

THE SIXTH MEETING

The Galileo Case

Dean Smalley

Good evening. Tonight we come to the fourth day of creation which deals with the origin of the sun, moon and stars. At our preliminary discussions we considered devoting this meeting to the origin of the solar system, but finally decided since we had quite thoroughly studied the origin of the universe on the second day, it would be more appropriate, considering the aims of our dialogue, to devote this meeting to the Galileo Case. We also plan a second meeting for this day dealing with the topic of Extraterrestrial Intelligence. Let me begin tonight's meeting with a reading of the Scriptural account of the fourth day of creation:

And God said, "Let there be lights in the firmament of the heavens to separate the day from the night; and let them be for signs and for seasons and for days and years, and let them be lights in the firmament of the heavens to give light upon the earth." And it was so. And God made the two great lights, the greater light to rule the day, and the lesser light to rule the night; he made the stars also. And God set them in the firmament of the heavens to give light upon the earth, to rule over the day and over the night, and to separate the light from the darkness. And God saw that it was good. And there was evening and there was morning a fourth day (Gen 1:14-19)

Dr. Arthur Schonfield

Jacob Bronowski devoted one entire program in his TV series *The Ascent of Man* to the famous case of Galileo Galilei, which gives us some idea of its importance in the eyes of the humanists. Dr. Bronowski began with a description of the geocentric or earth-centered system of the ancient Greek astronomer, Ptolemy. This system lasted until the time of the Renaissance when Nicholas Copernicus proposed his heliocentric or sun-centered system, which was vigorously championed by Galileo. Today, of course, the sun has been demoted from the center of the universe to the center of the solar system, while our solar system itself has been tucked away in a somewhat obscure corner of the Milky Way Galaxy. So while the astronomy of the Galileo Case, a geocentric versus a heliocentric universe, is now passé, the real issue involved in the Case, the attempt of the Church to dominate science, is still very much with us, as is evident from the recent trials concerning the teaching of evolution in the public schools.

So let me turn now to Dr. Bronowski, who explains that the Galileo Case can only be understood against the background of the great wars of religion which were raging at the time:

“The successes of the Protestant Reformation in the sixteenth century has caused the Catholic Church to mount a fierce Counter-Reformation. The reaction against Luther was in full cry: the struggle in Europe was for authority. In 1618 the Thirty Years War began. In 1622 Rome created the institution for the propagation of the faith from which we derive the word propaganda. Catholics and Protestants were embattled in what we should now call a cold war, in which, if Galileo had only known it, no quarter was given to a great man or small. The judgment was very simple on both sides: whoever is not for us is - a heretic. Even so unworldly an interpreter of faith as Cardinal Bellarmine had found the astronomical speculations of Giordano Bruno intolerable, and sent him to the stake. The Church was a great temporal power, and in that bitter time it was fighting a political crusade in which all means were justified by the end - the ethics of the police state.

“Galileo seems to me to have been strangely innocent about the world of politics, and most innocent in thinking he could outwit it because he was clever. For twenty years and more, he moved along a path that led inevitably to his condemnation. It took a long time to undermine him but there was never any doubt that Galileo would be silenced, because the division between him and those in authority was absolute. They believed that faith should dominate; and Galileo believed that truth should persuade.”¹

In the television presentation of the Galileo Case, we saw Dr. Bronowski in the "Secret Vatican Archives," where he opened a small safe and took out several documents:

...

“Every political trial has a long hidden history of what went on behind the scenes. And the underground history of what came before the trial lies in the locked Secret Archives of the Vatican. Among all these corridors of documents, there is one modest safe in which the Vatican keeps what it regards as the crucial documents. Here, for example, is the application of Henry VIII for divorce - the refusal of which brought the Reformation to England, and ended the tie with Rome. The trial of Giordano Bruno has not left many documents, for the bulk were destroyed; but what exists is here.

“And there is the famous Codex 1181, *Proceedings Against Galileo Galilei*. The trial was in 1633. And the first remarkable thing is that the documents begin - when? In 1611, at the moment of Galileo's triumph in Venice, in Florence, and here in Rome, secret information was being laid against Galileo before the Holy Office of the Inquisition. The evidence of the earliest document, not in this file, is that Cardinal Bellarmine instigated inquiries against him. Reports are filed in 1613, 1614, and 1615. By then Galileo himself becomes alarmed. Unbidden, he goes to Rome in order to persuade his friends among the Cardinals not to prohibit the Copernican world system.

“But it is too late. In February 1616, here are the formal words as they stand in the draft in the Codex, freely translated:

“Propositions to be forbidden: that the sun is immovable at the center of the heaven; that the earth is not at the center of the heaven, and is not immovable, but moves by a double motion.’

“Galileo seems to have escaped any severe censure himself. At any rate, he is called before the great Cardinal Bellarmine and is convinced, and has a letter to say that he must not hold or defend the Copernican World System - but here the document stops. Unhappily there is a document here in the record which goes further, and on which the trial is going to turn. But that is all seventeen years in the future.”²

Galileo went back to Florence in 1616 determined to wait for a more propitious moment to introduce the Copernican system. Cardinal Bellarmine died in 1621 and in 1628 Galileo thought his time had come. One of his admirers, Cardinal Nicholas Barberini, was elected Pope taking the name of Urban VIII. Galileo hurried down to Rome hoping to persuade the new Pope to lift the prohibition of 1616 against the Copernican system. He had six long private interviews with Urban but was not completely successful.

