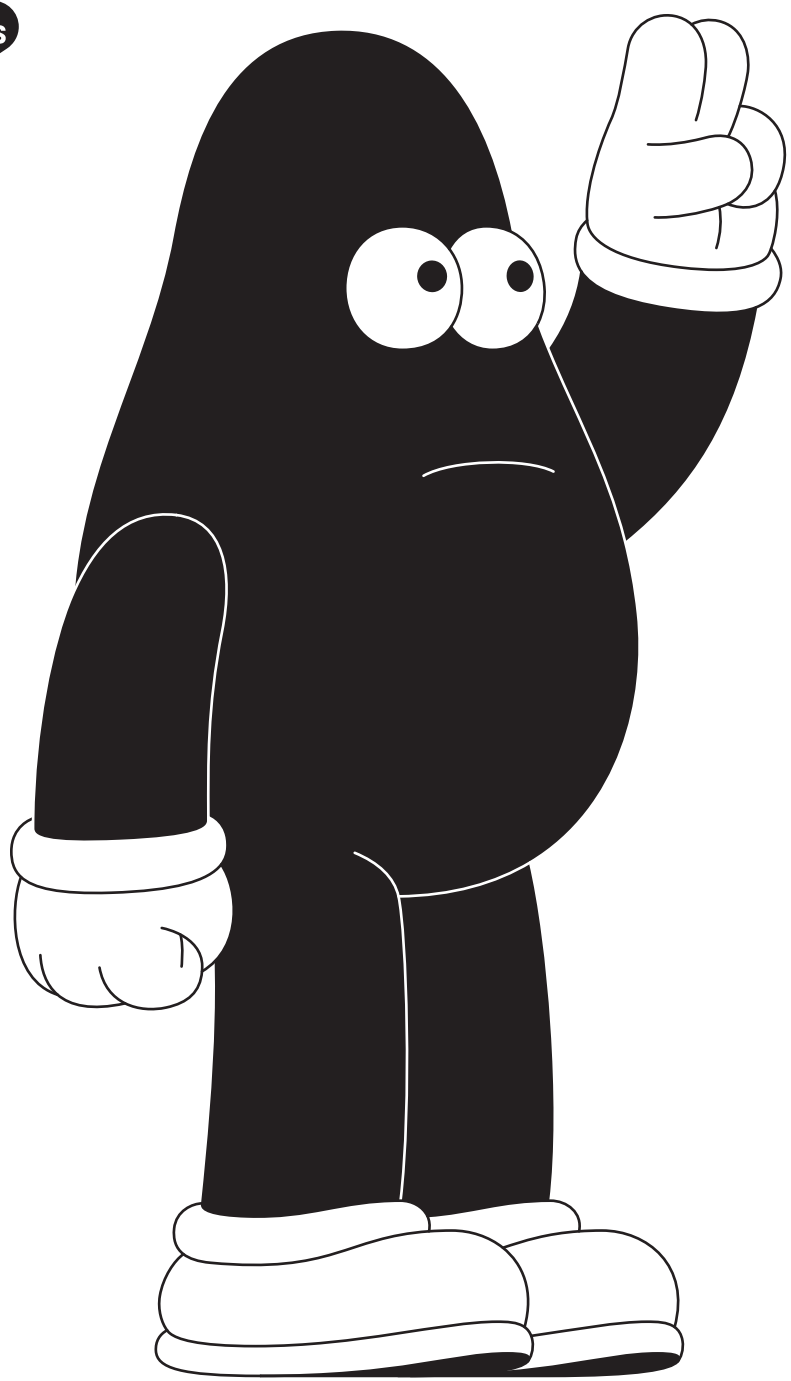


YOD

Object

Yod is the culmination of ten years experience in the design and production of independent toy figures. In 2003 Amos set out on an ambitious project to produce a definitive soft vinyl figure that would set the benchmark for similar products in future. Extensive research and development programmes were put in place to gather the necessary data and expertise to create the ultimate paradigm for such a product. Amos realised that to achieve their objective they would need to look to sources outside of those used for conventional soft vinyl figure design. A research team was assembled to explore disciplines not traditionally associated with toy design. Under the leadership of the esteemed illustrator James Jarvis, a visual manipulator widely acknowledged to be at the top of his field, the team set out to consult specialists in areas of Maths, Physics, History, Philosophy, Esoteric Theory, Theology, Music and Art.

