FIBONACCI NUMBERS AND THE GOLDEN RATIO

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A NEW PERSPECTIVE BY K. STRANG

Fibonacci Numbers and the Golden Ratio

Leonardo of Pisa wrote a book in 1202 under the assumed name of Fibonacci. The book introduced Arabic numbers and produced a fractal sequence known as the Fibonacci numbers: start by adding 1+1 =2 then add the 2 to the number before it, 2+1 = 3, then 3+2 = 5 and so on. The sequence is infinite and produces tree-like fractals and spirals. This sequence occurs in many systems and natural processes – see the images below.

The Fibonacci Sequence generates the Golden Ratio. If the Fibonacci number is Fn, then the next number in the sequence Fn+1 = Fn + Fn-1 and so on. As n increases in value the ratio of the successive Fibonacci Numbers gets closer and closer to a certain value. The value it settles down to as n approaches infinity is called referred to as Phi or ϕ. This is the Golden Ratio and is approximately 1.61803399. It is considered 'divine' and crops up in the paintings of da Vinci and the sonatas of Motzart.