Galileo finally proposed that he write a dialogue in which one speaker presented the Ptolemaic system and another the Copernican. The Pope, somewhat reluctantly, agreed provided that Galileo not come down too hard for either system, but allow the dialogue to end in a draw. He also insisted that he bring out that neither system could be considered absolutely true, since it would limit the power of God to run the universe by miracle if He so chose.

The Dialogue on the Great World Systems appeared in 1632 and it was a complete disaster for Galileo. The Ptolemaic spokesman, who had been made to look like a fool throughout, set forth at the end the proviso which was so dear to the Pope. Urban was outraged, thinking that the Ptolemaic spokesman, who was named Simplicius, was a caricature of himself, and that Galileo was mocking him. Galileo was summoned to Rome to stand trial. In the TV production Bronowski was seated in the room where the trial actually took place.

“So, on 12 April 1633, Galileo was brought into this room, sat at this table, and answered questions from the Inquisitor. The questions were addressed to him courteously in the intellectual atmosphere which reigned in the Inquisition - in Latin, in the third person. How was he brought to Rome? Is this his book? How did he come to write it? What is in the book? All these questions Galileo expected; he expected to defend the book. But then came a question which he did not expect...

“Galileo has a signed document which says that he was forbidden only to hold or defend the theory of Copernicus as though it were a proven matter of fact. That was a prohibition laid on every Catholic at the time. The Inquisition claims that there is a document which prohibits

Galileo, and Galileo alone, to teach it in any way whatsoever - that is, even by way of discussion or speculation or as a hypothesis. The Inquisition does not have to produce this document. That is not part of the rules of procedure. But we have the document; and it is manifestly a forgery - or, at the most charitable, a draft for some suggested meeting which was rejected. It is not signed by Cardinal Bellarmine. It is not signed by the witnesses. It is not signed by the notary. It is not signed by Galileo to show that he had received it.

“Did the Inquisition really have to stoop to the use of legal quibbles between ‘hold and defend,’ or ‘teach in any way whatsoever,’ in the face of documents which could not have stood up in any court of law? Yes, it did. There was nothing else to do. The book had been published; it had been passed by several censors. The Pope could rage at the censors now - he ruined his own Secretary because he had been helpful to Galileo. But some remarkable display had to be made to show that the book was to be condemned (it was on the Index for two hundred years) because of some deceit practised by Galileo. This was why the trial avoided any matters of substance, either in the book or in Copernicus and was bent on juggling with formulae and documents. Galileo was to appear to deliberately have tricked the censors, and to have acted not only defiantly but dishonestly.”³

I think the most powerful scene in the TV production was a closeup of the creaking wheels of a rack, and in the background the agonized voice of a man describing his torture on that infernal machine.

“...Galileo was to retract; and he was to be shown the instruments of torture as though they were to be used. What that threat meant to a man who had started life as a doctor we can judge from the testimony of a contemporary who had been actually suffered the rack and survived. That was William Lithgow, an Englishman who had been racked in 1620 by the Spanish Inquisition:

“I was brought to the rack, then mounted on top of it. My legs were drawn down through the sides of the three planked rack. A cord was tied about my ankles. As the levers bent forward, the main force of my knees against the two planks burst asunder the sinews of my hams, and the lids of my knees were crushed. My eyes began to startle, my mouth to foam and froth, and my teeth to chatter like the doubling of a drummer's sticks. My lips were shivering, my groans were vehement, and the blood sprang from my arms, broken sinews, hands and knees. Being loosed from these pinacles of pain, I was hand-fast set on the floor, with this incessant imploration: 'Confess! Confess!'”

“Galileo was not tortured. He was only threatened with torture twice. His imagination could do the rest. This was the object of the trial, to show men of imagination they were not immune from the process of primitive animal fear that was irreversible.”⁴

Dr. Bronowski concluded with a summary of the inevitable results of the condemnation of Galileo - the end, for all practical purposes, of the tradition of science in the Catholic countries of Europe.

“Galileo was confined for the rest of his life in his villa in Arcetri at some distance from Florence, under strict house arrest. The Pope was implacable. Nothing was to be published. The forbidden doctrine was not to be discussed. Galileo was not even to talk to Protestants. The result was silence among Catholic scientists everywhere from then on. Galileo's greatest contemporary, René Descartes, stopped publishing in France and finally went to Sweden.

“Galileo made up his mind to do one thing. He was going to write the book that the trial had interrupted: the *New Sciences*, by which he meant physics, not in the stars, but concerning matter here on earth. He finished it in 1636, that is three years after the trial, an old man of seventy-two. Of course he could not get it published, until finally some Protestants in Leyden in the Netherlands printed it two years later. By that time Galileo was totally blind. He writes of himself:

“Alas...Galileo, your devoted friend and servant, has been for a month totally and incurably blind; so that this heaven, this earth, this universe, which by my remarkable observations and clear demonstrations I have enlarged a hundred, nay a thousand fold beyond the limits universally accepted by the learned men of all previous ages, are now shriveled up for me into such a narrow compass as is filled by my own bodily sensations.’

“Among those who came to see Galileo at Arcetri was the young poet John Milton from England preparing for his life's work, an epic poem that he planned. It is ironic that by the time Milton came to write the great poem, thirty years later, he was also dependent on his children to help him finish it.

