Beauty in the Phi of the Beholder – By Hanis Naimi Hasli

A young girl shuffled across the pavement as the leaves crunched under her feet. She seemed young, though. Maybe around her teenage years. She was searching for something. Her eyes kept switching from the map on her phone and her surroundings before her brown orbs fixed this one particular premise between the others. Her steps became quicker, and she managed to let out a relieved sigh as she finally stood at the front door. Her hair was wavy and it flowed over her shoulders as she walked in. There was a trace of nervousness and excitement in her voice as she talked with the medical receptionist. Why?

Because it is the day she had been waiting for: her very own cosmetic surgery.

That may be a story of one in 18 million people in the world who had taken the risky path. The obsession to have an appealing facial presence consumed those people until they are blinded to understand the true meaning of it. Some people will go as far as changing their natural appearance because of the insecurities within themselves, even if it means going under the knife. The majority nowadays, especially women, tend to keep up with trends and outfit just to look beautiful, but what actually the word 'beautiful' truly defines?

Beauty is best to be described as the objects' features that make these objects pleasurable to perceive; such objects include landscapes, sunsets, humans and works of art. Standards of beauty have changed over time, based on changing cultural values. Today's standard is more to the direction of having blonde hair with blue eyes, double eyelids, fair skin and etcetera. Some prefer tan-skinned like the Asians while some prefer having freckles. Although the society seemed to be repeating 'don't judge the book by its cover', the sentence of 'having the first best impression' will win at last in this reality.

At present, South Korea is widely considered the ‘plastic surgery capital’ of the world, boasting the highest number of cosmetic procedures per capita worldwide, with more than 600 clinics in Seoul alone. Some of the teenagers ask for their parents to have cosmetic surgery as a graduation gift and the parents have no problem with it. The most common cosmetic procedure for those ages 18 and below is Rhinoplasty, a surgery that changes the shape of the nose. Those who are 19 and above prefer to have Botox (Botulinum toxin) injections which are noted primarily for the ability to reduce the appearance of facial wrinkles, especially among the age of 35 – 50 which were calculated about 2,888,647 procedures.

People also be likely to confuse between cosmetic surgery and plastic surgery. Cosmetic surgery is a unique discipline of medicine focused on enhancing appearance through surgical and medical techniques and it can be performed on all areas of the head, neck and body. Due to the treated areas function properly but lack aesthetic appeal, cosmetic surgery is elective. Plastic surgery, on the other hand, is defined as a surgical speciality dedicated to the reconstruction of facial and body defects due to birth disorders, trauma, burns, and disease. Plastic surgery is intended to correct dysfunctional areas of the body and is reconstructive in nature.

Also, we must aware the surgeons do not just go and point their blades whichever way they please. How can they figure out how to construct the patient’s nose to a better structure? Or how can they make sure that the patients will get their double eyelids that they always dreamt of?

Early mathematicians detected that there is seemed to be a pattern. This is what is called the 'Golden Ratio'. It can also be called Golden Mean, Golden Section, Golden Triangle, Extreme And Mean Ratio, Medial Section, Divine Proportion, Divine Section, Golden Proportion, Golden Cut and Golden Number. The ratio is derived from something called the Fibonacci sequence, named after its Italian founder, Leonardo Fibonacci.

The Fibonacci numbers, commonly denoted, form a sequence or Fibonacci sequence, such that each number is the sum of the two preceding ones, starting from 0 and 1. That is;

$F_0 = 0, \qquad F_1 = 1,$

and

$F_n = F_{n-1} + F_{n-2}$

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. Expressed algebraically, for quantities a and b with a > b > 0;

$$\frac{a+b}{a} = \frac{a}{b} \stackrel{\text{def}}{=} \varphi$$

It is symbolized by the Greek letter Φ which has a constant value of Phi=1.618. It is an irrational number that is a solution to the quadratic equation $x^2 - x - 1 = 0$ with a value of:

$$\varphi = \frac{1+\sqrt{5}}{2} = 1.6180339887\ldots$$

Mathematicians since Euclid have studied the properties of the golden ratio, including its appearance in the dimensions of a regular pentagon and in a golden rectangle, which may be cut into a square and a smaller rectangle with the same aspect ratio. The golden ratio has also been used to analyse the proportions of natural objects as well as man-made systems such as financial markets, in some cases based on dubious fits to data. The golden ratio appears in some patterns in nature, including the spiral arrangement of leaves and other plant parts.

