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Heretic

Freedom to express ideas of nature and God is a foundation of American culture. What does this mean to those who live in America? To understand the importance of this freedom that is enjoyed it is important to understand a time when there were no such freedoms. A fear of terrorism is familiar to anyone who has been a victim of it. As Fromm begins his dialog in “The Individual in the Chains of Illusion”, he talks of how life was during the outbreak of the first and second world wars. Insight into these wars is especially important because Fromm knows the readers may not be familiar with the turmoil that was experienced, of how freedoms are sacrificed and lost. It is often difficult looking back on history to place oneself in the time period. It can be difficult to understand the thoughts and emotions of the individuals involved (Fromm 328).

Lets begin in 1633, with Galileo Galilei. Galileo was a devout Catholic. He however did not agree with all the doctrines. Specifically, Galileo found problems with the literal interpretations of the Bible. Galileo believed in the Copernican view of a sun centered universe and was found guilty of “vehemently suspected of heresy” by the inquisition (Finocchiaro 260). It was one of the most publicized trials in history. His crimes against the Church where in affirming the hypothesis of Copernicus's heliocentric sun centered solar system. This was in contrast with the geocentric Earth centered system which was the accepted system for over a thousand years.

Compared to the global instability of Europe and the world that Fromm talks about, making

connections to heavenly perspectives of the Catholic Church and the astrologers may seem a far cry. However, when taken from the perspective of the late middle ages things are not so unfamiliar. Fromm's writings attempt to enlighten us of the lies and “illusions” of the world. A world that enslaves humanity to inhumanity. It is not such a contrast that the influence of philosophy and religious dogma raged war in a battle for truth and understanding. Fear, imprisonment, torture, and death were punishments suffered on both fronts.

“Nationalism Killed Humanism. The nation and its sovereignty became the new idols to which the individual succumbed” (Fromm 335). The Roman Inquisition, the reckless hand of the Holy Roman Catholic Church, would inflict pain, imprisonment and even murder to those who would not accept the Church's divine leadership.

To understand the Catholic Church's adoption of the Geocentric system, we must first learn a bit about where it came from. The origins of modern astronomy dates back to creation. It is spoken of in The Bible, a historical record that covers roughly 4000 BC till around 70 AD.. However, the reasons behind understanding the motion of the heavens started much more practical then a god creating Earth.

Believed to be erected around 2500 BC, Stonehenge is still in many ways mysterious to modern civilization. A few things that are certain is that Stonehenge acted as a calendar. Using alignments of the sun and other heavenly objects to know certain dates. It was purely practical to know when to plant crops or harvest them. This is the earliest known study of the heavens. It will be the Babylonians and the Greeks would make the first ventures into the motions of the heavens.

Although other civilizations study the heavens, the Babylonians where the first to use mathematics to find the positions of heavenly bodies. Their purpose of understanding the heavens was to make religious predictions. The Greeks however studied the heavens

geometrically. They where fascinated with numbers and desired to understand the motion of the planets by them. The measurements that where predicted by the Babylonian's have been found to be very close to the actual values, within a few percent.

Next came Pythagoras, a name very well known in modern times, was a man who lived from 580-500 BC. Pythagoras set up a school of learning, his followers where known as the Pythagoreans. No works of the Pythagoreans remains today, but many of their accomplishments are known. Briefly, they believed that the highest plane a person could reach is mathematics. They were the first to believe that the Earth was spherical. However their spherical Earth did not spin, it was stationary. All heavenly bodies where believed to be perfect spheres that were nested in large spheres that would move around the Earth. This Earth centered system is known as the Geocentric system.

The Pythagoreans would survive till mid 230 BC with the death of Aristarchus. Aristarchus among all others of his time is a person to remember. Aristarchus made the first accurate prediction of the Earth moon distance. He was a bit off with his Earth sun distance. But he was the first to argue that the sun, not the Earth was the center of our universe.

While the Pythagoreans were making their own progress, Plato (427-347 BC) began to have ideas of his own. He found little success explaining the heavens and the only thing to note about him was that he believed that all heavenly bodies are spherical in shape. A point Pythagoras also believed in. He also believed that the planets move in perfect circles. It was Plato's student Aristotle that would set the stage for the next 1500 years.

