Quest for the Golden Egg

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Abstract

What makes the egg shape so interesting? I will explain the function and meaning the egg shape has for me, and I will discuss how it relates to other natural structures and shapes. My eggshell paintings are spatial collages of white shells, arranged in a mathematical structure on white panels.

Introducing Eggs

My eggshell artwork "H-spiral" (Figure 1) was an award-winner at the 2018 Bridges Conference. I have been fascinated by the egg for 25 years, and I was inspired to take a closer look at the egg shape. What would my ideal egg shape look like? I use the egg shape in my art, and I would like to explain its function and meaning to me, how it can evolve and deform, and how I think it relates to other natural structures and shapes.

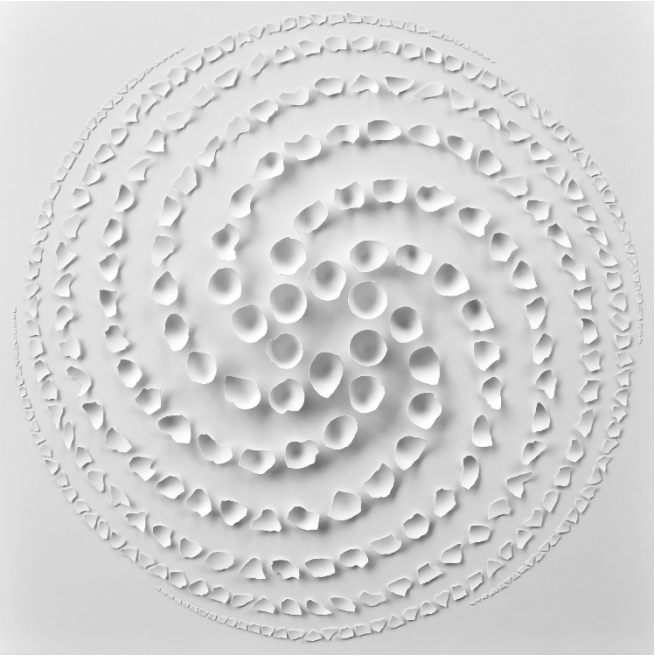


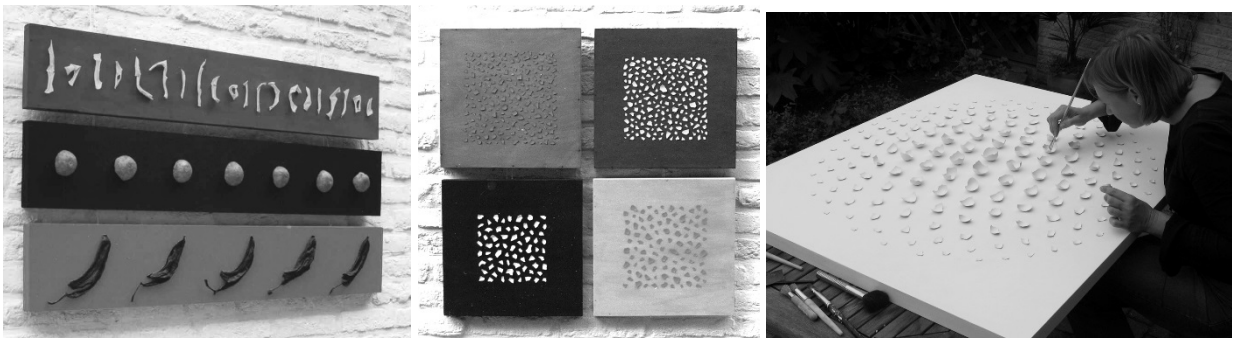
Figure 1*: Artwork of goose eggshells on wooden panel,100 x 100 cm, H-spiral, 2018.*

"A pupil may, as far as I am concerned, inform himself of all the secret numerical learning and measurement systems in the world, if he does not forget one thing: that everything comes down to looking with your own eyes." – J. J. Beljon [1].

A great inspirer who has taught me to look in a different way at shapes has been Joop J. Beljon (1927-2002), a Dutch artist, lecturer, author and art director of the Royal Academy of Art in The Hague from 1961-1985. I never met him, but I regularly read his book titled: "Zo doe je dat – Grondbeginselen van vormgeving" (translated: "That's how you do that – Fundamentals of design").

Origin of Eggshell Artworks

In 1992, I made 3D collages from packaging of all kind of food products. Food packaging is originally an invention of nature: shells and peels protect seeds, fruits, nuts and eggs. Based on this, I dried all kinds of peels, which I then painted in bright colors and stuck on panels with a contrasting color, so that the silhouette of the various peels was clearly visible (Figure 2a). However, the peels of apples, oranges and bananas quickly shrink when the fruit is no longer in it. Nuts and bird egg shells, on the other hand, retain their shape and are easy to store.



