

## Question: Analyze how Galileo, Descartes, and Newton altered traditional interpretations of nature and challenged traditional sources of knowledge.

The scientists Galileo, Descartes, and Newton shifted Europe away from Church dogma and religious interpretation of events and towards reliance on scientific factual evidence. Prior to the work of these three scientists, learning in Europe was reliant primarily on the efforts of the Church, geared primarily towards religious teachings. Europeans were taught by the Church to interpret all things in a religious manner, blending that which was of the spirit and that which was of the natural world. Galileo, Descartes, and Newton changed this perception by instead demonstrating that the world operated on set natural rules that were separate from Church teachings.

Galileo was a proponent of the heliocentric model, which had been previously proposed by Copernicus. The Church continued, during this time to encourage belief in a geocentric model based around the idea that the universe revolved around man, God's creation. Through observations and research conducted through the use of a telescope and mathematical calculations, Galileo set out to prove that the heliocentric model was the correct model of the Solar System. In so doing, Galileo contradicted the Church, incurring their wrath and resulting in charges of heresy being delivered against him, which led to him being under house arrest until his death. However, by challenging Church notions so publicly and in so controversial a manner with scientific evidence to back himself up, Galileo inspired Europeans to challenge their thinking and to search for factual evidence rather than to blindly believe in assumptions.

Descartes is considered the progenitor of modern Western philosophy, and he is also responsible for such feats as the development of analytical geometry and the Cartesian coordinate system. Under the thinking of Descartes, he posits that while God exists, humans possess free will. By Descartes' reasoning, humans live in a world that is not governed by laws of

the spiritual nether and are not predestined to fulfill certain acts. This thinking was important in forming the basis of ideas of individuals possessing certain freedoms in order to fulfill their needs for learning and a pursuit of accomplishment, separating individuals from beliefs that their place in life was set from birth by the will of religion.

Newton is famous for the conclusions he came to about the laws of physics following extensive observation and study. He established laws of physics that western civilization continues to adhere to today, dealing with motion, gravity, inertia, and other concepts. By providing a reasonable, proven, and scientific explanation to the phenomena of movement and gravity, Newton challenged preconceived notions of supernatural phenomena and the responsibility of ethereal forces in affecting the physical realm. Religion did not have to be looked to for explanation in the age of science, an age in which explanations could be proven with scientific experimentation.

Galileo, Descartes, and Newton were all three great men. These three men helped move Western civilization forward as they offered alternatives to the explanations of natural phenomena that had been offered by the Church. These three men offered to Europeans ideas of individual thinking, free will, and observation and experimentation to prove one's ideas correct. Science was no longer a practice that had to be motivated by religion; it was wholly distinct and not necessarily contradictory. Religion no longer dominated thought and the pursuit of knowledge, for now science was at the forefront of innovation.