Some twentieth-century artists and architects, including Le Corbusier and Salvador Dalí, have proportioned their works to approximate the golden ratio, believing this to be aesthetically pleasing. These often appear in the form of the golden rectangle, in which the ratio of the longer side to the shorter is the golden ratio. Some of the masterpieces are Villa Savoye, Notre Dame du Haut, Ville Radieuse and Unité d'Habitation de Marseille.

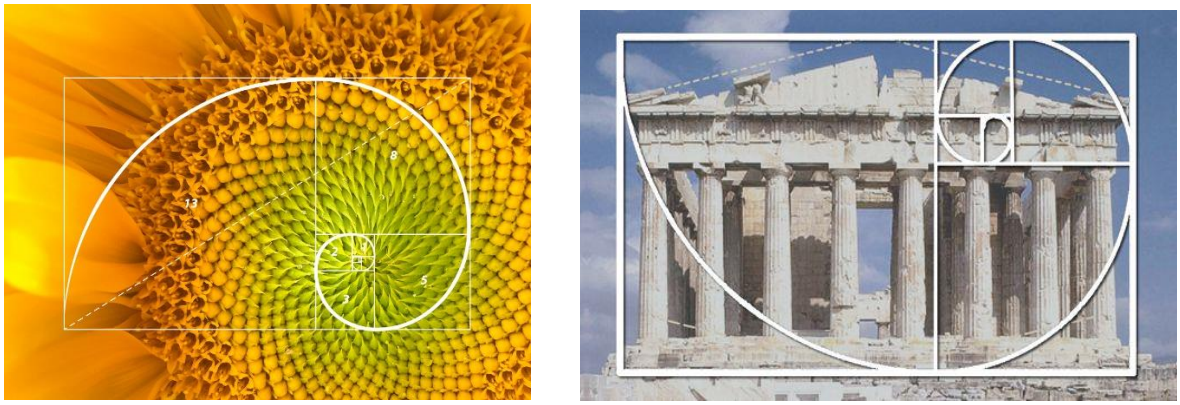

Figure 1: The Golden Ratio in nature and ancient buildings.

Besides architectures and natures design on plants, it is also the numerical definition of ‘perfect’ beauty dates back over 2500 years. Leonardo da Vinci used the ratio to define symmetry in structures, including the human body in which is aesthetically pleasing to the human eye. In Da Vinci’s study, it is the proportion of the measurements of a person’s body parts in relation to another body part. Observed in nature, it seems that there is a repeated pattern that has symmetry with a complex explanation. In humans and animals, it appears to be a genetic code that is passed on from generations through DNA. It cannot be created at will, but only by nature. To further explain this relation, the number, or the ratio, is found by dividing the object into 2 parts. It must be divided so that the longer part divided by the smaller part is also equal to the whole length divided by the longer part.

Let’s say you compare the measurements of the two body parts, like the nose denoted by a to the lips denoted by b. Then the ratio is computed as:

$(a + b)/a = a/b$

$= 1.6180339887498948420 ...$

$= \Phi$ (phi)

The ratio refers to a ‘triangle’ of aspects for facial beauty; the width of the mouth to the width of the cheek, the width of the nose to the width of the cheek and the width of the nose to the width of the mouth. The result is a healthy, natural appearance – not over-enhanced or age-defying. It might sound like a cookie-cutter version of beauty, but in the application by a skilled surgeon, it tailors the objectives of the surgery around the proportions of – and distances between – each patient’s unique characteristics.

This can be seen in the Blepharoplasty process - a type of surgery that repairs droopy eyelids and may involve removing excess skin, muscle or fat, and most people choose this process to get double eyelids. The doctors need to find the palpebral ratios to do the surgery.