“Milton at the end of his life identified himself with Samson Agonistes, Samson among the Philistines

‘Eyeless in Gaza at the Mill with slaves.’

who destroyed the Philistine empire at the moment of his death. And that is what Galileo did, against his own will. The effect of the trial and of the imprisonment was to put a total stop to the scientific tradition in the Mediterranean. From now on, the Scientific Revolution moved to Northern Europe. Galileo died, still a prisoner in his house, in 1642. On Christmas Day of the same year, in England, Isaac Newton was born.”⁵

It was the great synthesis of Newton built on the works of Copernicus and Galileo which would finally convince the world of the truth of the heliocentric system. And so concluded the most famous of the attempts by religion to dominate science, which had it been successful would have ended the scientific revolution at its very inception. But the recent court cases in

Arkansas and elsewhere on creationism versus evolutionism in the public schools indicate that the battle is not yet completely won.

Fr. Robert A. Staats

The Galileo Case was very much on the minds of the Council Fathers during the Second Vatican Council. Let me read a few excerpts from *Man's Intervention in Nature* one of the volumes in *The Twentieth Century Encyclopedia of Catholicism* by Fr. Owen Garrigan, a professor of chemistry at Seton Hall University. These excerpts, however, are from the Preface which was written by Fr. Francis Nead, the Chairman of the Department of Theology at Seton Hall:

“With the words, ‘One Galileo trial is enough for the Church,’ Cardinal Suenens took formal notice at Vatican II of the death of an age...The adolescence of religious man is finished. He is on the threshold of maturity. His childhood was marked by extensive ignorance of the real nature both of his world and of God. So in his fear he confused the two. His adolescent period saw the growth of his awareness that the world has its own immanent laws...

“Those who thought they knew God well turned upon the rash discoverers of the world's immanent forces in righteous indignation. They condemned Galileo and announced a state of war between science and religion. They cited God's holy word in support of their fulminations. Galileo was perplexed. He could not see, he said, why there was religious opposition to his theories. What difference does it make for man's eternal salvation whether the sun turns around the earth or vice versa? He was right. His judges made a mistake. As they studied God's word they learned more about its real meaning...

“The Pastoral Constitution ‘On the Church in the Modern World’ of Vatican II rings with repeated assertions of the solidarity of the Church with developments in today's world. She does not chide, bemoan the ‘death of religion,’ seek to call men back to former times, lament the disappearance of her influence. In her new consciousness of self and in fuller freedom she ratifies the transition from a sacral to a secular world. She declares her union with secular man struggling to subject the world to himself...

“The Constitution sounds a belated (but necessary) warning to Christians about a warlike attitude evidenced even now. ‘We cannot but deplore certain habits of mind, which are sometimes found, too, among Christians, which do not sufficiently attend to the rightful independence of science and which, from the arguments and controversies they spark, lead many minds to conclude that faith and science are mutually opposed.’

“Led by Scripture scholars, theology has entered into a new freedom, which is to say, a fuller maturity. It is ready to enter into an open and genuine dialogue with man's natural awareness of himself and the world. Freed by its realizing that there are sources of religious

knowledge outside of historical revelation, theology is ready to listen as the sciences speak of themselves.”⁶

One of the discoveries by Scripture scholars mentioned by Fr. Nead which has led theology to a new maturity is that of “literary forms.” We have seen that the Hexameron is a purified form of the *Enuma elish* myth, which means it does not contain historical, but rather religious truth. Now, while we are on the subject of literary forms, we had better take a look at the famous so-called “miracle of the sun,” which is in the background of the whole Galileo Case. Here is the story as it is told in the Book of Joshua:

Then spoke Joshua to the Lord in the day when the Lord gave the Amorites over to the men of Israel; in the sight of Israel:

*"Sun, stand thou still at Gibeon,
and thou moon in the valley of Aijalon."
And the sun stood still, and the moon stayed,
until the nation took vengeance on their enemies.*

Is it not written in the book of Jashar? The sun stayed in the midst of heaven, and did not hasten to go down for about a whole day. There had been no day like it before or since, when the Lord hearkened to the voice of a man, for the Lord fought for Israel (Jos 10:12-14).

Let me turn now to the biography *Robert Bellarmine* by the Jesuit historian James Broderick. Bellarmine, as we have heard from Dr. Bronowski, was very much involved in the Galileo Case. Here is Broderick on the so-called “miracle of the sun”:

“The texts have been a difficulty to biblical exegetes all through the centuries. But since the publication by Pius XII in 1943 of *Divino Afflante Spiritu*, there has been a great and salutary revival in Catholic biblical criticism, due largely to the Pope's sanction of the conception of ‘literary forms’ of various kinds, poetry, epic, history, legend, allegory, each with its own form of truth, in the construction of the Scriptures.

“Archaeology developed at an extraordinary rate since the Second World War and brought to light much new knowledge of the great pagan civilizations, in the midst of which the Hebrew people grew to political maturity and were in many ways effected by the cultures of the nations around them. The Book of Joshua is now seen to be peculiarly rich in ‘literary forms.’ The difficult chapter x is ‘epic history.’ The capture of Jericho, and the battle of Gabaon as described by the sacred writer, are not history in the modern Western sense of the word, but have the strictly religious design of exalting the greatness of Yahweh.