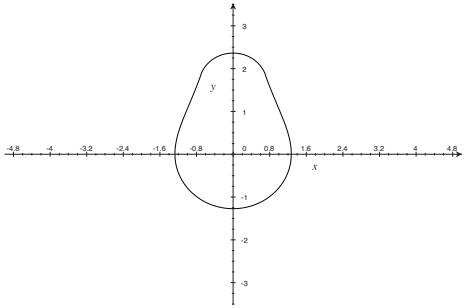
Idea

A fundamental element that came from this diverse research was the decision to develop a product that used the principles of the Golden Ratio. Since Luca Pachioli [1] published his three volume modern appreciation of the theory, De Divina Proportione, in 1509, the properties of the Golden Ratio have captured the imagination of biologists, historians, musicians, architects, psychologists, mystics and artists. Since the early Renaissance, artists and architects have used the Golden Ratio to proportion their work. For example, the paintings of Leonardo da Vinci and Salvador Dali are said to adhere to the ratio, as are the modern buildings of Swiss architectural genius Le Corbusier [2].

The Golden Ratio has fascinated mathematicians since the time of ancient Greece [3], its frequent appearance in Geometry proving an irresistible allure to theorists.

In mathematics the ratio can be expressed as a constant, φ (Phi) which is written as (1+√5)/2. In practical terms, two quantities are in the Golden Ratio if the ratio between the sum of those quantities and the larger one is the same as the ratio between the larger one and the smaller. In the case of Yod, Jarvis used this ratio as the scaling factor around which he built a perfectly proportioned body.

Theory



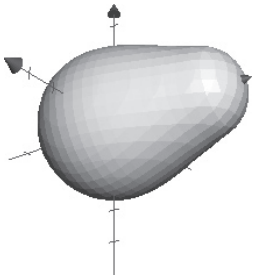
$$x^2=\begin{cases} \varphi-y^2 & 0\geq y \\ \varphi\cosh^{-1}(y) & \frac{\pi\varphi}{e}>y>0 \\ \frac{\Psi}{\psi}\frac{\varphi}{\pi}-(y-\varphi)^2 & y\geq\frac{\pi\varphi}{e} \end{cases}, \varphi=\frac{1+\sqrt{5}}{2}, \Psi=666, \psi=616$$

Fig. 1

Within the specified scale Jarvis also chose to utilise the mathematical properties of π (Pi, the most important geometric number also known as the Golden Number), *e* (the natural base number of all mathematic theory) and two interpretations of the Number of the Beast, 666 [4] and 616 [5] (the latter considered by some to be the Real Number of the Beast). The true meaning of these numbers have been deliberated on for almost two millenia but it is clear that they have historical, philosophical and mystical properties beyond their numerical values [6]. Because of their widespread significance, Jarvis chose to employ these numbers in the process of creating the master design for the body of Yod. For example, by dividing the false number of the beast 666 by the true number of the beast 616 in conjunction with the proscribed limit set by φ (The Golden Ratio) multiplied by π and then divided by e we get the perfect proportion for uppermost trisection of Yod (this being the highest point of the structure which faces up from the planet and so out into the heavens and beyond) (fig. 1).

The base of the body is a unit circle with a radius of φ (Phi), so creating a mathematically perfect shape conforming to the theories of the Golden Ratio and the application of Pachioli's theory in the production of art.

