

# Leonardo da Vinci and Mathematics

By: Alex Casu

# Background

- Born in Anchiano, Italy in 1452
- Father was Ser Piero da Vinci, a notary
- Mother was Caterina, a peasant
- Illegitimate

# Education

- No formal schooling, self taught
- Apprenticeship with Verroccio. Stayed with him for over ten years, but Leonardo was certified a master painter within six.
- With the help of Pacioli, Leonardo finished Euclids *Elements*

# Artist and Sculptor

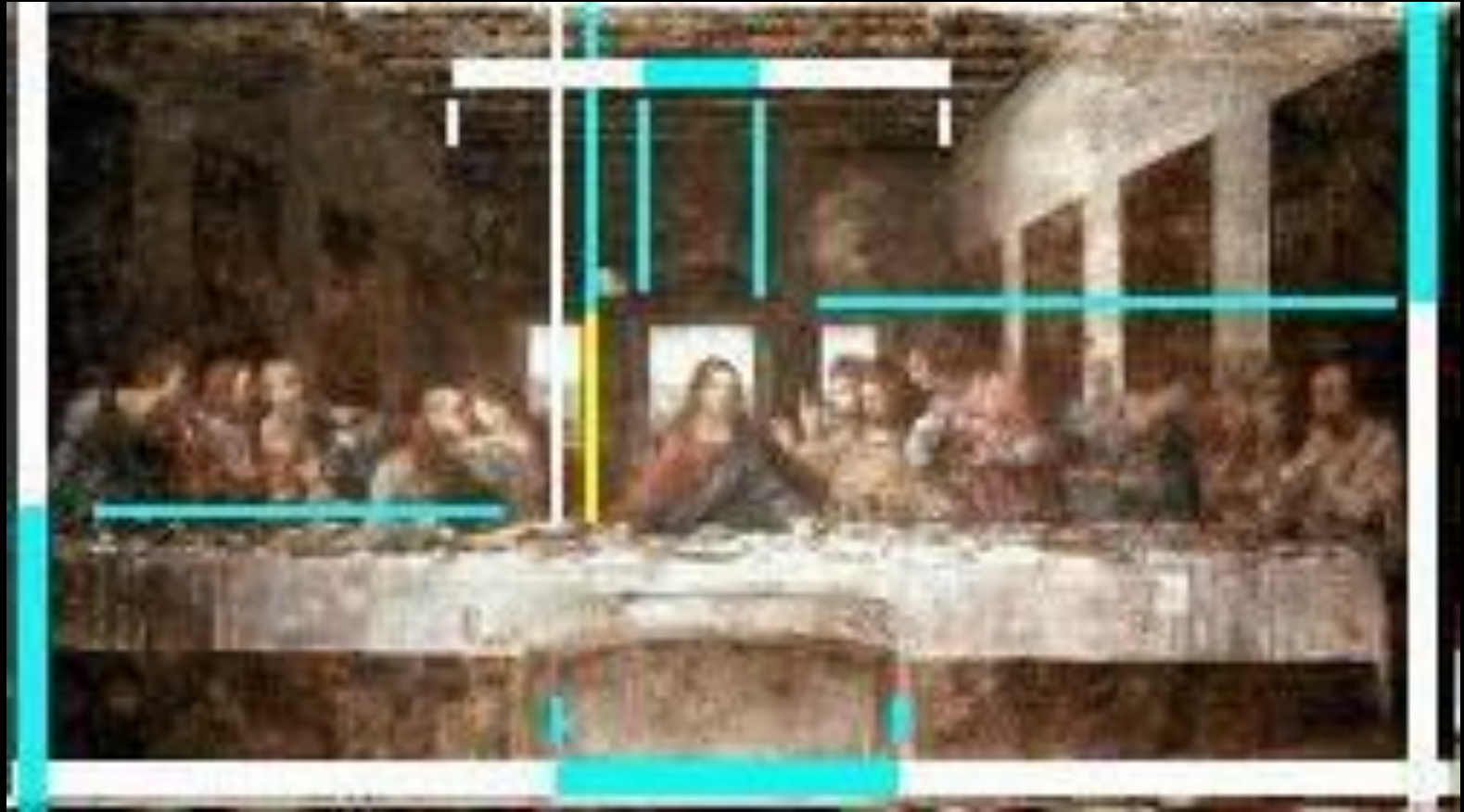


# Phi the Golden Ratio

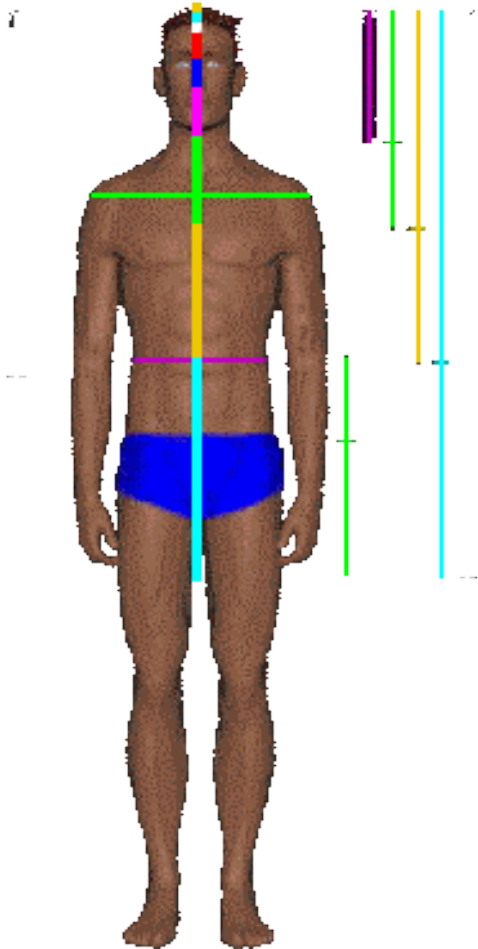
- Obtained through the Fibonacci series:  
1, 2, 3, 5, 8, 13, 21, 34, 55, 89, 144, 233...
- $(1+\sqrt{5})/2$
- AB is to CB as CB is to AC



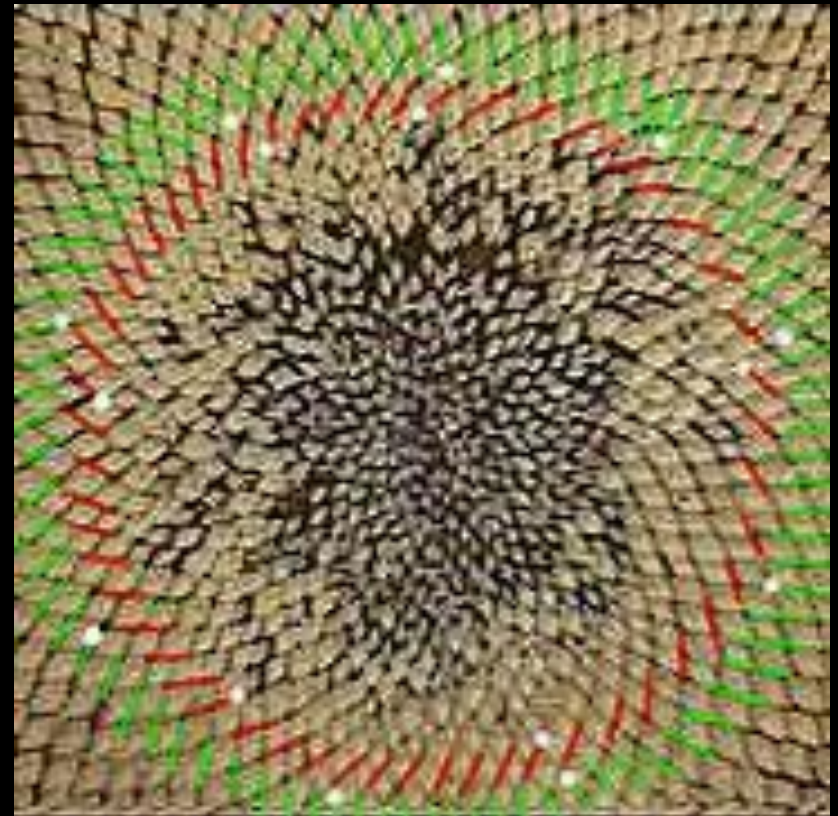
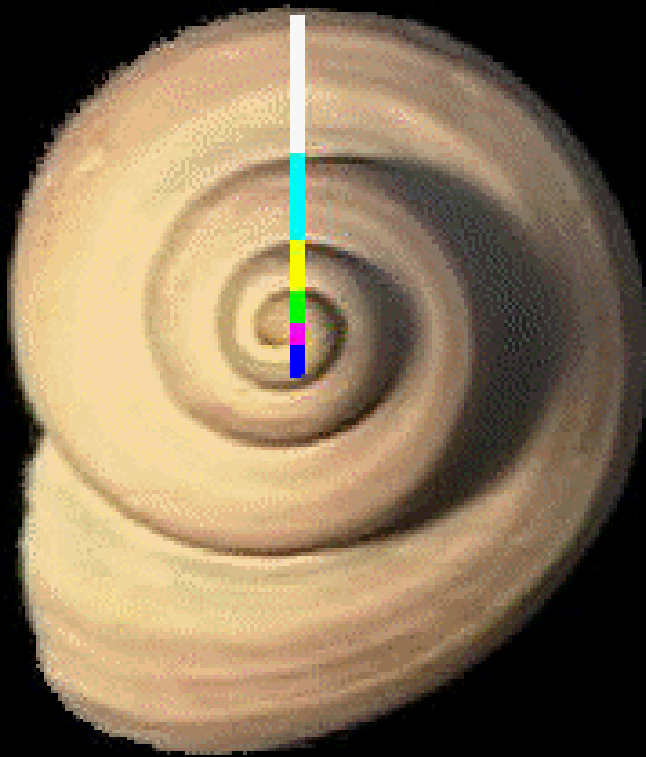
# Phi in Art



