARTS CORPORATION.
MOUNTAIN FOLD
MOUNTAIN FOLD TO WHITE DOT
MOUNTAIN FOLD TO ARROW
MOUNTAIN FOLD
TAB A
TAB B

Bill also executed a series of five works, each of which is based on a different way of cutting a sphere into two identical parts. Bill may not have been aware of it, but one of the works, the gray granite *Half Sphere around Two Axes,* is based on an old folk method of quickly slicing an apple into congruent halves. A half sphere cut by this method is shown in Figure 50. It is not as easy to make as it looks. Make a vertical cut halfway through the center of the top of a sphere. Turn the sphere over and make a second halfway cut, perpendicular to the first, through the center of the bottom of the sphere. Now make two horizontal cuts through diagonally opposite quarter sectors of the sphere's equatorial disk. The half sphere shown in the illustration is one of the two identical halves that re-

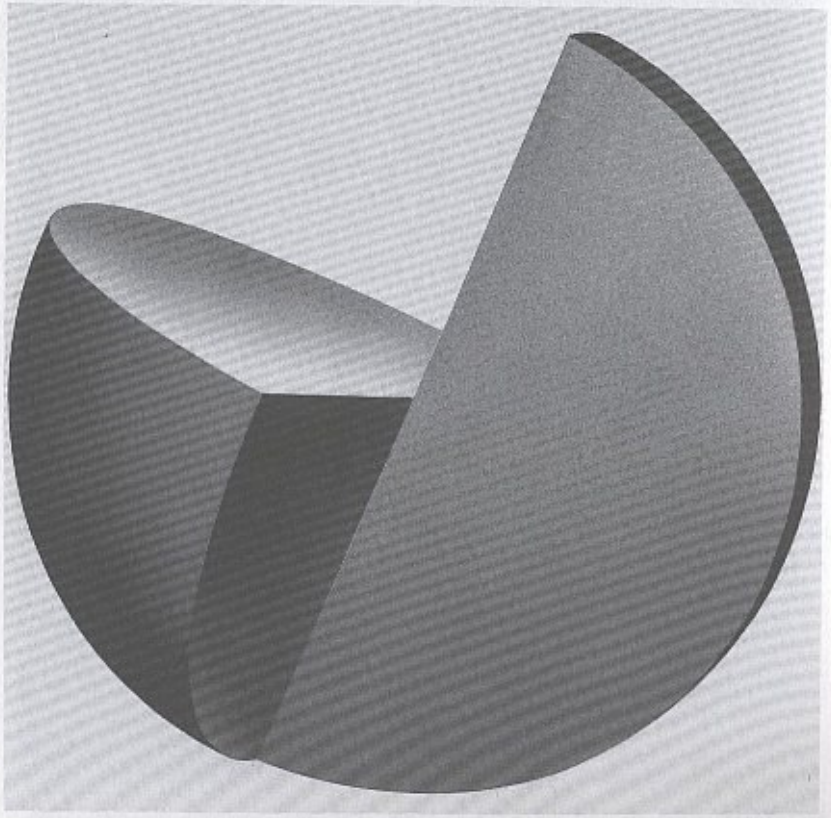

FIGURE 50 Half of a sphere

Muchas gracias por vuestra atención

Sugerencias, comentarios, dudas…

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