

Editorial

The proposition that the Sun is the center of the world and does not move from its place is absurd and false philosophically and formally heretical, because it is expressly contrary to Holy Scripture.

The proposition that the Earth is not the center of the world and immovable but that it moves, and also with a diurnal motion, is equally absurd and false philosophically and theologically considered at least erroneous in faith.

We say, pronounce, sentence and declare that you, Galileo, by reason of these things which have been detailed in the trial and which you have confessed already, have rendered yourself according to this Holy Office vehemently suspect of heresy, namely of having held and believed a doctrine that is false and contrary to the divine and Holy Scripture.

We condemn you to formal imprisonment in this Holy Office at our pleasure. As a salutary penance we impose on you to recite the seven penitential psalms once a week for the next three years.

Condemnation of Galileo on June 22, 1633

Such was the malice, sarcasm, hostility, bigotry, and hegemony of religion. The accused was guilty of all charges, and he was persuaded to throw in the towel with his tails between his legs, metaphorically, and grunted: “I, Galileo Galilei ... [W]ith sincere heart and unfeigned faith I abjure, curse, and detest the aforesaid errors and heresies.” If you happen to be anything other than being a Catholic, don’t laugh yet. Note what the founders of Protestantism had to say on the same affair. Martin Luther blatantly ridiculed, “People gave ear to an *upstart astrologer* who strove to show that the earth revolves, not the heavens or the firmament, the sun and the moon. This *fool* wishes to reverse the entire science of astronomy; but sacred Scripture tells us that Joshua commanded the sun to stand still, and not the earth.” John Calvin was no less cynical, and agitatedly blathered, “Those who assert that ‘the earth moves and turns’ ... [are] motivated by ‘*a spirit of bitterness, contradiction, and fault-finding; possessed by the devil, they aimed to pervert the order of nature.*’” Notice my emphases, and kindly appreciate their choice of humble vocabulary with due respect.

To lament with Charles Dickens’ famous opening line of *A Tale of Two Cities*: It was the worst of times, the age of foolishness, the epoch of incredulity, the season of Darkness. Humankind was totally bereft of the freedom of thought, curiosity, intelligence, and unbound exploration. Thanks to dogmatism of faith which upheld that the Earth is fixed as the centre of the universe, and everything else, from the Moon to the Sun and other stars without exception, move around it [*cf.* 1 Chro 16:30; Psalm 93:1, 104:5; Eccl 1:5]; presumably, to glorify us.

The glory crumbled when Galileo di Vincenzo Bonaiuti de’ Galilei invented, or rather improved, a telescope in 1609, precisely 400 years ago, based on the technique of Hans Lippershey, who invented the first telescope in 1608. It ultimately turned into the ‘fruit of the tree of knowledge’ in astronomy, eventually leading to his discovery of many novel features of the universe, and to all his adversities, his denunciation. It was when toying with his telescope that he soon discovered four large moons revolving around Jupiter, implying all heavenly bodies need not necessarily move around us. More revealing was his observation that Venus clearly orbited the Sun, and not our majestic world – a sign unambiguously illustrating the Earth is not at the centre.

When he publicly argued his thesis against the religious dogma, he was summoned before the Inquisition at Rome in 1616, was thereof branded a heretic, and he acquiesced for the first time. The Earth then stood still. He knew full well the fate of his Italian predecessor Giordano Bruno, who had fervently advocated heliocentrism, the infinity of the universe, and the Sun as just one of an infinite number of heavenly bodies, beside other iniquities. The Inquisition convicted Bruno of heresy, and was burnt at the stake in 1600. Such was the grace.

In 1623, a friend and admirer of Galileo, Cardinal Barberini rose to papacy as Pope Urban VIII, and granted formal authorization to Galileo's book, *Dialogo dei due massimi sistemi del mondo* (*Dialogue Concerning the Two Chief World Systems*), so long as a balance argument for the Earth-centered (geocentric) and the Sun-centered (heliocentric) views was promoted without bias. The book was published in 1632, but exposed that Galileo was no feeble pigheaded fellow. In the book he frequently scoffed at geocentrism, particularly into the mouth of Simplicius, who characterized of all people, the very Pope himself. The Pope learned he was deceived, and harshly mocked at.

For the second and the last time the Holy Office sentenced Galileo of irrevocable heresy, as in the opening quotes. The Church was magnanimous; his conviction was commuted to house arrest, a binding honour he held till his last breath. So much for Christian ethics, benevolence and compassion.

However, Galileo was persistently stubborn enough to retort to Johannes Kepler, "My dear Kepler, what would you say of the learned here, who, replete with the pertinacity of the asp, have steadfastly refused to cast a glance through the telescope? What shall we make of this? Shall we laugh, or shall we cry?" The irony resonates to the present, the joke is on religion, if only they knew.

Kepler was much more fortunate. He had worked out the mathematical basis for movements of the planets in the form of ellipses, called laws of planetary motions, and the Sun as the centre of the force. He summed up his calculations in a book, *Astronomia nova* (*A New Astronomy*) in 1609. He did not have to endure the sympathy of the Inquisition, though, as he was a rebellious and unorthodox Lutheran; moreover, a German with reputable credentials. Good riddance.

Now we are beyond any reasonable doubt that the Sun is the centre of the solar system, and that the Earth and the other planets revolve around it. And if students come up with the blunt statement, and not otherwise, it is perfectly scientifically advisable to teachers not to sentence them to detention, or impose them to write down or recite the words of reproach fifty or hundred times, as your practice may be, and obviously not to the pyre, not even the canes – they are unethical.

Even the Church had acknowledged the scientific fact. On October 31, 1992, Pope John Paul II formally conceded and admitted that Galileo was right, after a mere three century and a half (350 years) of his death. The Earth after all has been turning around. We believe it, and its not that bad.

We celebrate the International Year of Astronomy (see pp. 107-114 of this issue) to commemorate the 400th anniversary of Galileo's first telescopic observation and the publication of Kepler's *Astronomia nova*, with pride. I salute the lifelong custody of Galileo and the martyrdom of Bruno for free thought and modern science – those indomitable *devil-possessed upstart astrologers* – with modesty.

Now is the best of times, the age of wisdom, the epoch of belief, the season of Light!

K. Lalchhandama