# Phi in Man



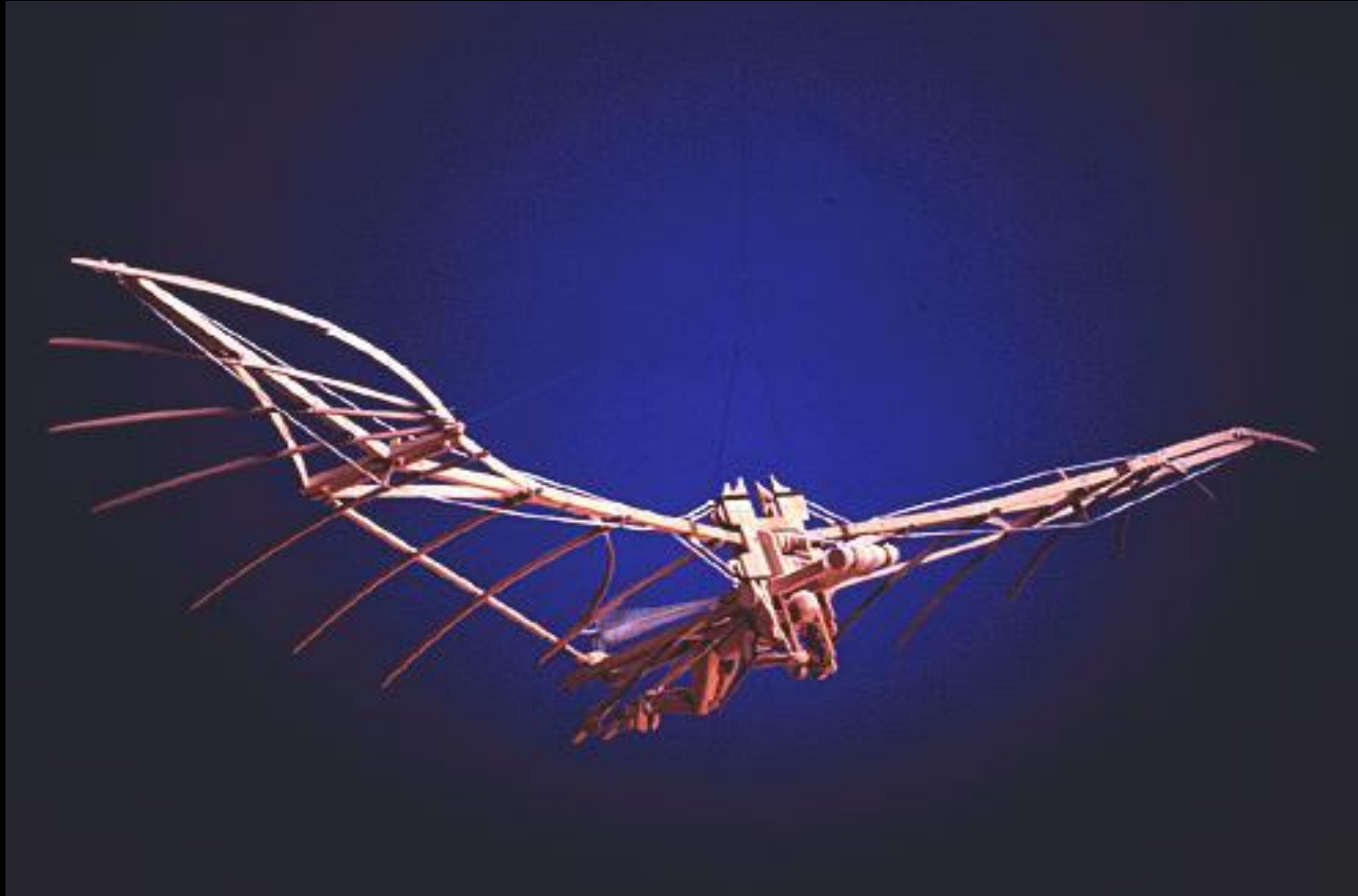
# Phi in Nature



# Machines

- Designed and/or created over 300 machines
- Self-regulating spit
- “Flying Ship”
- “Leonardo’s Glider”
- Rotary ball bearing; understood friction 200 years before Newton

# Glider



# References

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