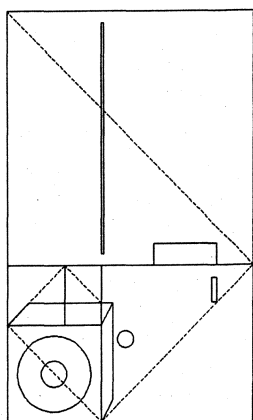


Geometry in Dali's Painting

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Abstract

The relationship between Art and Geometry has been permanent from the classic period to these days. Many painters have built their works by using notable proportions and geometry in the main lines in order to organize the picture.



In this poster we have chosen Dali's paintings as examples, due to the clearness in the use of the form and proportions. In "*Giant flying cup with incomprehensible appendage five meters long*" (1944-1945), the canvas have dimensions $a_1=50$ cm. and $a_2=31$ cm., therefore the proportion is $50/31 \approx 1.613$, which is approximately the value of the golden number ϕ . The skyline divides the canvas in a square of side length $a_2=31$ cm. and a rectangle of dimensions a_2 and $a_3 = a_1 - a_2 = 50 - 31 = 19$ cm. whose proportion is $31/19 \approx 1.63 \approx \phi$. The edge's cube divides the previous golden rectangle in another square of length $a_3 = 19$ cm. and golden rectangle of dimensions $a_3 = 19$ cm. and $a_4 = a_2 - a_3 = 31 - 19 = 12$ cm. We can repeat the same division two times more obtaining a sequence of golden rectangles and squares. The following property of the golden rectangle is verified:

If a square is removed from the golden rectangle, another smaller golden rectangle is obtained, and so on. If we continue this process indefinitely, and denoting by (a_i, a_{i+1}) the sequence of the side lengths of the golden rectangles, by (D_i) the sequence of the diagonal lengths of the squares, $D_{i+1} = \sqrt{2}a_{i+1}$, and by (A_i) the sequence of the square's areas, we have:

$$\frac{a_i}{a_{i+1}} = \phi; \quad \frac{D_{i+1}}{D_{i+2}} = \phi; \quad \frac{A_{i+1}}{A_{i+2}} = \frac{a_{i+1}^2}{a_{i+2}^2} = \phi^2; \quad i \geq 1$$

Also, a rectangular spiral can be built from the square's diagonal sequence.

In the picture titled "*Hyperxiological sky*", whose dimensions are 31 by 43 cm, the diagonals divide the canvas in four triangles. Also, the vertical axes of symmetry of the canvas and the skyline define a square, whose side length is 21.5 cm. Other static and dynamic rectangles appear from the diagonals and other basic composition lines.

And also, if the long side of a root-two rectangle is divided in two equal parts, another two root-two rectangles are obtained. This property can be verified in this picture.

$$\frac{43}{31} \approx 1.387 \approx \sqrt{2}, \quad \frac{31}{21.5} \approx 1.44 \approx \sqrt{2}, \quad \text{etc.}$$

In order to raise more information about this two paintings and Dalí's pictorial work, the book "*Dalí. La obra pictórica*" (R. Descharnes, G. Neret; Ed. Taschen, Colonia, 2001) could be consulted.

