Atatürk Üniversitesi Güzel Sanatlar Enstitüsü Dergisi
Journal of the Fine Arts Institute
(GSED), Sayı / Number 38, Erzurum, 2017, 99-103

THE DIFFERENT FORM OF THE GOLDEN RATIO

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Geliş Tarihi: 2017.03.10
Kabul Tarihi: 2017.04.25

Abstract

We came up with a new approach to the concept of golden ratio found in the fields of fine arts besides geometry. We made a golden ratio by drawing a double-sided triangle on the marble.

Key Words: Golden Ratio, triangle and parallelogram.

Altın Oranın Farklı Formu

Öz

Geometri dışında güzel sanatlar alanlarında da yer bulan altın oran kavramına yeni bir yaklaşım getirdik. Paralelkenar üzerine ikizkenar üçgen çizerek altın bir oran oluşturduk.

Anahtar Sözcükler: Altın Oran, üçgen ve paralelkenar

1. Introduction

1.1. A Golden Ratio

The golden ratio has been claimed to have held a special fascination for at least 2.400 years, although without reliable evidence (Kowsky,1992).

According, to Mario Livio:"Some of the greatest mathematical minds of all ages from Pythagoras and Euclid in ancient Greece, through the medieval Italian mathematician Leonardo of Pisa and the Renaissance astronomer Johannes Kepler, to present-day scientific figures such as Oxford physicist Roger Penrose, have spent endless hours over this simple ratio and its properties. But the fascination with the Golden Ratio is not confined just to mathematicians. Biologists, artists, musicians, historians, architects, psychologists, and even mystics have pondered and debated the basis of its ubiquity and appeal. In fact, it is probably fair to say that the Golden Ratio has inspired thinkers of all disciplines like no other number in the history of mathematics (Kowsky,1992).

Line segments in the golden ratio,

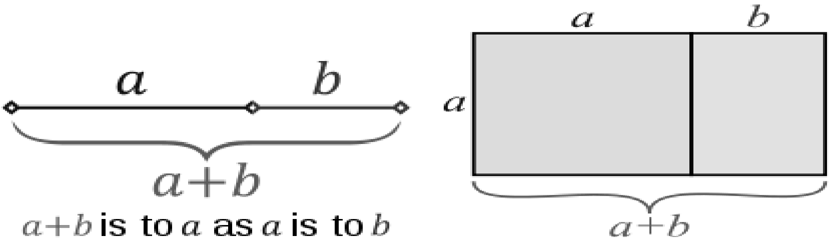

Figure.1.1

A golden rectangle (in pink) with longer side ***a*** and shorter side ***b***, when placed adjacent to a square with sides of length ***a***, will produce a similar golden rectangle with longer side

a **+*b*** and shorter side ***a***. This illustrates the relationship. In mathematics, two quantities are in the **golden ratio** if their ratio is the same as the ratio of their sum to the larger of the two quantities. The figure on the right illustrates the geometric relationship. Expressed algebraically, for quantities a and b with $a > b > 0$

Two quantities a and b are said to be in the *golden ratio* φ if

$$\frac{a+b}{a} = \frac{a}{b} = \varphi$$

of φ is to start with the left fraction. Through simplifying the fraction and substituting in

$$b/a = 1/\varphi ,$$

One method for finding the value

$$\frac{a+b}{a} = 1 + \frac{b}{a} = 1 + \frac{1}{\varphi}$$

Therefore, $1 + \frac{1}{\varphi} = \varphi$

Multiplying by φ gives $1+\varphi=\varphi^2$, which can be rearranged to $\varphi^2 - \varphi - 1 = 0$.

Using the quadratic formula, two solutions are obtained**:** $\varphi = \frac{1 \pm \sqrt{5}}{2}$

1.2. Golden Ratio Beauty Mask

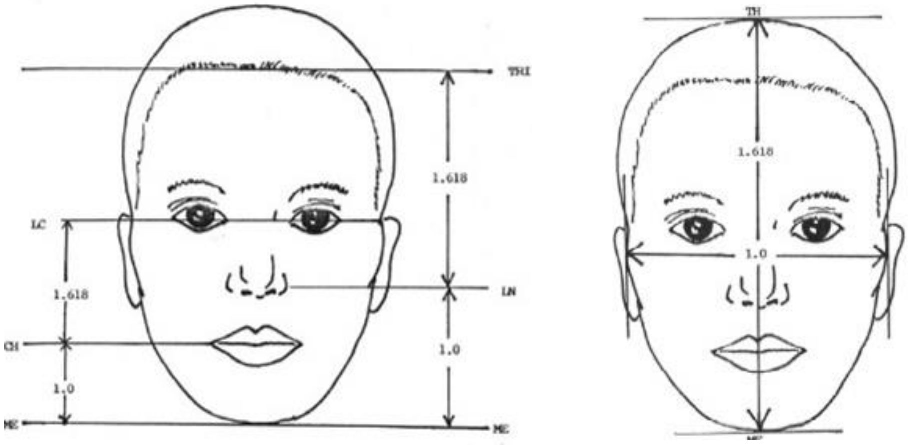

Figure 1.2.1

Golden ratio beauty masks (www.sriyantraresearch.com). Our perception of beauty is actually defined by the golden ratio. An attractive person is attractive because their proportions are closer to the golden ratio. In nature the Fibonacci numbers are a close approximation of the golden ratio since fractions are not always possible in the real world.