[Footnote] “An ancient poem containing an incantation to the sun and moon is first cited and then transferred into a story. The narrator thus adds to the victory of Gabaon a detail

calculated to fill the hearers with admiration: The day of victory was the longest that men had ever seen." ⁷

So for us there is no problem of whether the sun stood still or whether the earth stood still as was the case in Galileo's time. Here is Broderick's summary of his fellow Jesuit, Robert Bellarmine, and the unfortunate role he played in the Galileo Case:

"It would obviously be anachronistic and unfair to judge Robert Bellarmine's views on Scripture and the Fathers of the Church by the standards of modern Catholic biblical criticism, especially as developed since the publication of Pope Pius XII's encyclical *Divino Afflante Spiritu* in 1943 - curiously the fourth centenary of the publication of *De Revolutionibus Orbium Caelestium* [Copernicus' book on the heliocentric system]. The development of Christian doctrine has been a continuous process since the Apostolic age, as the implications of divine Revelation become clearer to the Church under the guidance of the Holy Spirit; and much is obvious now to the instructed Catholic mind which was far from plain even to so great a man as Bellarmine. But, it might be asked, how does the Cardinal stand when judged by the standards of such highly intelligent Catholics of his own age as Galileo himself, Foscarini, the Jesuit Pereira, and others? The answer must surely be not too well. For instance, when he [Bellarmine] says that "the Council of Trent forbids the interpretation of Scriptures in a way contrary to the common opinion of the Fathers," Galileo was able to reply with the very words of the conciliar Fathers at the fourth session, held on April 9, 1546: 'So far as I can find,' he wrote in the *Letter to the Grand Duchess Christina*, 'all that is prohibited is the "perverting into senses contrary to that of holy mother Church, or that of the unanimous agreement of the Fathers, matters of faith and morals pertaining to the upbuilding of Christian doctrine."' But the mobility or stability of the earth or sun is neither a matter of faith nor contrary to morals.' As for "the common opinion of the Fathers" in the matter of the earth's stability, Galileo again scores heavily against St. Robert whose principles of patristic interpretation were very superficial and not accepted by some good theologians of his own time, e.g. the Spanish Augustinian Didacus à Stunica in his *Commentary on the Book of Job* published at Toledo in 1584, or the Jesuit Pereira *On Genesis*, or the Carmelite Foscarini...

"Bellarmine's rather 'fundamentalist' views were not special to him. They were widespread at the time, and in a sense inevitable, owing to the cautionary and defensive attitude with regard to the Scriptures forced on the Church by the Protestant revolution." ⁸

Finally I would like to read Broderick's comments on the infamous document, mentioned by Dr. Bronowski that was used to bring about Galileo's condemnation in 1633:

"What then is to be made of the document dated February 26 in the Vatican files and produced by the prosecution in 1633 in proof that Galileo had been given an absolute injunction by the Commissary of the Holy Office, in 1616?...The dark truth of the matter...is that the document...is not an original text but somebody's concoction, probably that same year, to

embroil Galileo with the Inquisition should he at any time seek to maintain Copernicanism as a physical reality.

“The bogus injunction is in the same handwriting as that of the neighboring and certainly genuine documents, so the man responsible must have been some unscrupulous curial official hostile to Galileo, now impossible to identify. He succeeded beyond his wildest hopes seventeen years later, when his imaginary injunction was produced as a trump card against the unfortunate astronomer during his trial in Rome. He was taken completely by surprise, and maintained that he had never been given such an injunction. In proof, he produced Cardinal Bellarmine's certificate in 1616; and it is incomprehensible if the Dominican Commissary Firenzuola in 1633 was really trying to discover the truth and not predetermined on a verdict of guilty, that he should not have seen the complete incompatibility between the false injunction and St. Robert's certificate.”⁹

Let me conclude with the somewhat similar case of Teilhard de Chardin. The spirit of the Inquisition which persecuted Galileo is very much alive in the Church today, as is evident from the troubles of Fathers Kung and Schillebeeckx over their progressive theology. But it is even more evident in what amounted to a lifetime persecution of Teilhard on the part of the Roman authorities. Teilhard's troubles first began in 1924 when he was teaching at the *Institut Catholique* in Paris over a paper he had written on the subject of original sin. We shall see later when we come to the sixth day of creation, which deals with the origin of man, that Teilhard did not believe in the historicity of the biblical story of Adam and Eve, since it is incompatible with the scientific fact of the evolution of man. This means that the doctrine of original sin will have to be reformulated. His paper on original sin somehow found its way to Rome, and Teilhard was compelled by his superiors to sign a retraction against his will, and was eventually exiled to China - in other words, an almost exact replay of the Galileo Case.