Aristotle developed a complex Earth centered model. This model will be discussed more later. But suffice it to know that the Earth was in the center, and the stars where nested in a distance sphere that rotated around it. The planets and sun all also have their own spheres, that move at their own speed. According to Pythagoras, the spheres would rubbed against

each other in this motion, creating the, “music of the spheres.” (Mcfadden, Weissman and Johnson 53)

“The Roman Church was a Catholic Church precisely because it was a supernatural, universal church” (Fromm 334). The Catholic Church's roots of authority is in the apostles of Christ, in the time of Christ. The birth of Christ was marked by the appearance of a new star in the night sky. The New Testament of the Bible, Mathew chapter 2 begins, “Now when Jesus was born in Bethlehem of Judea in the days of Herod the king, behold, there came wise men from the east to Jerusalem, Saying, Where is he that is born King of the Jews? for we have seen his star in the east, and are come to worship him” (The Holy Bible 1188). Astronomy was surely important. As the Church seeks to understand the will of God and world he created for them, they would adopt the geocentric system as doctrine. After all, it found support in the scriptures. Psalms 104:5 reads, speaking of God “Who laid the foundations of the Earth, that it should not be removed for ever” (The Holy Bible 781). The direct interpretation of this was that the Earth is centered among the heavens and all heavenly bodies move around it. All other theories of celestial movement where heretical and came under the cruelest punishment from the Church. From imprisonment, to death. The Church would, like the soviet leaders in Fromm's time, discourage disobedience by force. (Fromm 333)

The Dark Ages begin, The Holy Roman Church would dominate the next 1500 years of history, Rome would rage war against other nations. All non-enlightened nations were barbaric. The Inquisition, on their own, tortured and murdered transgressors, sinners who disobeyed the teachings of the church. In the 1990s, Pope John Paul would compare the actions of the Inquisition to “the crimes of Hitler’s Nazism and Marxist Stalinism.” in the second world war (Kauffman 25).

Countless records were lost over the next thousand years. Near 400 AD during the Roman

conquest of Egypt, The Ancient Library of Alexandria was burned by a Christian mob. It was destroyed in what was considered an accident, when an Archbishop attempted to destroy the section that contained books on witchcraft and polytheism, the belief of multiple gods. Imagining a library being destroyed may just seem unfortunate in modern day life. The destruction of this library was nothing short of a great trajectory. Today books are widely available, but in this time a book or scroll had to be hand copied, “a lost book put itself on the endangered species list.” “Virtually all the great Greek mathematical and scientific thinkers to follow Euclid worked in this incredible library” (Mlodinow). Incidentally, Euclid was a Greek mathematician who lived around 300 BC and was to be remembered as Euclid of Alexandria. His book Euclid's Elements is still used today, 2300 years later. It is available translated from Greek into modern English.

Getting back to the discoveries and observations of the early astronomy, the early model of the universe that placed the Earth at the center, suffered exceptions. One exception was to describe something called the retrograde motion of planets. An example of retrograde motion can be seen by looking up at night. The planets, or wondering stars as they where known, move across the night sky from west to east. For a short period however the planets at different intervals can all be seen reversing direction, then later returning to normal motion. To explain this motion Ptolemy, like Aristotle, used epicycles, and epicycles within epicycles. A planet like Venus moves around in a circle, whose center moves around the Earth (Beatty 34). This can be observed with all planets and was not easily explained. Indeed as observations improved the geocentric system got more and more complex and it gets worse.

It however was accepted on the basis that it gave accurate predictions. For a theory to survive it has to make accurate predictions. Ptolemaeus Earth centered system lasted through the dark ages, while Aristotle's geocentric system was believed to be right. Mid 1300,

during the middle ages a philosopher named Nicolas Oresme thought to himself a “theory of astronomy in which the Earth rotated and even moved around the sun.” Unfortunately he would reject these ideas on the bases of scripture. Psalms 93:1 reads that “...the world also is established, that it cannot be moved” (*The Holy Bible* 775).

