

Class 7
The Age of Discovery
Week 3
Friday 7th August 2020

Inventions and the *Mona Lisa*

It must have been devastating for Leonardo to have ruined his first paintings with his experiments. One redeeming quality Leonardo had was that he was willing to learn from his experiments – to see where something went wrong was helpful in knowing what to do next. He was one of very few people at the time who could look at things in this way. There were no scientists yet who could share what they knew about chemistry and physics – who could have given him good advice. Through risking his paintings for the sake of his experiments, Leonardo learnt a lot, and he loved knowledge.

Lots of people admired Leonardo, and liked him, but not as a close friend. He was quite lonely because of this. He did not have one special friend he could share his deep interest in knowledge and learning with. This was largely because there was no one really like him at all – he was a man far ahead of his time.

At the time when the French invaded Italy and the great clay horse sculpture was destroyed, Leonardo went to Venice. The Turks were storming Europe, after the fall of Constantinople, and Turkish ships attacked Venetian ships in the Mediterranean. Because of this was between the Turks and Venice, Leonardo's mind turned to exploring inventions that could defeat the Turks.

Leonardo kept notebooks and these still exist today. Within them are ideas that have only come to fruition and put into practice five hundred years later. One invention was a one-man submarine, which was intended to attack the Turkish ships under water. Another was a diving suit with a glass-fronted helmet and air-filled bladders which connected to the helmet with tubes. This was so that the diver could breathe underwater. Can you think of something we have today that follows this idea? Leonardo also thought of using gloves with webbed fingers for swimming under water. This idea can be seen four hundred years later in the frogmen of the Second World War.

He had the idea that one could throw containers with sulphide of arsenic at the enemy. This is a poisonous gas used in 1914 in the First World War. As a way to protect people from this gas – those on the receiving end – Leonardo devised a damp cloth over nose and mouth, which is the first idea of a kind of gas mask. Petrol was as yet unknown, and so the petrol engine was not yet invented – but Leonardo designed an armoured car driven by pedals.

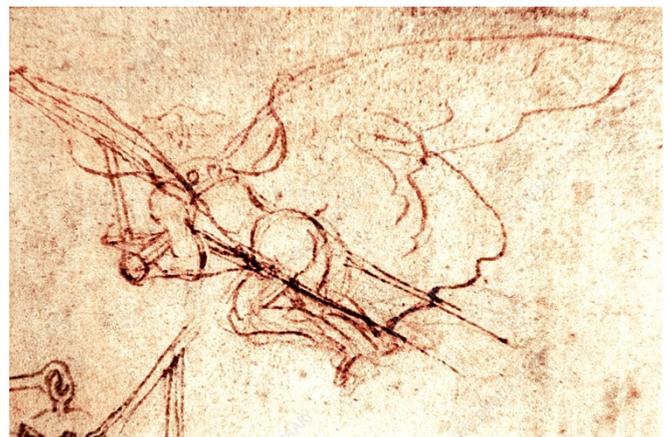
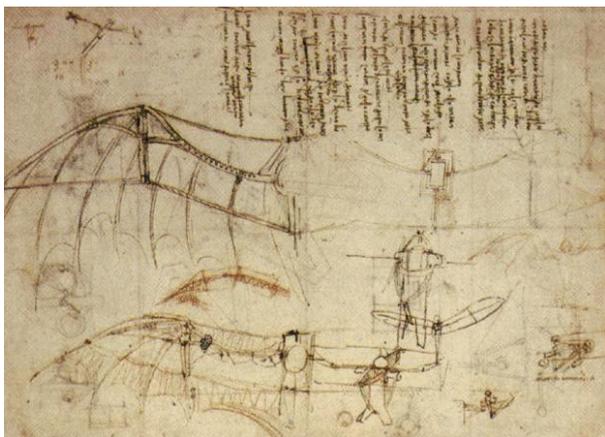
While Leonardo thought these amazing objects up in his mind, he wrote in his notebook, "I will not make these things known, for men are evil and might use them for killing." He did not tell the Venetians, or anyone else for that matter, about his inventions. Instead he kept them in his notebook, written in a type of code – mirror writing – so that it was difficult to read. Nobody bothered to look through these notebooks until the twentieth century, that is the 1900s. By then, these kinds of inventions already existed.