The central trisection for the shape of Yod is based on Imaginary Number Cos Theory. This relates specifically to the concept of imaginary numbers [7]. In mathematical terms $\cosh(x)=\cos(ix)$ where *i* represents the base imaginary number, which in this case is used to symbolise the creative imagination required to produce true great art.



$$x^2=\begin{cases} \varphi-y^2-z^2 & 0\geq y \\ \varphi\cosh^{-1}(y)-z^2 & \left(\frac{\pi\varphi}{e}>y\right)\wedge(y>0) \\ \frac{\Psi}{\psi}\frac{\varphi}{\pi}-(y-\varphi)^2-z^2 & y\geq\frac{\pi\varphi}{e} \end{cases}, \varphi=\frac{1+\sqrt{5}}{2}, \Psi=666, \psi=616$$

Fig. 2

When expanded on graphically and given a Z-axis, the original equations are given the dimension of depth and the shape of Yod becomes manifest, clearly demonstrating the relationship of the finished product to the application of the multifarious theories explored in the design process (fig. 2).

Conclusion

The method and approach to creating Yod was truly unorthodox. At Amos we feel this unique creative path has resulted in a very special product that breaks all boundaries of toy production. At Amos we believe that Yod will become a cornerstone for great future civilisations. One day it will be recognised as an important factor in the further growth and evolution of the species.

All Hail Yod!

Notes

1. Luca Pachioli (1445–1514). Italian mathematician and Franciscan friar. Sometime collaborator with Leonardo De Vinci. Considered to be the forefather of modern accounting.

2. Le Corbusier (1887-1965). Born Charles-Edouard Jeanneret but later chose to be known as Le Corbusier. Swiss/French architect famous for his Modernist, International Style buildings. Fascinated by the idea of the Golden Ratio, he used the theory for his Modulor system for the scale of architectural proportion. This system was crucial to his design philosophy.

3. Pythagoras and Euclid both studied the ratio and its properties because of its importance in regular pentagrams and pentagons. At the time, the discovery of the ratio was attributed to the Pythagoreans whose symbol was the regular pentagram with a regular pentagon inscribed within. Euclid is said to give the first known written definition of the ratio. "A straight line is said to have been cut in extreme and mean ratio when, as the whole line is to the greater segment, so is the greater to the less".

4. The Number of the Beast is a concept from the Book of Revelation in the New Testament of the Christian bible. "Here is wisdom. Let him that hath understanding count the number of the beast: for it is the number of a man; and his number is six hundred threescore and six". The beast referred to is generally believed to be the Antichrist. 666 is also an abundant number and interestingly, in mathematics, sin 666° = -½ x the Golden Ratio. Hence the expression, "The sign (sine) of the devil is the opposite of good, but only half as strong".

5. In 2005 a small piece of papyrus was found containing the earliest known version (late 3rd or early 4th Century) of the part of the Book of Revelation that discusses the Number of the Beast. Here the number assigned is 616. However the number 666 is still the most widely accepted sign for the Beast of the Book of Revelation.

6. 666 is an abundant number and so has many interesting mathematical properties, too numerous to expound upon here. It is also widely believed by many historians to be a numerical code for the Roman emperor Nero. This theory is given even more credence when one realises that the corresponding numbers to the Hebrew letters that spell the name Nero, add up to 666. Considering the early Roman persecution of both Jews and Christians it is easy to imagine them using clandestine codes to describe their Roman oppressors. Other recent theories state that the number is the mark of modern commerce, for example, being the number template for all generated barcodes. In chemistry one atom of the element Carbon, the know basis for all life, is made from 6 protons, 6 neutrons and 6 electrons. In Kabbalah (Jewish mysticism) 666 is considered to represent the physical universe and is seen as a mystical and holy number. And, rather interestingly, the Roman numerals for 666, DCLXVI, represent the first 6 Roman numerals written backwards (D, C, L, X, V, I).

7. An imaginary number is a complex number whose square is a negative real number. They were so named as they were considered fictitious and useless until the latter half of the 16th Century. It was a while before their existence became widely accepted as it is today in modern mathematics. One can understand that they are real numbers when considering that all numbers are abstractions and any abstraction can be valid when not recognized within any given context. For example, negative numbers are useless when keeping score during a soccer game but are of use when measuring the atmospheric temperature on the pitch. Imaginary numbers are applied in many areas including those of cartography, electro-magnetism and quantum mechanics.