The dawn of the age of enlightenment. The Catholic Church and its Inquisition would begin to lose their grip on the world. Like Nazi Germany, they would not give up without a fight. To be able to combat the dogma of the Church and heavenly concept passed down from Ptolemy, the world would need “a new kind of man – a man who transcends the narrow limits of his nation” (Fromm 335). The Roman empire was powerful, and the Holy Roman Church was its divine hand of God that would justify its actions.

Along came Nicolaus Copernicus born in 1473. Copernicus was a Roman Catholic monk who lived in Poland. He too believed that the orbits of planets where perfect circles. His ideas of how the universe worked would also run into a few problems because of this. However it was able to perfectly explain retrograde motion, without epicycles. This was known as a sun centered or Heliocentric system. With all the planets orbiting the sun and getting the distances from the sun to the planets almost right on. Even with observations to support his theories he knew the heretical implications that would result. To prevent putting his life and ambitions in danger Copernicus did not have his findings published till the day he died. The manuscript for the book <u>De Revolutionibus Orbium Coelestium</u> (On the Revolutions of the Heavenly Spheres) placed on his deathbed (“Meet Mr. Universe” 2).

It is interesting to note that in light of issues later faced by Bruno and Galileo, Copernicus really did not have to much to be worried about. The forward to the book was written by a man named Andreas Osiander. In the forward Osiander noted that the book would explain a mathematical model of the solar system, not how the solar system actually moved. Perhaps if

Copernicus has been alive things would have been different. In any event, the model was not readily excepted. Although more correct, It was no better at making predictions then the Ptolemy model, and did not agree with the scriptures. There was no real reason or evidence to accept one over the other. It was natural to accept the Earth was the center. The Copernicus model would be proved later on by Galileo, but before then, it was believed by a man named Giordano Bruno.

Giordano Bruno was an Italian philosopher born in 1548. Giordano beliefs went beyond the Copernican system. During his stay in England when he was 45, Bruno gives three dialogs of his views of the universe. Bruno lived during the same time period as Copernicus and discussed the heliocentric model with others. He would also talk about the plurality of worlds, and wonder of their inhabitants. Finally along with other worlds, he imagines infinite universes (Ferraro 727). These views were highly heretical. To imagine that the stars in the night sky are suns like our own, and that they have planets around them like the one we live on. And finally to assume that these planets like Earth, have life on them. It is interesting that many of the assumptions and beliefs of these early astronomers are being proven as the years go by. Surely no life has been found, yet, but with an infinite universe, and who really knows. Bruno's belief in the plurality of worlds and an infinite universe had become widespread. Unfortunately, it was one of the 8 things considered heretical by the Roman Inquisition. Bruno had the capacity to be “disobedient to the authorities that tried to muzzle new thoughts” that he had. (Fromm 332)

As a result the Inquisition did “condemn him to be burnt at the stake in Campo dei Fiori in Rome, on February 16, 1600” (Ferraro 735). One poetic account reads “They mocked you before they lit the fire, 'Italian juggler,' though you saw the atom in the galaxy, and in their stares your own charred finger pointing toward heaven” (Torbin 113).

In our modern day the heavens are studied not only with human eyes, but with the eyes of machines. In radio waves and X-rays, over 200 so called extra solar planets have been found. These planets are are moving around a sun like our own, several light years from our own. If it was not for the dark ages we may have by today sent probes to explore them. It is a tribute to the memory of Giordano Bruno, that such discoveries are now being made, and he is remembered. Thirty Six before the death of Bruno on February 14th 1564, Galileo Galilei was born in Italy. Galileo was a contemporary of Bruno, and he too would face the Inquisition.