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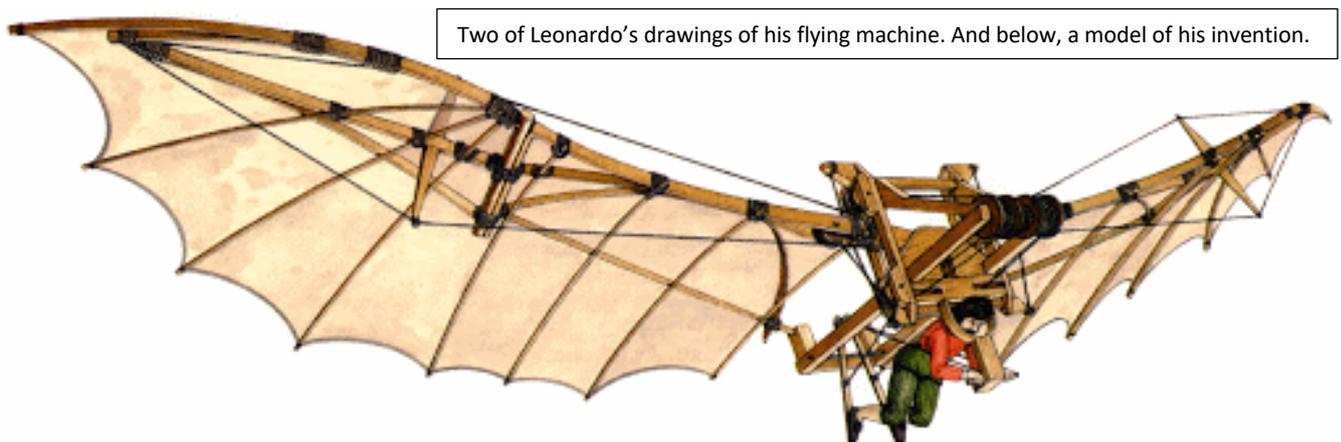
Leonardo left Venice. He returned to Florence where he had created the battle picture that came to such a sad demise. He was not concerned about this because a new idea had caught his interest – the idea of building a flying machine.

He went to the market, bought some birds, and watched how they took off. He measured their wingspan and compared this with their body weight. He made all sorts of drawings of birds in flight. Over and over he made and destroyed bird wings in a quest to create his flying machine. He also had the thought, “What if the machine fails in mid-air?!” So, he made a parachute to save the pilot.

Another drawing of Leonardo’s shows the concept of what we now call a helicopter. The last of his drawings is an elegant glider, similar to ones we use today. It is quite likely that Leonardo built a glider. He disappeared from Florence for a few weeks but on his return was very quiet about why he had been away, and his notebooks never mentioned flying machines again.



Two of Leonardo’s drawings of his flying machine. And below, a model of his invention.



In the countryside around Florence there was a legend that peasants had seen an enormous bird flying over the hills. It seems that Leonardo had tried out his glider and was perhaps the first man to fly. But he kept his secret to himself.

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You can see how Leonardo could easily feel lonely. He knew so much but felt he could not share it with others. The printing press was very new at this time and there were no reliable watches or clocks, but here was a man thinking of helicopters, gliders and submarines! People could not follow his ideas. They only appreciated him as a painter, but even as a painter, he upset even his greatest admirers.

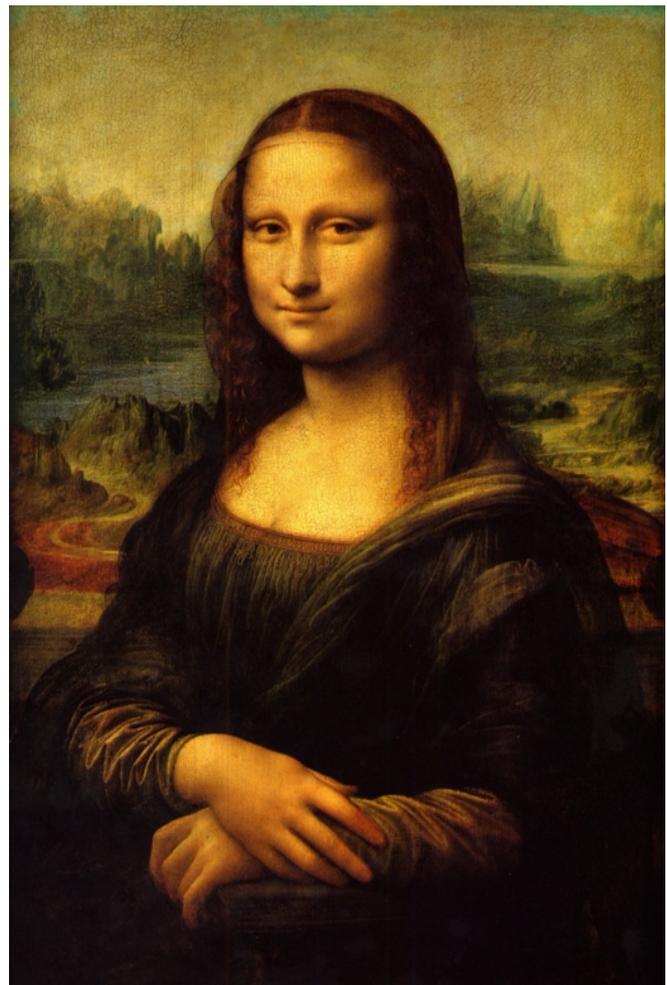
An artist's impressions of Leonardo painting Mona Lisa, the wife of a merchant.



