



## SCULPTURE, EXTENDED NATURE

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### ABSTRACT

*The paper portrays some aspects that show how nature is implemented into the graphic values domain by confronting the physical image of the artistic subject. The article presents some rules that have marked over time the representation of the human body in sculpture, based on the subtle game of proportion. There are also presented brief studies of works of art based on an analysis of framing surfaces the sides of which are in the golden section ratio.*

KEYWORDS: sculpture, canon, proportion

### 1. Introduction

The models that are the bases of obtaining by casting the statues are all artistic creation, and the task of reproducing their exact form belongs to the foundry worker who creates those unique meaningful and sustainable pieces, exact copies of models in clay or plaster.

Taking into account that without shaping metal or alloy, taken by the rat, it would not be possible to obtain statues, thus the work of the two artists is very important. As the model is crucial, the artist has been always looking for the best, most expressive and not at least, the most well proportioned form.

Since ancient times, when statuary art appeared, artists have been seeking to represent objects such as nature represents objects not as anatomy does.

Excepting the relief located at a height, in which the deformations are specifically made to figure the real proportions, in all other cases, the harmonious arrangement of parts in volume and forms, was the constant preoccupation of artists.

### 2. The study of proportions

In classical Greece besides generalized processing bronze, human figure is represented in close correlation with the ideal proportions of the human body. When speaking of proportions, it is envisaged the dimensional relationship between its parts and between each part and the whole.

The study was based on the proportions of measurement systems that:

- took the whole as a unit (i.e. total body height) and then they split it into fractions: halves, quarters, sixths, eighths, etc.;

- took as a unit of measure one side of the human body, the so-called mode: head height, foot length, hand length, etc.

Realizing that the beauty of a figure lies primarily in scale, artists were concerned from the earliest times to find those ideal relationships between body sizes, that provide perfect beauty solution. Thus there were born, through the centuries, the canons or the systems of proportions. Each canon comprises a group of human body proportionality rules and suggests a certain aesthetic type. In all civilizations before the Greek one: Egypt, China, India, the canons rendering the human body were almost entirely conventional, its representation is the result of mechanical application of the canon. The first canon in its true sense, the Greek one, is linked to Policlet of Argor (450 - 400 BC), sculptor and theorist of art, in whose creation predominates figures of gods, heroes and winning athletes. He created the "canon" on the ideal proportions of the human body, on which he wrote a treatise.

His work "The Dorifor" (Fig. 1) illustrates this theory, but it is known only through Roman copies.

Policlet based his proportionality on human body parts, so on organic elements, rather than on conventional methods.

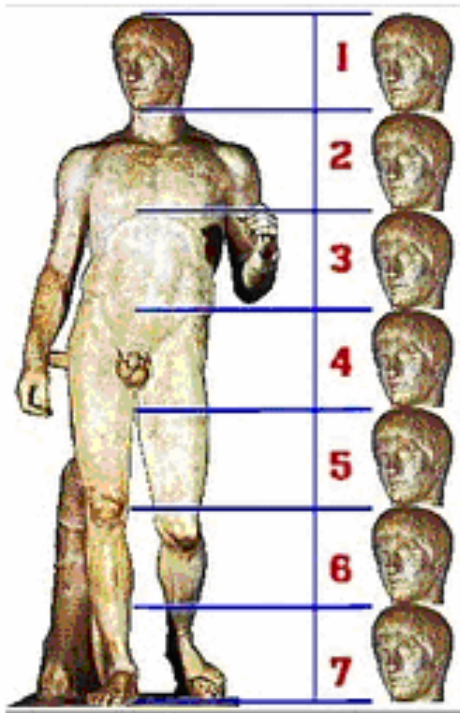


Fig. 1. The Dorifor man of 7 heads high.

Thus, the representation of the human body is not the result of the canon, but the result of studying the body.

The canon statue "The Dorifor", known as the "Seven-Headed Man" (due to the fact that his head height is equal to 1/7 of the total face height figure of the character) has remained, for a long time a model for artists after Policlet, having in addition to the works of that time a valuable attribute namely the movement. The Greek sculptor Lysip, who knew Policlet's work, has developed another proportionality in which the head as a module contains eight times the body height. Over time there have been some other canons: the Roman architect Vitruvius's (first century BC), of eight heads, the Durer's of 7, 8, 9 and 10 heads etc.; all having in common the arithmetic mode with whole numbers or with fractions. The multitude of variants shows that the proportions had not a generally valid form of expression. Only at the middle of the nineteenth - century, Adolf Zeising (1810 - 1876) discovered that there was a law of proportionality which predominated in nature and governed the proportions of the body of each individual, man or woman of any age, any race, in any moment of a lifetime, etc., i.e. a universal law and that law is the section of gold.

