

Leonardo da Vinci: a great Engineer and Visionary

Most of us know this great man as one of the most famous artist and painter in human history. His paintings like 'Mona Lisa' and the 'Last Supper' are timeless classics.

But it is important to know that he was a multifaceted genius: an accomplished painter, sculptor, architect and also a brilliant engineer.

He came up with many wonderful ideas and fantastically novel engineering designs, which we find in his extensively written and well illustrated notebooks. Without these notebooks we would not have probably come to know of this genius at all. The only regret is that this unusually productive mind failed to bring many of his projects and ideas to completion and reality (he passed away in 1519 AD at the age of 67 years).

One possible explanation for this might be that his head was always bursting with brilliant ideas and he constantly struggled to put them all down on paper before his death. This project of putting his ideas on paper, as we understand now, was also far from complete (too many ideas to write down in a lifetime). Hence in his lifetime, he was unable to pursue anything beyond drawings and ideas.

Another possible explanation might be that he was kept too busy with the artistic jobs, most often commissioned for the entertainment of Italian and French nobles that kept food on his table.

But what I think is that he could not find an equally brilliant production oriented genius who could give shape to his ideas. We can imagine that it was difficult to find such a production engineer in the 16th century. This was because there would hardly have been any social support system to produce such a mechanically oriented production genius in the 16th century society.

Clearly he was bestowed with three unique gifts: an extremely keen and sensitive sense of observation matched with an extremely fertile and vivid imagination with a more than liberal dose of insatiable propensity to play around with ideas. It is evident from his notes that he patiently studied paints, hues, textures, perspectives, mechanical and civil engineering aspects to the minute details for hours on end.

As an engineer he is probably best known for his prototype like designs (in the form of drawings and models) of modern mechanical devices such as the airplane, automobile, submarine, cantilever beams, structures, structural deformation under loads, lathes, canons, tanks, hydraulic machines, grinding, polishing, filing machine, planing machine, pumps, inclined screw conveyors, cranes, parachute, diving suit, mechanical musical instruments and much more (simply amazing range of ideas to play with).

But his greatest contribution to the field of engineering is the establishment of the field of statics and dynamics; that is applied mechanics. He played around with complex problems in this area with pulleys, weights, gears and screws. He characterized the principles of solid body motion nearly 200 years before Sir Isaac Newton delved deeper into this subject. Much before modern studies of structural deformation, he discussed the capabilities of pillars and beams in various configurations to withstand loading.

Had he been paired with a brilliant production engineer the history of engineering might have been quite different today.

But none-the-less his legacy lives on and young engineers may take to heart the three unique qualities of this great genius: keen observation of reality, vivid imagination and the desire to play incessantly with ideas, drawings and models. That is what sets a genius apart from the rest of us. Strangely these qualities can be developed and honed to the extent of being a genius. So being an engineering genius is well within your grip. Go for it now!