The Dutch had an invention around this time, the telescope. This invention would allow a person to view far away objects as if they where close by. Really no more then toys, Galileo perfected the telescope. He would not only look along land, but also into the sky. The simple observations through his telescopes were wonders that no living man or women since creation had seen. They were exciting and every sight proclaimed truths, damned falsehoods and raised countless questions. Galileo believed that God gave people eyes to observe nature and brains to understand it, that people should not take everything to be dogma. Galileo like the new West would “employ its new technological powers for the sake of man” enlightening humanity. (Fromm 336)

There where three specific observations that would be of most importance to this time period. Each one was a magnificent learning experience. Of his first observations, was of the moon. The moon up until this point, was believed to be the same as every other heavenly body, a perfect sphere. Smooth like a marble stone in the heavens moving around the Earth. Galileo saw the dividing line of sunlight and shadow, easily seen by anyone, but the shadow was not smooth. Indeed the most astounding discovery was of mountains and valleys on the moon. It would be one thing to say that there are mountains on the moon, but how about learning that they are five miles high. The heavens are not perfect, even our closest neighbor.

The next discovery is a little complex. It drives from the motion of Venus through the night sky. One observation that was known is that Venus seems to be locked in movement always near the sun. Venus is only ever seen at sunrise or sunset. Now if the Earth was indeed the center of the universe, and Venus orbits around it, then the phases of Venus would only partially be seen on Earth. Galileo was told by one of his followers, Benedetto Castelli, that if the sun was at the center, and that if Venus did indeed orbit around the sun, then he would be able to see a full set of phases for Venus. Galileo observed Venus night after night and found that he could observe a full set of phases for Venus. This proof alone destroys any theory of a geocentric universe, Ptolemy was not correct.

One final blow would come to the geocentric universe. If the heavens are perfect, and if all bodies orbit the Earth no heavenly body would be seen to orbit another. Jupiter orbits on the outer reaches of the then observable universe. Galileo took notes while observing Jupiter, he recorded that there were objects that would appear in front of and behind it. They moved as if to move around the planet. What Galileo discovered was Io, Europa, Ganymede and Callisto. Four moons orbiting Jupiter. These are today known as he Galilean moons and give evidence that not all heavenly objects move around the Earth. Something more was that they where not left behind. So it is possible that the moon can move around Earth and the Earth around the sun. With this he “made some progress in understanding himself and tremendous progress in understanding nature” (Fromm 336).

Other observations were made and combined to excite Galileo, who would start to spread his findings. He wrote a paper entitled The Starry Messenger, and was swiftly brought before the inquisition. However all charges were dropped and he was warned to keep his mouth shut. He did not, he later wrote a short book entitled Dialogo sopra i due massimi sistemi del mondo (Dialog on the Two Chief Systems). In this book three characters discuss the two

systems of astronomy, geocentric and heliocentric. One who supports the geocentric, one who supports the heliocentric and a third educated man who is in between. The man supporting the geocentric is portrayed as a simpleton. Unfortunately the Catholic church decided to review this book, and when they review a book, they also review the author. (Filippenko 14) The trial that would precede as mentioned in the beginning found Galileo guilty of heresy. Galileo knew the dangers that he confronted and to avoid being locked up in a dungeon or burned like Bruno he recanted his belief in the heliocentric theory.

Galileo would not burn for his beliefs. He was put on perpetual house arrest, his writings were banned, and for three years he had to recite the seven penitential psalms. Galileo would spend the rest of his life doing experiments and making discoveries about motion and gravity until his death on 8 January 1642. The Catholic Church would apologize for their harsh actions towards Galileo in 1992. Pope John Paul commented that “The Bible tells how one goes to Heaven, not how the heavens go” (Hummel 14). Religious domination would longer rules over humanity like a brutal tyrant. The very same year Galileo died, Issac Newton was born. He was born on Christmas day and would bring the observations of the celestial motion to completion. He would dabble in alchemy, and invent the calculus. The last of the mystics, Newton would bring a final close to the middle ages and bring civilization into the age of reason, but that is another story.

As Fromm talks about Marx and Freud, he credits them both to have “given us the intellectual tools to break through the sham and rationalization of ideologies, and to penetrate to the core of individual and social reality” (Fromm 336). Galileo, Bruno, Copernicus and the other heroes of this short story surely did the same as they fought the irrational dogma of the evil Holy Roman Empire. By doing so, they brought us into the the modern area of unbridled discovery.

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