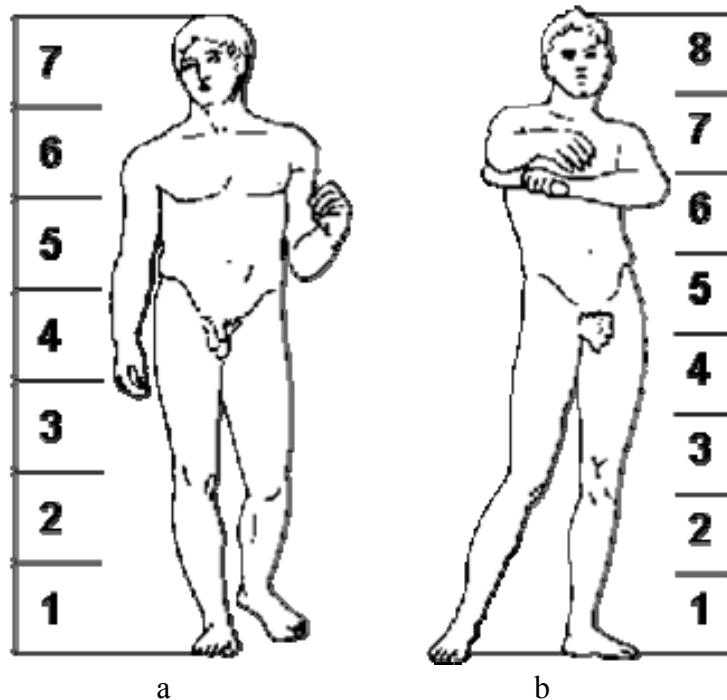
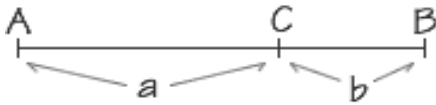


Fig. 2. The Greek canons: a-Policlet's canon; b-Lysip's canon.

On a straight line segment AB (with extreme points A and B) there is a single point (C) which divides it into two parts so that the ratio between the whole segment and the largest side is equal to the ratio between the largest (called a major part, marked

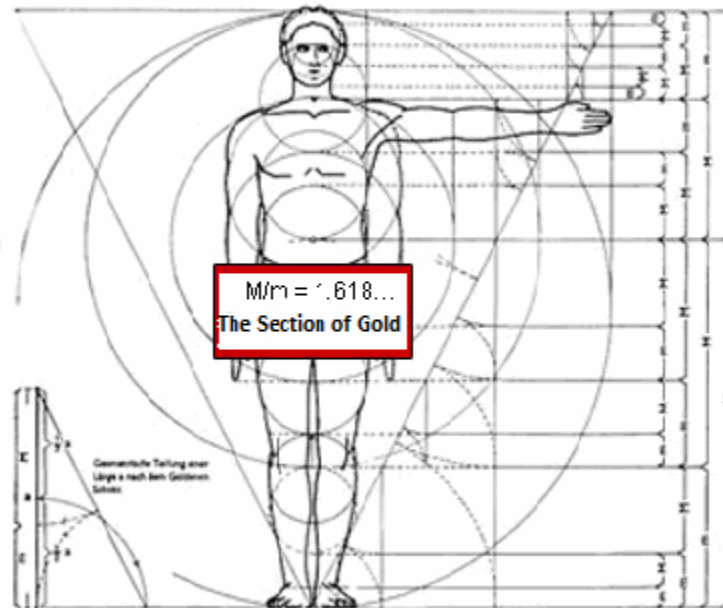
by M) and the smallest (sometimes called minor and marked by m) side ( $AB / AC = AC / CB$ ) and vice versa. This way to divide a segment has several interesting properties, some of them rather strange,

that's why it was called the golden section (Fig. 3) marked by  $\Phi$  (equal to the ratio  $M/m = 1.618$ ).



