Hans Walser, [20150821]

Visualizations of the Fibonacci recursion

Figure 1 depicts a classical visualization.

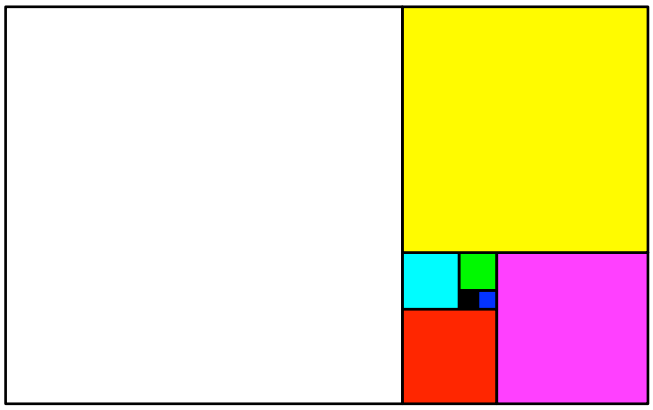

Fig. 1: Classical

We have a spiral arrangement without overlapping squares.
In this figure and also in the following we use a color code according to table 1.

No	RGB	Color	Example	New No	Fibonacci
0	0,0,0	Black		1	1
1	0,0,1	Blue		2	1
2	0,1,0	Green		3	2
3	0,1,1	Cyan		4	3
4	1,0,0	Red		5	5
5	1,0,1	Magenta		6	8
6	1,1,0	Yellow		7	13
7	1,1,1	White		8	21

Tab. 1: Color code

In figure 2 we have a linear arrangement.

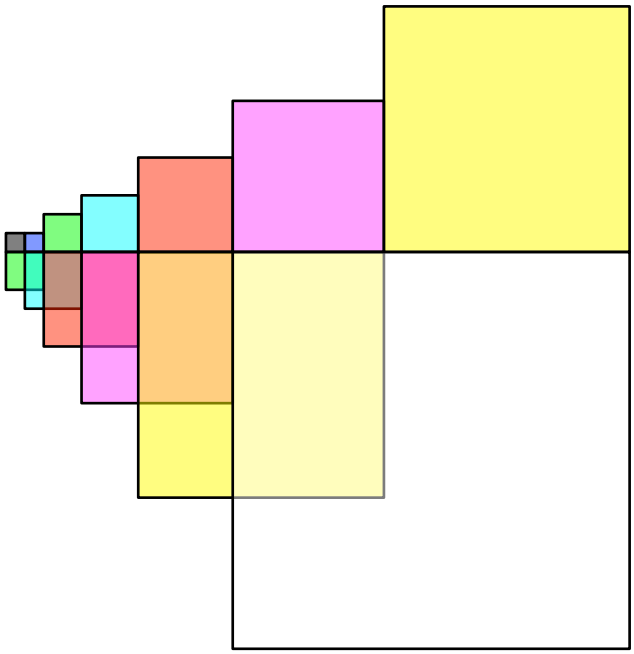

Fig. 2: Linear arrangement

This can be done also with other polygons. The figure 3 gives a version with regular triangles.

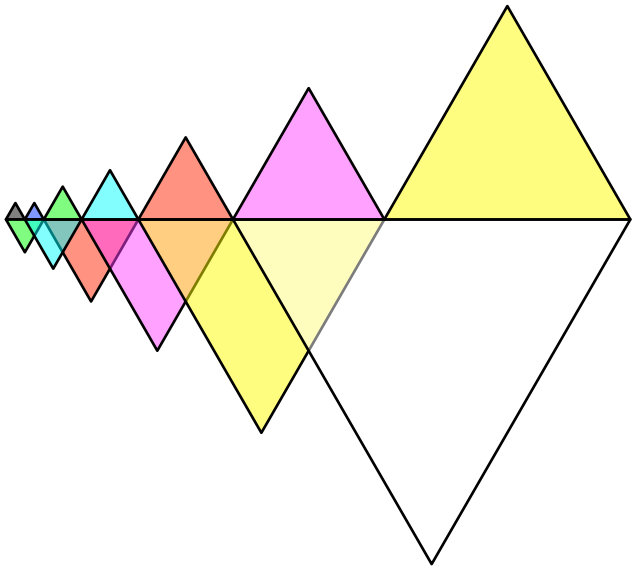

Fig. 3: Regular triangles

The figure 4 works with regular pentagons.

