

LEONARDO DA VINCI (April 15, 1452 –May 2, 1519)

by HEINZ KLAUS STRICK, Germany

LEONARDO was born the illegitimate son of a notary MESSER PIERO and a peasant girl CATERINA near Vinci, a village near Florence. His parents did not marry each other, but rather married other partners.

He grew up in his father's house, was treated like his father's legitimate children, and learned to write, read and do some arithmetic.

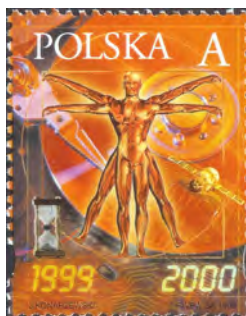
His father noticed his son's artistic abilities early on. As a respected citizen of the city of Florence, he was able to arrange an apprenticeship in the workshop of ANDREA DEL VERROCCHIO for his 15-year-old son. Here LEONARDO learnt the basic techniques of painting and sculpture. At the age of 20, he was accepted into the Painters' Guild, but regarded himself as a beginner until he was 25. During this time, numerous pen and pencil drawings were made, including technical devices.



At the age of 30 he entered the service of LUDOVICO SFORZA, the Duke of Milan. In the list of staff he is listed as a painter and engineer. He received orders for the production of paintings, altarpieces, wall paintings (including the famous *Last Supper*), was asked for technical advice, and for the construction of fortifications.

His biggest project, to have a five-metre-high equestrian monument to FRANCESCO SFORZA, the founder of the dynasty, cast in bronze, could no longer be done in 1499 because the metal was needed to cast cannons to defend the besieged city of Milan.

In the year of the discovery of America (1492), he made the famous drawing of a man that illustrates human proportions. The idea for this goes back to the Roman architect MARCUS VITRUVIUS POLLIO (around 30 BC). Today, this figure is a symbol of scientific research and is also used by numerous organizations.



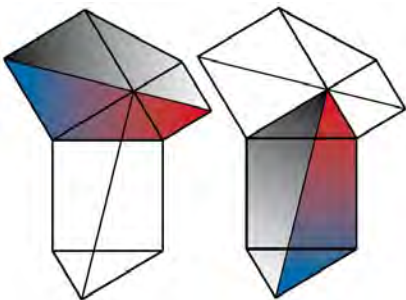


In the next years in Milan, he worked intensively on the book by PIERO DELLA FRANCESCA on perspective. He met the mathematician Franciscan Father LUCA PACIOLI and was inspired by his book *Summa de arithmetica, geometria, proportioni et proportionitã* (Summary of arithmetic, geometry and algebra), published in 1494, to work intensively with EUCLID's geometry. LEONARDO's sketchbooks from this period are filled with construction approaches for squaring the circle and doubling the cube. He invented a proportional circle with which you can draw figures that are similar to the original. *'Non mi legga chi non e matematico'*, he wrote in his sketchbook - *'Nobody is allowed to read this who is not a mathematician!'* LEONARDO expressed the conviction that there can only be reliable knowledge in science if mathematics plays a role.

When PACIOLI wrote a second mathematics book - *De Divina Proportione* (About the "divine" relationship, now called the golden ratio), he made 60 drawings for this.



After the occupation of Milan by French troops, LEONARDO traveled with LUCA PACIOLI to Mantua and Venice, and finally to his hometown of Florence, where the now famous artist was received with great honour. He was constantly concerned with geometric problems; he found a simple, brilliant proof of the Pythagorean theorem.



(by courtesy of Peter Gallin, University of Zurich)

He did not last long in Florence; he was attracted by the offer of CESARE BORGIA, the son of Pope ALEXANDER VI and most powerful commander in Italy to work in his service as a military architect and engineer. He travelled through the papal estates and created city maps and topographical maps, the perfection of which still astonishes today. When he returned to Florence, he made plans for how the Arno river could be redirected so that it would no longer run through Pisa, but instead connect Florence directly to the sea. In a hospital, he began his intensive anatomical studies on the structure and functioning of the human body by secretly dissecting corpses.



LEONARDO described nature as his teacher; he systematically observed the flight of birds, examined the physical properties of flowing water and compared them with those of air. LEONARDO noted his ideas and descriptions in mirror writing. One possible explanation is that it was easier for him as a left-handed person, another that he wanted to prevent others from reading his notes - there was no protection against intellectual theft. The second explanation is also supported by the fact that he deliberately incorporated errors into the design descriptions of the machines he invented so that they would not work. Restlessly he took on orders for paintings and worked as an architect and engineer and inventor of mechanical toys. However, his unbridled urge to research often prevented work that he started from being completed.



He commuted between Florence and Milan until French rule ended there. In Rome he joined the ruling Medici Pope, who however preferred RAPHAEL and MICHELANGELO. Offended, he accepted the generous offer of the young French king FRANCIS I and settled in Amboise.



After his death, the artist, naturalist and inventor left many thousands of pages of notes, the ingenuity of which only became clear in the 19th and 20th centuries.



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