**Fig. 3.** Dividing a straight line segment, AB, into two parts by a third point C.

It was found that the navel divided the total human height by rules of the golden section (no matter the absolute value of total height), that each of the two segments of the total height thus obtained (down-navel and top-navel) is also divided by golden section; that each of the four segments thus obtained are divided again by the golden section, etc (Fig. 4).



**Fig. 4.** The human body proportions after Zeising.

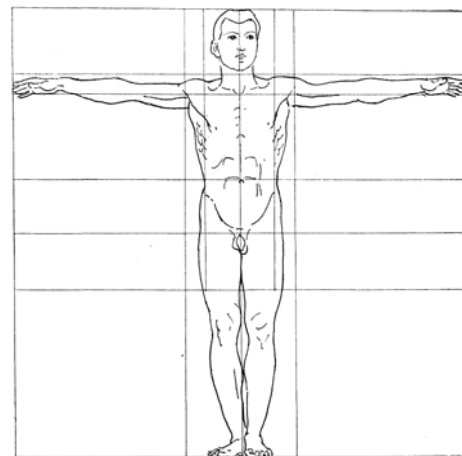
### 3. The proportions and the golden number

In the early twentieth century, Hambidge imagined a new theory of human body proportions based on an analysis of framing surfaces the sides of which are found in the ratio of the golden section or in related ratios.

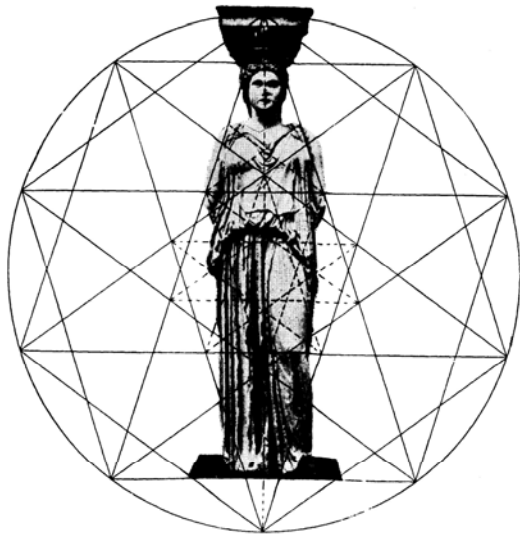
The Golden section relations are found in the geometric figures, which are derived from regular pentagon, the pentagram and the star polygon and convex and star decagon.

Relationships between the sides of these geometric figures and the radius of the circle are dominated by the ratio  $\Phi$ . The harmonic analysis of a nude by the square and the golden section is shown in Figure 5.

Based on a guided route by a double pentagon Lucie Wolfer - Sulzer made an analysis of a Kore in the Temple Erechteion (Fig. 6).



**Fig. 5.** The harmonic analysis of a male nude by square and golden section.



**Fig. 6.** *The analysis of a Kore in the temple Erechteion by double pentagon (of Lucie Wolfersulzer Urbild Abbild und der Griechischen Form 1941).*

Using the same route of the double regular pentagon (called the pentagram) the architect Adrian Gheorghiu prepared analytical files on some of Brancusi's sculptures.

Figure 7 shows one of these analyses on the statue "Prayer", where he used the same route of the double regular pentagon, in which different sides, diagonals and axes cross each other making ratios and proportions or triangles and rectangles corresponding to the number  $\Phi = 1.618 \dots$

The figure registers mainly into the inclined A'B'D triangle.

The parallel inclined diagonals AB, C'E', EC, A'B' points, separate or connect key elements of the composition: forehead, arms hook, line thighs, feet.

Note the oblique axis DD', the right hand wrapped at the intersection of the diagonals AC, BE, C'E' and the outer contour of the back on the directions D'B', A D C'A', so that the triangle ACD also enters the composition so the inclined attitude is emphasized.



**Fig. 7.** *The Prayer, 1907, The Art Museum of Romania.*

#### 4. Conclusions

Geometry and space science are for graphic artists the arranging support of forms, the logical principle of organization of the graphic space.

Geometric unification, as shown, is the main means of arranging, but it never fails to exercise its domination over freedom of variation of the details that retain the viable initiative in motion in the orbits and paths between the monotony of scheme and the chaos of variation.

Art obeys the most general law of matter, the one that unifies order and deviation, rigour and exception, constraint and freedom, rule and repetition with creative imagination.

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