(a) (b) (c)

Figure 2: *(a) Dried fruit peels on panel, 1994, (b) Colored eggshell panels, 1994, (c) The first large (chicken) eggshell artwork in white, 2006.*

The idea of using eggshells for artworks is obvious and not obvious for one and the same reason: they are fragile. Therefore, I started with small pieces. I made patterns on wooden panels with shells of chicken eggs. First as a kind of mosaic in all sorts of color combinations (Figure 2b) until I discovered that broken eggshells in themselves already yielded exciting shapes. From then on, the designs changed from mosaics to straight and later to curved grids. The use of color also changed from brightly colored eggshells and panels to white on white (Figure 2c). The whimsical shapes of broken eggshells are particularly useful on a white background because then light and shadow also play a role. The optical effect is enhanced by a geometric pattern.

Making Large Eggs

To get the egg out of the existing context and to get more feeling about the egg shape, I started looking in 2002 for a way to make large eggshells. A quick way was to use papier-mâché by wrapping paper around balloons (Figure 3a). I then cut my own large eggshells from the paper balloons and painted them white (Figure 3b). These large egg shells give a different dimension to the environment than the eggshells of chicken eggs. Shortly thereafter I laid an egg myself and in 2004 my son Timo was born! Unfortunately, postpartum depression stagnated my work as an artist and journalist for quite a few years.

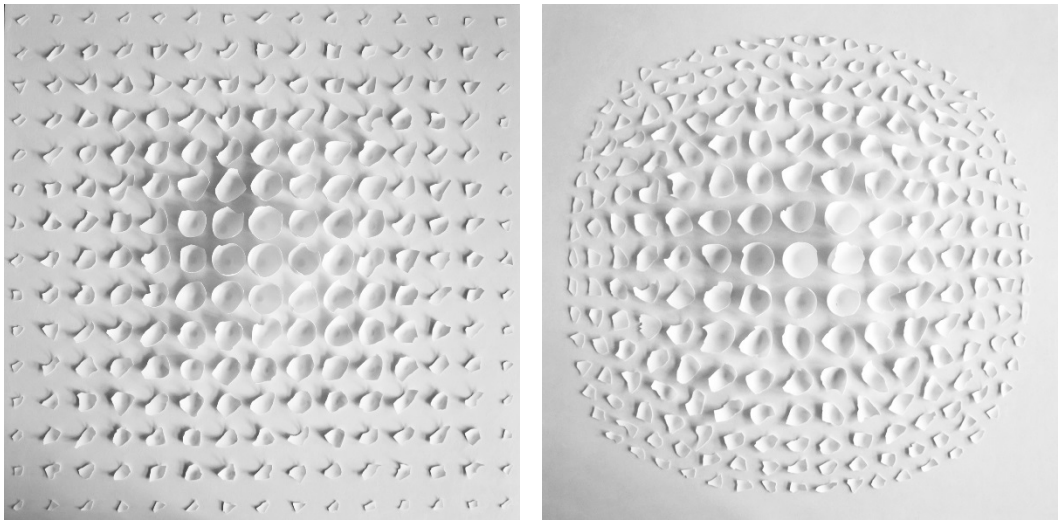
(a) (b) (c) (d)

Figure 3: *(a) Balloon eggs of paper, 2002, (b) Shells of paper painted white, (c) Clay egg in two halves, (d) A ceramic egg in nature, 2008.*

Eventually, the paper eggshells gave rise to the idea of making ceramic eggs (figure 3d and 3d). In 2007 I followed a ceramics course. Because I wanted to make several eggs, I needed a mold. But to be able to make a mold you must first have the desired shape. An inflated balloon comes pretty close to an egg shape, but that wasn't the egg shape I had in mind. What shape and dimensions should my egg have? It took me four attempts to find my ideal egg shape. My first attempt consisted of a large circle and a small circle on top of each other and from there I found the right curve in three iterations.

Geometrical Design in Eggshells

From 2012 I decided to switch from chicken to goose eggshells. These large, strong and white eggshells lend themselves to geometric patterns on larger, white panels. The first two panels were commissioned by a restaurant owner and the dimensions of the panels were set at 100 x 100 cm. The design for both panels became the same: a circular surface with the spatial effect of a sphere. This optical effect is obtained by varying the size of the eggshells, starting with large shells from the center to ever smaller pieces up to the edge of the circle. I really enjoyed the optical effect and started thinking of two new, totally different geometric designs. One became a precisely defined grid (Figure 4a) and the other became a hybrid between a framed grid that with curved corners (Figure 4b). To my surprise, both paintings were bought immediately from the first glance by two different buyers.