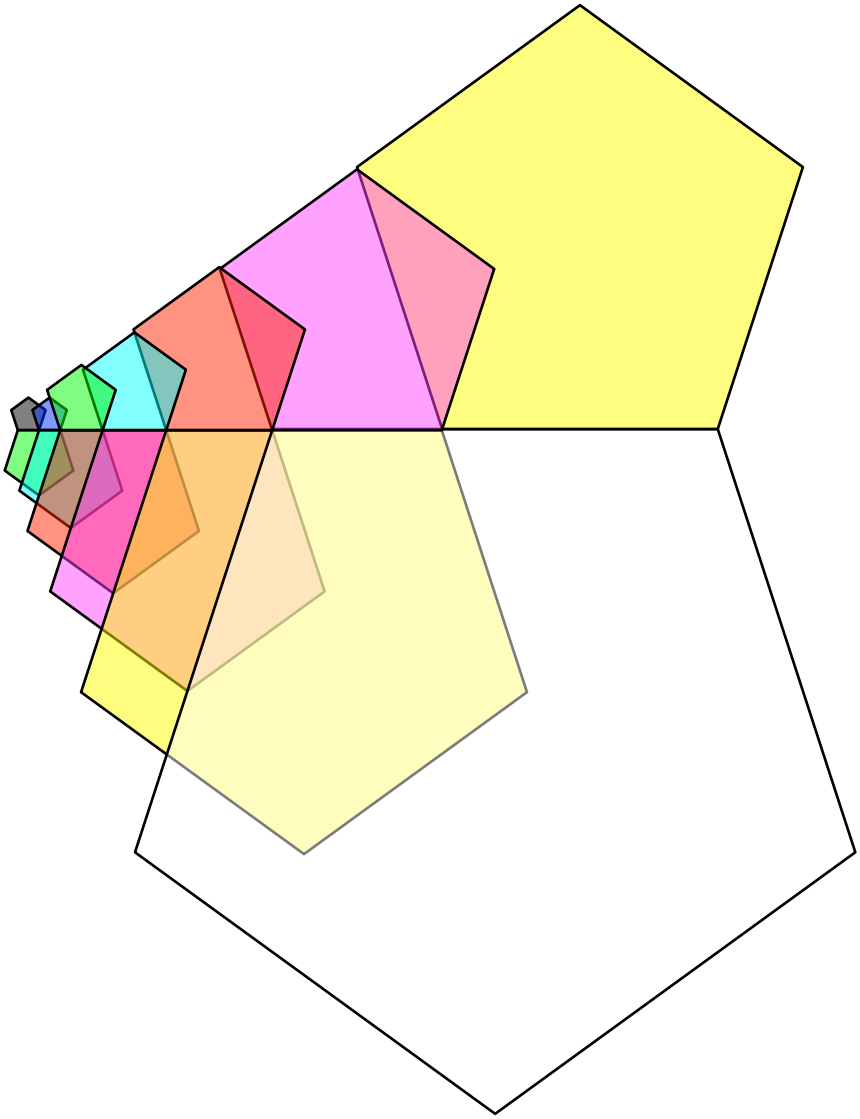

Fig. 4: Regular pentagons

The “roofline” is not straightforward, but interrupted.
Taking a geometric sequence based on the golden section

$$\Phi = \frac{1+\sqrt{5}}{2} \approx 1.618$$

leads to a proper roofline (Fig. 5). But this is no more a Fibonacci sequence. The difference is visible at the beginning.