Teilhard spent twenty years in China, yet his exile backfired because, when he returned to France after the Communist takeover in China, he found that he had become a sort of folk hero to both the scientific community and the progressive element in the Church, which saw him as a modern day Galileo. He was showered with honors including an offer of a professorship at the prestigious Collège de France, France's highest academic honor. The Roman authorities, however, would not allow him to accept the post and once again he was ordered to leave the country. Here is Teilhard's biographer, Robert Speaight:

“The Roman theologians, Teilhard thought, were less important in themselves than for what they represented; and he met their intransigence with serenity. ‘I am prepared to go on to the end,’ he said, ‘and with a smile if possible.’ What put him out of patience, and momentarily out of temper, was the invitation of an ex-religious to join a small dissident community of freethinkers. If the people said to him, as they sometimes did: ‘Your religion is admirable, but it is not the Catholic religion,’ he would answer severely: ‘Do you think me mad enough to want to found a new religion, or to imagine myself a second Jesus Christ?’ There are still Catholics who doubt whether Teilhard's religion was the religion of the Church which he claimed to serve;

but if the authorities of that Church are alarmed at the expansion of his ideas, they have only themselves to thank. The consensus *fideliū* - and *infideliū* - does not in the case of Pierre de Chardin, amount to unanimity, but it has given a pretty reverberating answer to tribunals who pronounce in secret, sentences against which there is no appeal.”¹⁰

Teilhard did not have to wait 200 years, the way Galileo did to have his books taken off the Index. Immediately after his death his humanist friends got together and published his works which had been forbidden by Rome. These have met with astonishing success among humanists and Christians alike. Finally the Church herself, not more than ten years after his death, has made many of his teachings her own in the decrees of the Second Vatican Council, especially the famous *Gaudium et Spes*, the Pastoral Constitution of the Church in the Modern World.

“To the new and acrid secularism of the West, the Church in which Teilhard never ceased to believe has replied with a dramatic *aggiornamento*. Nothing that Teilhard said in public or private - and much that he did not say - was left unsaid at the Second Vatican Council. Much that he clamored for was implied or incorporated in its decrees. When he wrote of inspiration that ‘it is not limited to the composition of a text, but it envelopes that text and lives in it to the extent that the Church very slowly understands it,’ he was stating what is now a theological commonplace. If Teilhard were alive today, he would accept his *reclame* with such equanimity as his modesty allowed; but he would find his optimism vindicated in the popularity and progress of his ideas.”¹¹

Not to be outdone by the final triumph of Teilhard de Chardin, I would like to conclude on a hopeful note concerning Teilhard's prototype, Galileo. There is underway in Rome today, at long last, a movement to reopen the Galileo Case, and thus bring about the complete exoneration of that unfortunate scientist. Let me conclude with a few excerpts from an address given in November of 1979 by Pope John Paul II to the Pontifical Academy of Science:

“[Galileo] had to suffer a great deal - we cannot conceal the fact - at the hands of men and organisms of the Church. The Vatican Council recognized and deplored certain unwarranted interventions: ‘We cannot but deplore - it is written in number 36 of the conciliar constitution *Gaudium et Spes* - certain attitudes (not unknown among Christians) deriving from a shortsighted view of the rightful autonomy of science; they have occasioned conflict and controversy and misled many into thinking that faith and science are opposed.’ The reference to Galileo is clearly expressed in the note to this text, which cites the volume *Vita e opere di Galileo Galilei* by Msgr. Pio Paschini, published by the Pontifical Academy of Science.

“To go beyond this stand taken by the Council, I hope theologians, scholars and historians, animated by a spirit of sincere collaboration, will study the Galileo Case more deeply and, in loyal recognition of wrongs from whatever side they come, will dispel the mistrust that still opposes, in many minds a fruitful concord between science and faith, between the Church

and the world. I give all my support to this task, which will be able to honor the truth of faith and of science and open the door to future collaboration.”¹²

True to his word the Pope has set up a mixed commission of theologians, scientists, and historians, who are currently re-examining the Case.

Mrs. Maria Stepan

Before I approach the fourth day I would like to comment on Dr. Morris' biblical interpretation of the third day of creation. If you remember, I had originally given from the philosopher Fr. Korin, what I thought would have been the fundamentalist interpretation of the third day, namely that God would have intervened directly by way of miracle without the benefit of secondary causes in the production of life. I commented at the time that while this position was reasonable, I did not think it probable. But the position actually brought forward by Dr. Morris I think is not only improbable but also unreasonable. Dr. Morris said that death did not enter the world until after the fall of our first parents. Men would have been immortal and, apparently, he said, the animals as well. Therefore the plants could not have been alive, since they would have died when eaten by men and animals. So plants, according to Dr. Morris, do not possess life, at least in the biblical sense. Now this interpretation that plants are not alive puts the creationists in some very strange company. So let me turn to a standard text entitled *Psychology: A Class Manual in the Philosophy of Organic and Rational Life* by Msgr. Paul Glenn:

“There have been in times past, and indeed there are today, physicists (from the atomists of ancient Greece to the Cartesians of the past three centuries and the materialists of the present) who maintain that plants are not alive at all. But this contention stands fully confuted by the fact that plants have life-activity, and hence a life-principle, and therefore life itself. Plants are alive. The plant has its own fixed and determinate mode of action, and its action is really its own: it is immanent action, performed by, in, and for the plant itself; it is action originated by the plant, directed by the plant, and finished by the plant. Thus, for example, a plant takes food or nourishment, and shows a nice discrimination in selecting and assimilating what suits its nature. It transforms the food into its own substance, building and maintaining the various parts of a highly complex and delicately interbalanced whole. Now no operation of lifeless bodies or lifeless forces (physical, chemical, mechanical) is thus self-originating and self-directive and self-perfective. Chemical affinities, physical union, gravitation, cohesion, inertia, electrical vibration or impulse, local movements, - all these and other lifeless forces or energies are, in non-living bodies, exercised by the wholly extrinsic influence of one bodily thing upon another, even when this influence ends in the substantial union or fusion of the bodies in question. There is nothing self-directive in lifeless activities considered in themselves. There is in them no inner drive or tendency to keep functioning for the benefit of the bodies in which they are found; there is rather the tendency externally or extrinsically, to exercise their mutual function and have done with it; there is a tendency to equilibrium, and rest and inertia. Thus lifeless forces are always transient and extrinsic in their manifested activity; they show no tendency towards development,

preservation, and propagation in themselves or in the bodies which they affect. Living bodies, on the contrary, tend, not to equilibrium and rest, but to continuous, unremitting, self-perfective action; and the plant is, on this score, a truly living body.”¹³