Royalty and well-to-do, high profile people, like noblemen and women wanted Leonardo to paint their portraits. Leonardo refused and then chose to paint the wife of an Italian merchant, who was not nearly as prestigious, just by the fact that she was a merchant's wife. Because Leonardo painted her, she was well-known throughout Europe and now, all over the world. You have heard of her, I am sure – her name was Mona Lisa. Her portrait is the most famous in all the world. It is not a large portrait, and it took Leonardo six years to paint. People who look at this painting feel as though they are looking not just at her face, but her soul. Leonardo has captured something quite elusive in this painting.

Florence began to lose interest in Leonardo. He was about sixty years old at this stage. There were many reasons why – his battle picture had slid off the wall, a huge failure; if he painted anything it took him years; he invested a lot of time drawing machinery no one understood; and he refused to fulfill many requests for portrait paintings. The people of Florence turned their backs on Leonardo.

Soon after, Leonardo suffered a significant misfortune – he had a stroke and his right arm was paralysed. He could no longer draw or paint with his right arm. But Leonardo



The Mona Lisa

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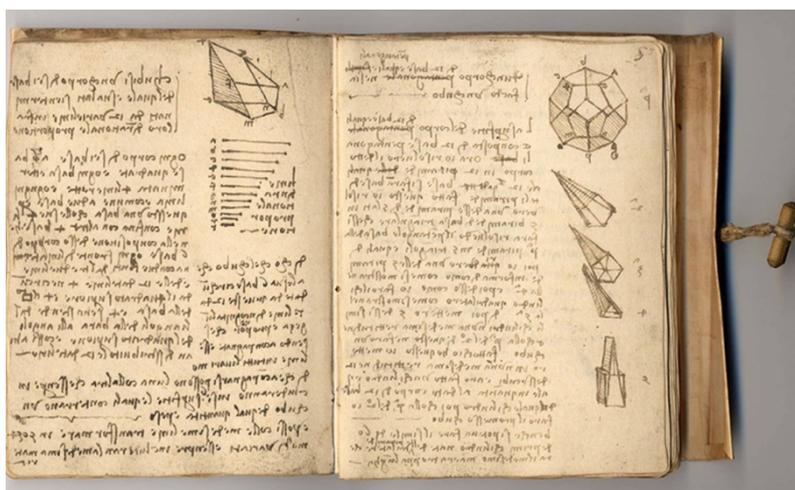
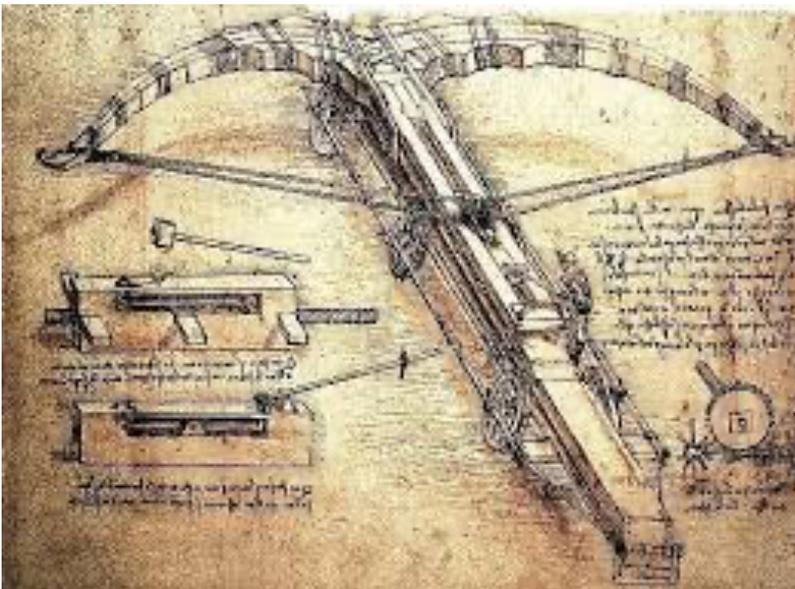
had a strange gift – he was ambidextrous. This means you can use both right and left sides equally well. So, he began to use his left arm and hand instead.