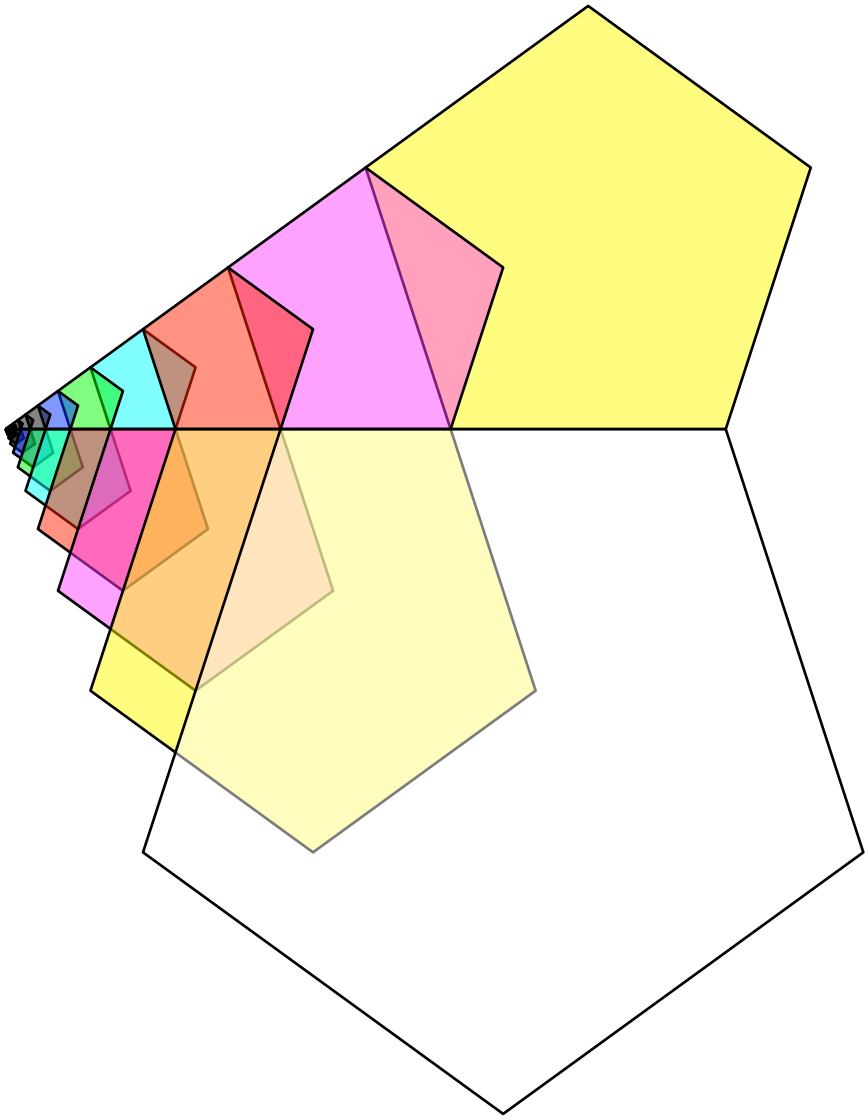

Fig. 5: Golden section

Parts of this figure can be used to draw a regular pentagon (Fig. 6).