(a) (b)

Figure 4: *(a) Quadrivium, 2014, (b) Universe, 2014 (b).*

Evolution of a Shape

An egg is a universal shape and symbol for the origin and evolution of life but for me it also represents the thinking, creating and playing human being. Just like a cocoon, the egg carries expectation. You feel that something is happening inside, a mysterious, incomprehensible process. Apparently out of nothing a new life arises, cells divide until a new, living, self-contained being arises (Figure 5). An egg has a strong plastic appearance, which I believe is due to the combination of horizontal symmetry and vertical asymmetry. The blunt convex side indicates volume, the pointed side indicates direction. It offers the possibilities to create many forms with little space and time. This drawing was the starting point for me to get into sculpting.

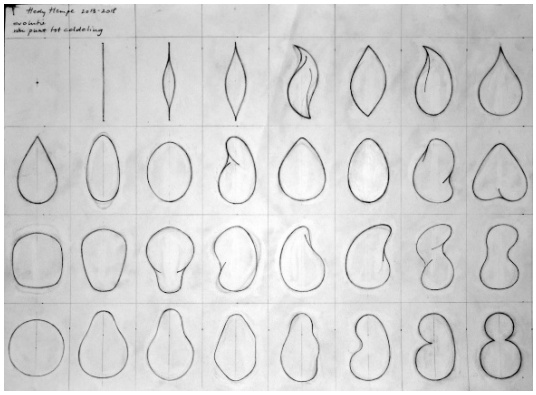


Figure 5: *'Evolution of a shape', 2015.*

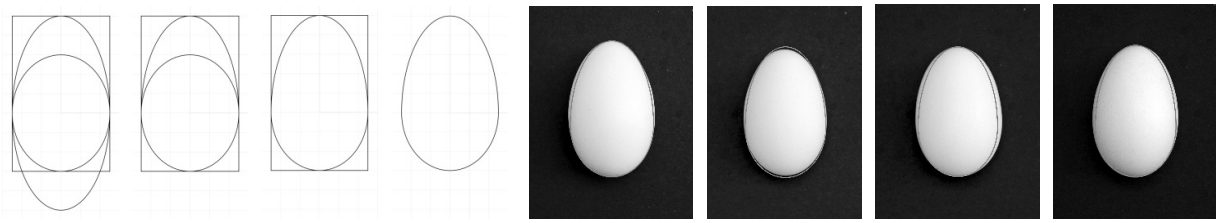
White is the Magic Color

My eggshell paintings are spatial collages of white shells, arranged in a mathematical structure on a white panel (see Figures 1, 2c, 4a and 4b). Light and shells are creating shadow effects, which makes the

image graphic and dynamic. As the degree and direction of the incidence of light changes, the appearance also changes. The kinetic effect is an interplay between 3-dimensionality, geometric pattern and light. An eggshell consists of about 95% $CaCO_3$ (chalk). This makes the egg shell white. The first white paint used by Paleolithic artists was made of chalk. White is the lightest color and is achromatic (having no hue), because it fully reflects and scatters all the visible wavelengths of light. Pure white paint does not exist. Each white has a certain shade. Today white paint is mostly made of titanium dioxide or zinc oxide.

A Perfect Egg

Recently I have been wondering if I could think of a perfect egg shape. According to nature, every egg is perfect as long as it fulfils its purpose. For that reason it is impossible to reconstruct the perfect egg shape, but I have a certain image in my head of an ideal egg stature. In my opinion, to find a constructive, ideal egg shape you cannot escape certain geometric rules. You simply have to deal with symmetry, curved lines and proportions. I photographed and measured 40 eggs of tame geese. Goose eggs have visible variations in size and shape but the differences are limited. It is interesting to see that the shapes of goose eggs vary from more spherical to almost ellipsoid shapes. Measurements of 40 goose eggs: width/diameter varied between 4.9 cm-5.9 cm, length varied between 7.3 cm-8.9 cm. These intervals contain the Fibonacci numbers 5 and 8, so I used those in my construction (Figure 6a). I used a combination of two ellipses and found this fits quite well with the real goose eggs (Figure 6b).



(a) (b)

Figure 6: *(a) Egg of 2 ellipses in rectangle according to Fibonacci ratio numbers 5:8, (b) Real goose eggs compared to egg shape of 2 ellipses according to Fibonacci ratio.*

Summary and Conclusions

Does a golden egg exist? Nature is not perfect but in geometry a golden egg exists. According to the fairy tale the golden egg is the egg of a goose. The egg of two ellipses is not perfectly symmetric, but the pointy top makes it more eggy. To my surprise a goose egg resembles a 2-ellipses shape very well. Complexity is the visible evolution of an ideal line or shape in chaos, space and time. Natural materials challenges us to find new structures and shapes. Both the scientist and the artist need imagination to develop ideas about shaping, without a source of inspiration there is no progress in process.

Acknowledgements

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References

[1] J.J. Beljon. *Zo doe je dat – Grondbeginselen van vormgeving*, 1976, Uitgeverij De Arbeiderspers Amsterdam, pp. 215.