Preoperative	
Height of eyebrow–eye unit	A1
Eye fissure length	A2
Distance of eyebrow to upper lid margin	A3
Eye fissure height	A4
Iris diameter	A5
Height of exposed iris	A6
Postoperatively	
Height of eyebrow–eye unit	B1
Eye fissure length	B2
Distance of eyebrow to upper lid margin	B3
Eye fissure height	B4
Iris diameter	B5
Height of exposed iris	B6
Distance of eyebrow to fold peak	B7
Height of fold (pretarsal show)	B8
Distance of fold peak to lower lid margin	B9

Figure 1: The palpebral parameters were measured by an electronic calliper using a computer monitor by the same investigator.

Preoperatively vertical ratio of exposed iris to iris diameter	A6/A5	0.636±0.099
Postoperatively vertical ratio of exposed iris to iris diameter	B6/B5	0.794±0.087
Preoperatively ratio of height to length of eye fissure	A4/A2	0.316±0.047
Postoperatively ratio of height to length of eye fissure	B4/B2	0.398±0.039
Preoperatively vertical ratio of eye fissure to eyebrow–eye unit	A4/A1	0.362±0.049
Postoperatively vertical ratio of eye fissure to eyebrow–eye unit	B4/B1	0.480±0.061
Vertical ratio of pretarsal show to eyebrow–eye unit	B8/B1	0.155±0.031
Vertical ratio of pretarsal show to eye fissure	B8/B4	0.328±0.078
Vertical ratio of subunit below fold peak to eyebrow–eye unit	(B4 + B8)/B1 or B9/B1	0.652±0.055
Ratio of height of subunit below fold peak to eye fissure length	(B4 + B8)/B2 or B9/B2	0.542±0.037
Increment of vertical ratio of exposed iris to iris diameter	(B6/B5) – (A6/A5)	0.158±0.106
Enlargement of exposed iris height	(B6/B5)/(A6/A5)	1.274±0.230
Increment of ratio of eye fissure height to length	(B4/B2) – (A4/A2)	0.080±0.053
Enlargement of eye fissure height	(B4/B2)/(A4/A2)	1.279±0.232
Increment of vertical ratio of eye fissure to eyebrow-eye unit	(B4/B1) – (A4/A1)	0.118±0.064
Enlargement of eye fissure in eyebrow-eye unit	(B4/B1)/(A4/A1)	1.344±0.210
Increment of visual ratio of eye in eyebrow-eye unit	(B9/B1) – (A4/A1)	0.289±0.059
Enlargement of visual ratio of eye in eyebrow-eye unit	(B9/B1)/(A4/A1)	1.826±0.243
Enlargement of visual ratio of eye fissure height to length	(B9/B2)/(A4/A2)	1.734±0.260

Figure 2: The relative proportions of various parameters were calculated to analyze alterations in the eye configuration after double eyelidplasty/Blepharoplasty.

Some suggest that facial features that adhere to the Golden Ratio are physically more attractive. As cosmetic surgeries can bring the facial features into better balance and improve the Golden Ratio of the face, it can enhance the overall appearance. Rhinoplasty is a surgery that changes the shape of the nose. The nose is the central facial feature and often defines the appearance of the entire face. A nose that is too large can detract from other facial features. A few small tweaks to the size or shape of the nose can dramatically impact facial appearance with this process. Another type is the facial implant where it can improve the balance and proportion of the face, especially in patients with a weak chin or jawline. Many cosmetic surgery clinics offer cheek, lip, chin, and jawline implants. Facial implants are made from solid materials that are safe and compatible with bone and tissue. They offer long-lasting augmentation and enhancement to the area where they are placed.

A perfect Golden Ratio isn't essential for facial beauty, but balance and harmony certainly are. Although physical beauty could sometimes make people behave like they were under a cast of a magic spell, let's not forget that the beauty of the heart and soul is the best beauty there is in the world. It would be such a waste if the world is full of good-looking humans walking around when morale is ignored by every one of them. Everyone is beautiful. It is just that we lived in a judgmental society. Whether you are white, brown, black, tall, short, with or without double eyelids – at the end of the day, we are still humans that share the same air and live under the same sky.