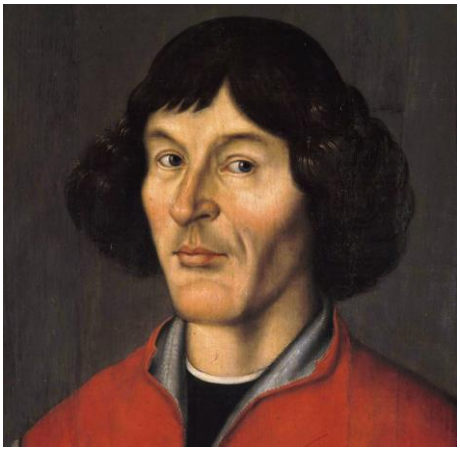


THE COPERNICAN REVOLUTION – QUESTIONING BELIEFS

To know that we know what we know, and to know that we do not know what we do not know, that is true knowledge.
-Nicolaus Copernicus

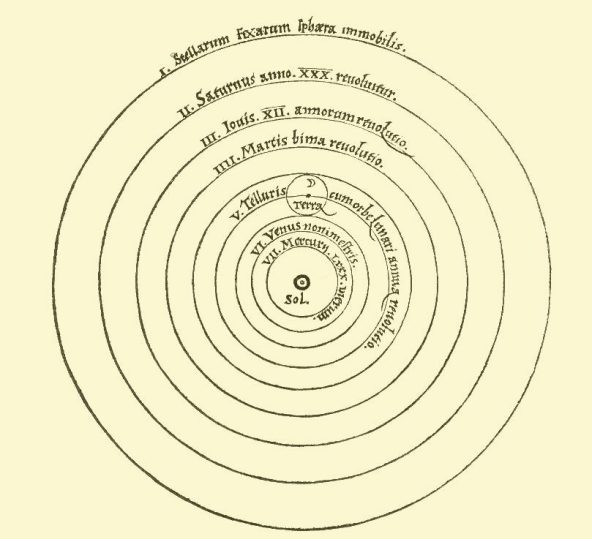
Many philosophers and scientists have made considerable theories, notions and discoveries available for the world to experience and adopt, and perhaps one of the most influential and important ones was Nicolaus Copernicus, who lived through 1473 to 1543. He made several important discoveries in his lifetime, and present many observations on the position of other planets and stars as seen with naked eyes as no telescopes were made at his time. He was an eager mathematician, astronomer, and clergyman himself.

BASIC OVERVIEW OF THE MODEL OF A HELIO-CENTRIC UNIVERSE.
A heliocentric model of the universe is a theory proposing that the sun is the centre of the universe. Though many philosophers had been struck by this thought as early as 400 BC, and worked on this theory for a long time until it was finally proved by Galileo in 1610.
Earlier Aristarchus of Samos (310-230 BC)
had proposed the first ever heliocentric model around 18 centuries before Copernicus.
His astronomical ideas were often rejected in favour of the geocentric theories of Aristotle and Ptolemy.
The widely spread idea of the Earth being the centre was formed rigidly in people's mind and little could be done to prove it to them, the world had to wait around 2000 years to realize how the heliocentric model was accurate.

Copernicus created a buzz with his heliocentric theory which stated that the sun was the centre of the universe and all other planets revolved around it, all this could not have been proved but he presented a model with circular orbits and motions which often resulted in the spotting of planets in the sky , but this model was not accurate , as we know today, that the orbits are elliptical.

OPPOSITION FOR THE HELIOCENTRIC THEORY
1. The church disregard this idea by saying that the Earth was a sinful place and the heavy burden of all the sins made it heavy and stationary at one place. The Church did not approve of this theory to maintain the faith of the people in the Holy Scriptures that stated the Earth is at the centre.
2. Ancient philosophers also adhered to the 1000 year old geocentric theory of Ptolemy.
They contradicted this theory by saying that if the Earth is rotating about its axis, and orbiting around the Sun, then

the Earth must be in motion. However, we cannot feel or see the effects of this motion.
3. Other people had pre formed beliefs that they did not want to change and were not ready to accept other theories without certain proofs. They were happy thinking that the earth had been given a special position in the universe and all other things revolved around it.



COPERNICUS' MODEL IN PRINT

Copernicus wrote an initial outline of his heliocentric theory in the Commentariolus. It was more theoretical that mathematical but it made assumptions regarding Earth's triple motions. The Commentariolus, was not a final manuscript and was given to read only to Copernicus' closest friends.

The ideas were further elaborated in
De revolutionibus (the rotation), which had some different aspects than the draft theory. Copernicus was afraid of the possible criticism and opposition of his theory by traditional clergymen. He did not want to make his book public. When he was about to die, he passed it on to his disciple and friend Joachim Rheticus .

THE COPERNICAN REVOLUTION
The Copernican Revolution refers to the shift in the belief from a geocentric model to proving that the solar system was heliocentric by Galileo. This was very important in the history of science and the world itself. The revolution gained momentum after the death of Copernicus and the publication of De revolutionibus orbium coelestium (On the Revolutions of the Heavenly Spheres). It inspired many young scientists and helped them to reach the conclusions of elliptical orbits and heliocentrism.
Johannes Kepler wrote in his book a Cosmographical Mystery about how orbits were elliptical and not circular and that solved a lot of problems and provided much accurate observations in the sky
Galileo had used telescopes for the first time and done mathematical calculations to prove a heliocentric model and it finally was proved.
All this work later resulted into Newton’s Universal Law of Gravitation which stands as a pillar of today's physics and many ongoing researches.

The Copernican Revolution is an excellent example of how an idea if pursued can result into changing other's false notions and how not everything taught to us should be accepted without letting out minds wander into the infinite possibilities. We need to understand how if Copernicus and others never pursued an idea we would have been missing out on such an important aspect of understanding our universe.

- Manikarnika Sharma