The king of France admired Leonardo, so even though Florence lost interest in him, he had a bright future. The king of France invited him to spend the last eight years of his life in peace in France.

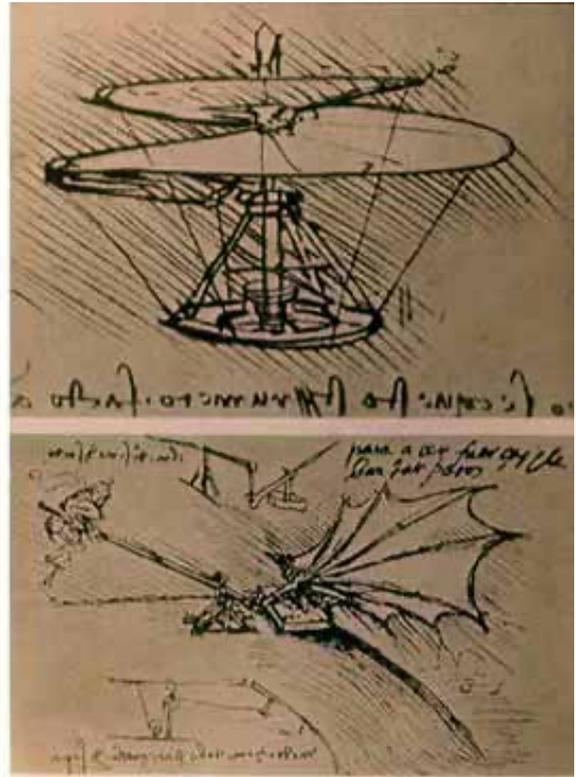
When people expressed to Leonardo their appreciation for all the beauty he had created, he shook his head and said, “I have achieved nothing.” He died in 1519, the year Magellan set out on the first voyage of the world.

Today many consider Leonardo one of the greatest men that ever lived. He was a very well-rounded person in that he was extremely skilled across many disciplines, like painting, sculpture, architecture, and engineering. He was passionate about learning more and more about the world; he was a seeker of knowledge and truth.