The idea that in the state of innocence carnivorous animals, such as lions, ate plants rather than meat, would probably have to be done by way of miracle, since these animals can't now assimilate grass. They don't chew their cud or have the three-chambered stomachs of cows and other herbivores. St. Thomas would consider this opinion improbable, though not of course, impossible.

“In the opinion of some, those animals which are now fierce and kill others, would in that state, have been tame, not only in regard to man, but also in regard to other animals. But this is quite unreasonable. For the nature of animals was not changed by man's sin, as if those whose nature it is to devour the flesh of others, would have then lived on herbs.”¹⁴

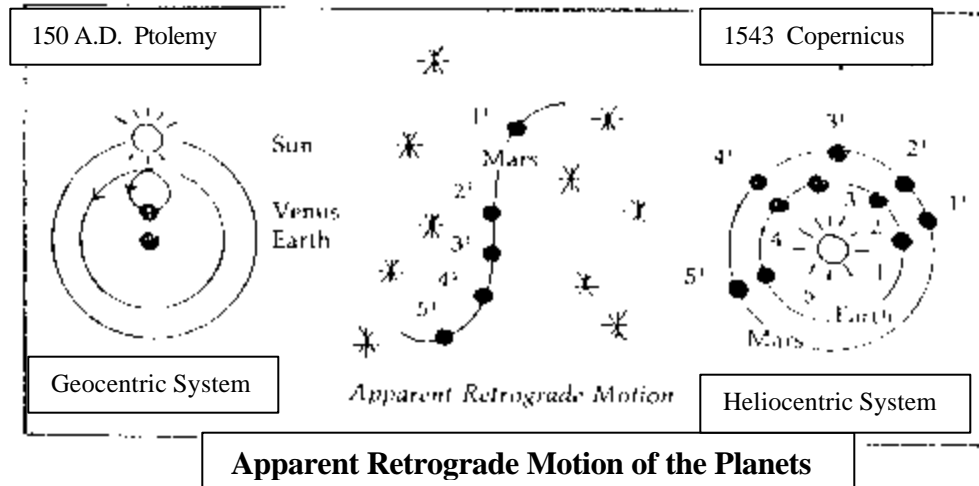
I should also point out that St. Thomas would not agree with Dr. Morris' overly literal rendering of the effects of the Curse on Adam and the earth. "Cursed is the earth in thy work...thorns and thistles shall it bring forth to thee" (Gen 3:17,18). St. Thomas did not think that thorns and thistles appeared on the earth by a special creation after the fall of our first parents. He thought that noxious plants were created at the same time as beneficial plants, but by God's Providence they would not have harmed Adam and Eve in the state of innocence:

“Even before the earth was accursed, the thorns and thistles had been produced, either virtually or actually. But they were not produced in punishment of man; as though the earth, which he tilled to gain his food, produced unfruitful and noxious plants. Hence it was said: "Shall it bring forth to thee." ”¹⁵

Let me go on to our subject for this evening, the Galileo Case. The liberal Protestant biblical scholar, Rudolf Bultman, began a campaign against the historicity of the Gospels which he called "demythologizing." This campaign has, unfortunately, been taken over by liberal Catholics, and a good example of it is their attitude toward Joshua's "miracle of the sun." We heard Fr. Broderick, in the face of all Catholic Tradition, assign this miracle to the literary genre of "epic history," a euphemism for myth. But what really needs to be demythologized is the humanist account of the relations between the Church and Science, a good example of which is the humanist myth as presented by Dr. Bronowski regarding the Galileo Case.

Now all it should take, theoretically at least, to refute a mythological account of an historical event, is a simple recitation of the historical facts. So I thought I would depart tonight from my usual format of commenting first on Dr. Schonfield's presentation and then on Fr. Staatz's, and offer a simple presentation of the historical facts in the Galileo Case. But we need to have a minimum background in astronomy in order to be able to follow the Case, so let's begin with the Greek astronomer Ptolmey, who lived in Alexandria around 150 A.D. Ptolmey's geocentric or earth-centered system made possible for the first time accurate predictions of

eclipses, conjunctions of the planets, and so forth. His system lasted for about 1200 years, which is quite a tribute to his genius.