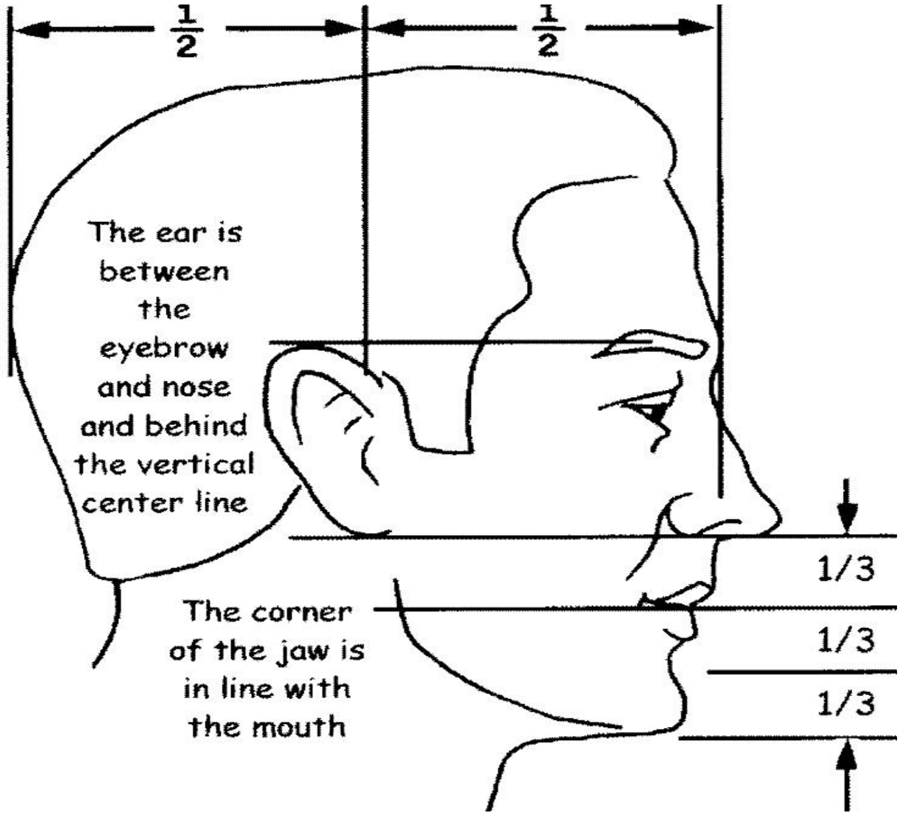

Figure 1. 2.2

2. New Formation

Theorem.2.1

Let's draw the AEF isosceles triangle on the ABCD column as

[AB] = [BD] = [CD] and DAB <90.

Extend the right piece of [CD] and wrap it around the circumference circle of triangle G and H. In this case, the D point [CG] divides the correct part in gold (Figure 2)

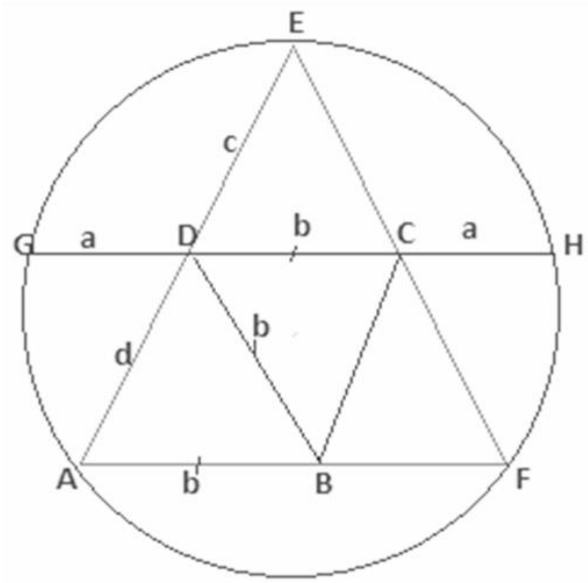

Figure 2.1

Proof .2.1 ABCD is a parallelogram, EAF is an isosceles triangle;

DAB = EDC = ECD = EFA and ABD = CED.

According to the similarity relation in the triangles, the EDC is similar to the BAD triangle. This similarity

$|AB| = |BD| = |CD|$=b, $|GD| = |CH| = a$, $|ED| = c$, $|AD| = d$

To be, $\frac{|AB|}{|ED|} = \frac{|AD|}{|CD|}$, $\frac{b}{c} = \frac{d}{b}$ and $b^2 = d.c$. (1)

When you write a force in the circumference of a triangle;

$|GD|.|DH| = |AD||DE|$ and c.d= a(a+b) . (2)

From (1) and (2) are taken into account. (3)

(3) gives us $\frac{b}{a}=\frac{a+b}{b}$ gold ratio , then D divides CG in the golden ratio.

Let's be a = 1 ; When the equation is solved $b^2-b-1=0$. Golden number is found

$$. \ b_{1,2}=\frac{1\pm\sqrt{5}}{2}$$

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