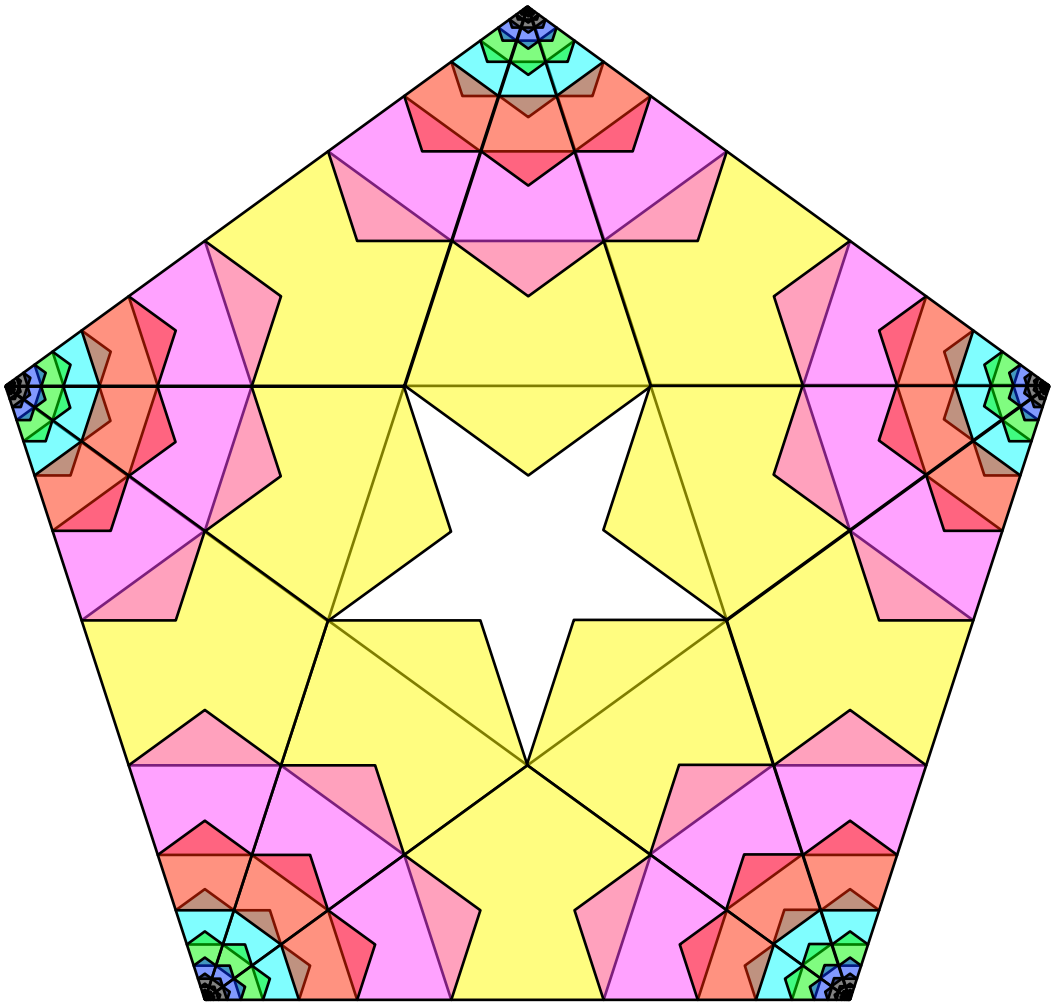

Fig. 6: Pentagon

In the following figures we will work again with the Fibonacci sequence.
The figure 7 uses half hexagons.

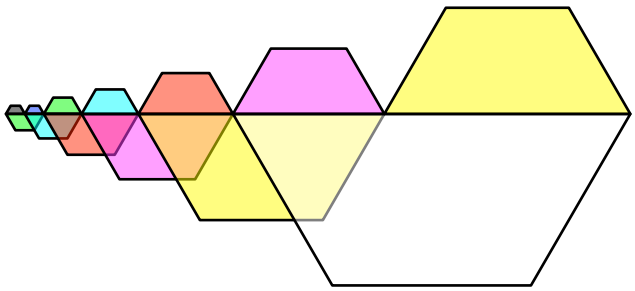

Fig. 7: Half hexagons

In figure 8 half circles.

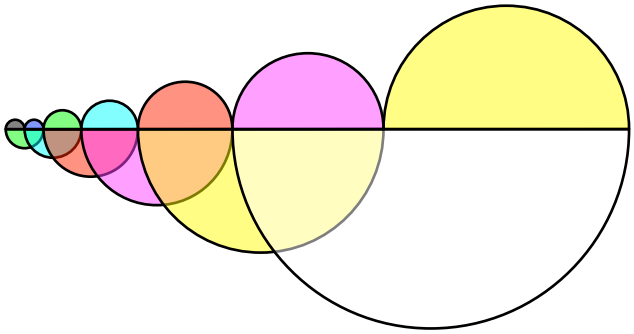

Fig. 8: Half circles

In figure 9 half circles again, but this time with a golden geometric sequence.

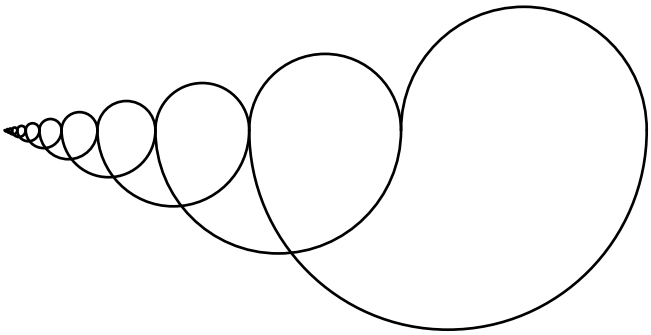

Fig. 9: Golden section