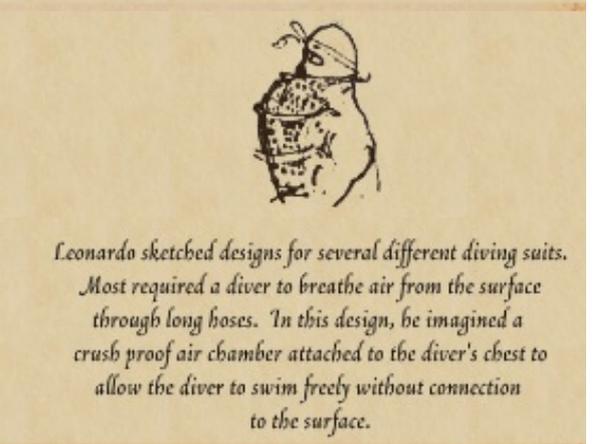
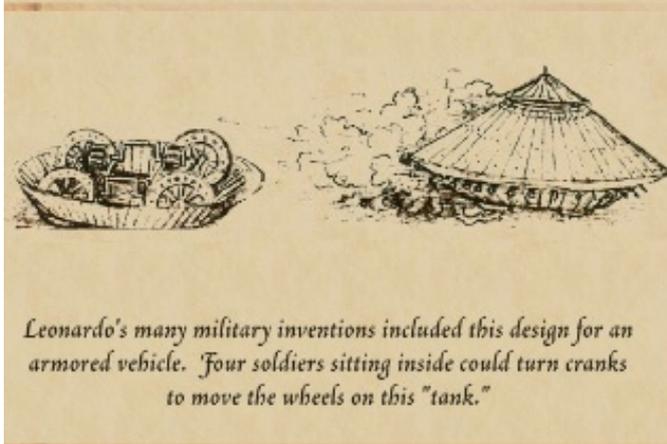
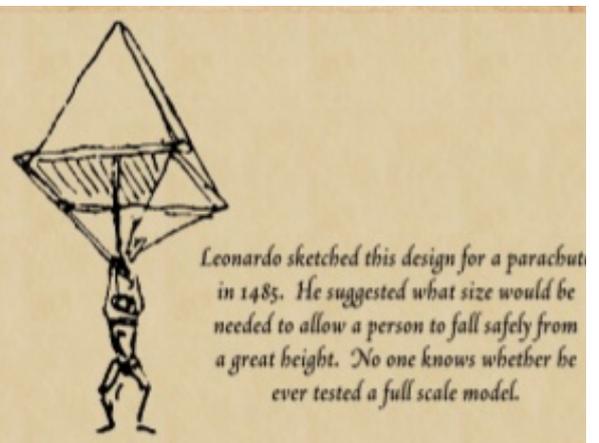
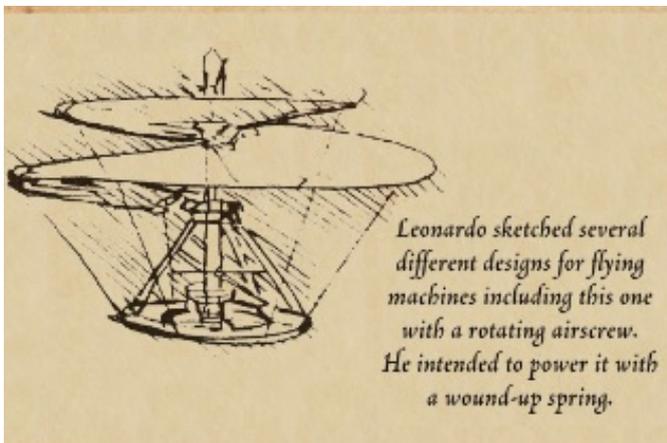
Below are a number of images that are from Leonardo's notebooks. I have also included some models people have since made, like the parachute and the helicopter.

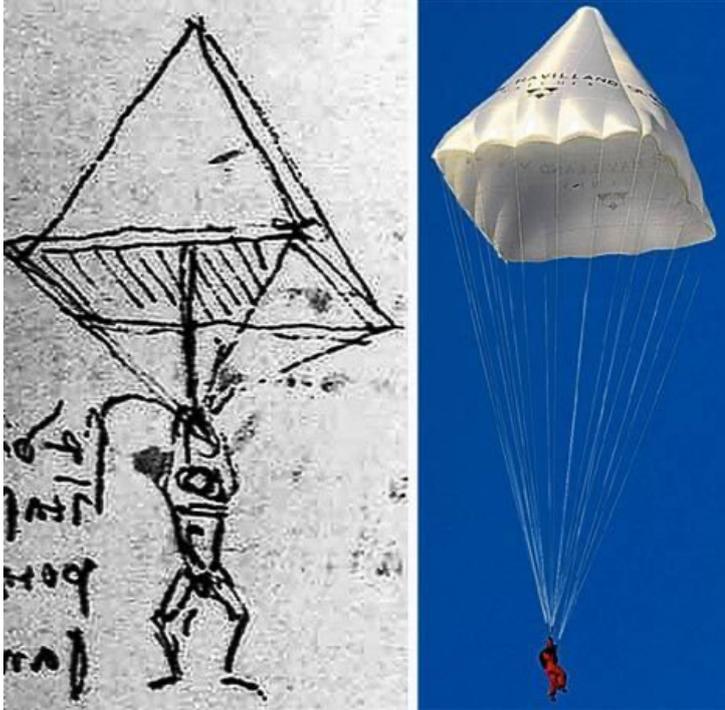


Clockwise from top left: Large-scale crossbow (can you see the person standing in the drawing?); Scuba diving suit; One of Leonardo's notebooks.



Above: A model of the helicopter and Leonardo's drawings.
 Below: 4 different inventions with some explanation.





Left: The parachute – Leonardo’s drawing and an operational example!

Below: A sample of drawings from Leonardo’s notebook