In the illustration on the blackboard, I have indicated in the middle what is called the "apparent retrograde motion" of the planets. As we observe the planets, they appear to move back and forth against the background of the fixed stars. This is why they are called "planets," from the Greek word for "wanderer." To explain this motion, Ptolemy proposed that the planets were moving in "epicycles," another Greek word meaning "a circle upon a circle." In other words, the planets, as they were circling the earth, were looping the loop. I have indicated the planet Venus executing one of these loops. These epicycles explained the apparent retrograde motion of the planets. As the planet moved forward, and at the same time down on one of its loops, it appeared to be going backward; but as it came to the top of its loop, it appeared to be going forward. This was an ingenious mathematical explanation, but the physics of it just wouldn't work. Imagine if a baseball pitcher could throw a ball in such a way that just as it got to the plate it looped the loop. Every game would be a no-hitter!

In 1543 Nicholas Copernicus, a Polish priest, proposed his heliocentric or sun-centered system. This system offers a much simpler explanation of the apparent retrograde motion of the planets than the Ptolemaic system. In the diagram on the board, the sun is in the center of the universe (it wasn't until much later that it was reduced to being just the center of the solar system) with the Earth plus the planet Mars in orbit around it. From Position 1 on Earth, we observe Mars at Position 11. At the next position 2/21, Mars appears to have gone ahead of Earth; then at position 3/31, Mars appears to have fallen behind. It is like two racing cars on concentric tracks. From the point of view of the car on the inner track (Earth), the car on the

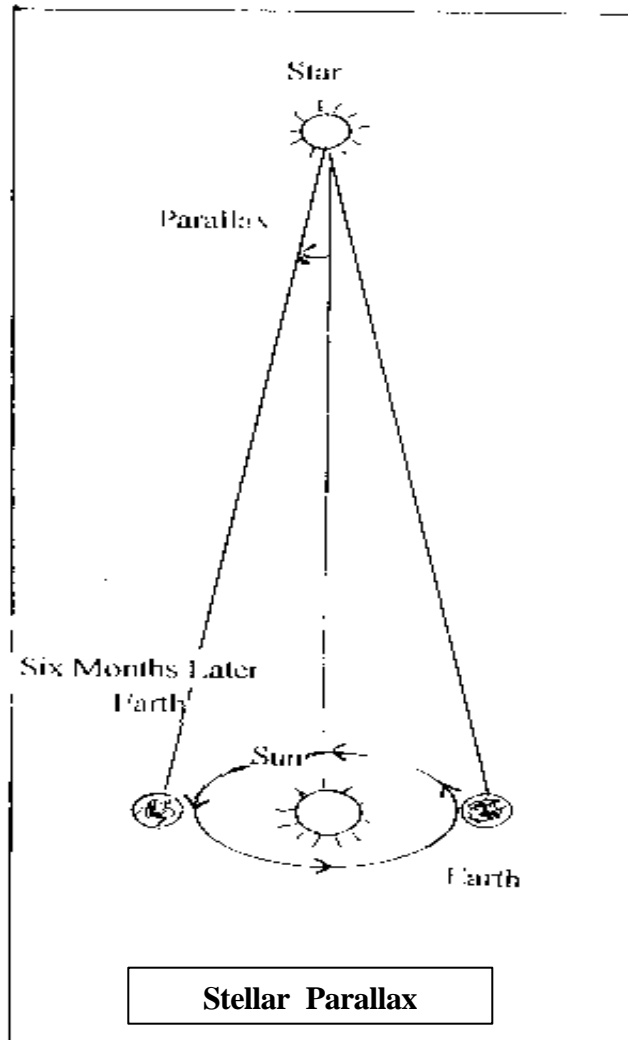
outer track (Mars) appears at one time to have fallen behind, and at another time to be catching up.

This is obviously a much simpler explanation than the complex Ptolemaic system, but the Copernican system had one serious flaw; all the orbits were perfect circles. This made the system useless for predictions of eclipses, conjunctions of planets, and so on. So to make the system useful, Copernicus had to add his own system of epicycles, just as Ptolemy did. In all, he had 34 epicycles, four for the Moon, three for the Earth (which was something new) seven for Mercury, and five each for the other planets. Again, the physics of it just wouldn't work; you can't throw a baseball in such a way that it loops the loop. Copernicus' epicycles were just a crutch to make his system useful for predictions.

The Danish astronomer Tycho Brahe (d. 1601), was a Lutheran, but eventually became the court astronomer of the Catholic Emperor at Prague. One of Brahe's great contributions to astronomy was his study of comets. You can see how comets would be a tremendous problem in a universe such as Ptolemy's which was filled with crystalline spheres. A comet has a huge elliptical orbit, sometimes coming very close to the sun and then going way out beyond the orbit of Pluto, often taking hundreds of years in the process. A comet then, would have to pierce the crystalline spheres. For this reason Aristotle thought that comets were just atmospheric phenomena, well below the sphere of the moon. It is interesting to note that Galileo, whose whole crusade was against the Aristotelian Establishment of his day, rejected Brahe's interpretation of comets, and continued to hold all his life with Aristotle that they were just atmospheric phenomena.

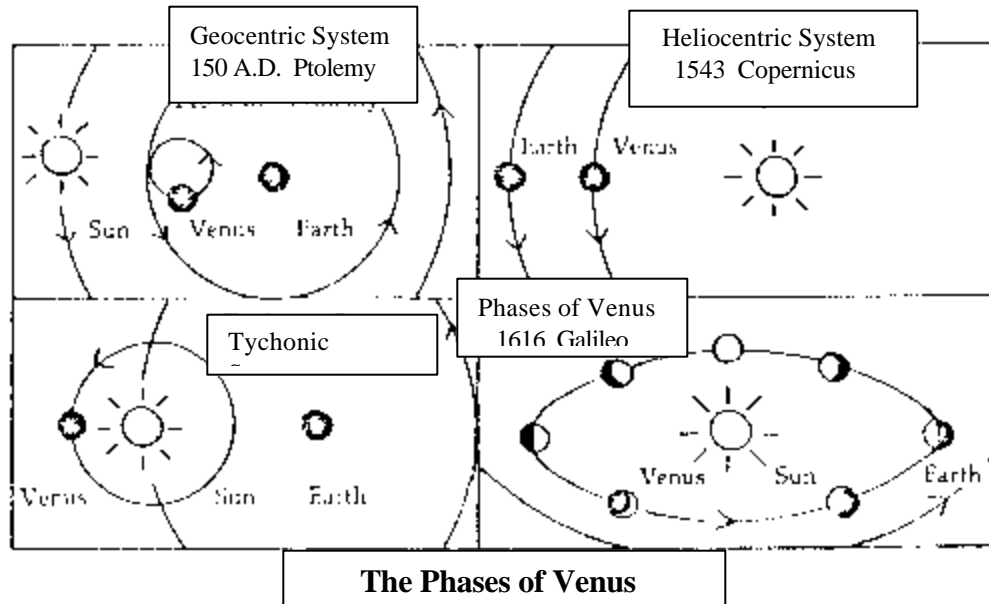
Tycho Brahe never accepted the Copernican system because he could never get a parallax on the fixed stars. Brahe took the angle a fixed star makes with the earth, and then six months later when the earth was supposedly on the other side of its orbit, he took the angle again. It was the same. This meant that either the stars were much further from us than had ever been thought, or that the earth was not moving. Brahe decided that the latter was the case. (Stellar parallax cannot be detected with the naked eye, but only with a very good telescope. It was not until 1838 that the astronomer Friedrich Bessel detected an almost infinitesimal parallax in the star 61 Cygni.) So Brahe proposed his own unique model of the universe based on a stationary earth.

In the Tycho system, the earth is the center of the universe and the sun is going around it, but the inner planets, Mercury and Venus, are going around the sun. The Jesuits, who were among the outstanding scientists of the day, expected to see the eventual confirmation of the heliocentric system, but felt at the time that it lacked sufficient proof to warrant its complete acceptance, and so adopted the Tycho system as a transitional model.

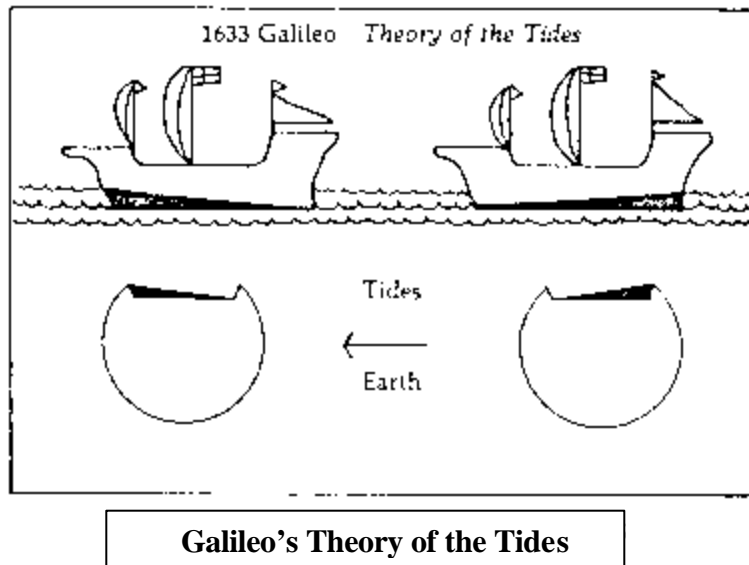


Johannes Kepler (d. 1630) was a German, also a Lutheran, and he succeeded Brahe as court astronomer at Prague. Kepler discovered that the orbits of the planets were not perfect circles as Ptolemy and Copernicus had thought, but rather ellipses. Kepler arrived at the elliptical concept by careful observation, begun by Brahe, of the planet Mars, over a period of many years. Kepler deduced from this that the orbits of all the planets were elliptical. He immediately saw that if the elliptical orbits, rather than perfect circles, were placed on the Copernican model, eclipses, and so on, could be predicted without the crutch of epicycles. This made it possible for the first time to figure out the physics of the heavens, and Kepler who was a much greater astronomer than Galileo, wrote to him about his new discoveries, but Galileo continuously spurned Kepler's offers of friendly collaboration. To the end of his life, Galileo held fast to Copernicus' cumbersome epicycles. Galileo actually wrote: "To me and to me alone, it

has been given to make all the discoveries in astronomy." It was this terrific arrogance which was the source of all Galileo's troubles with the Church.



Galileo Galilei (d. 1642) was the first to study the heavens with a telescope, and the first to observe the phases of Venus, which he considered a convincing proof of the Copernican system. In the diagram on the board, on the lower right, we can see that when Venus is in front of the sun, it is in its crescent and gibbous phases. When it is to the left or right of the sun, it is in its half phase, and when directly behind the sun, in its full phase. As you can see from the Ptolemaic diagram (upper left), Venus is always in front of the sun, so it should always be in its crescent or gibbous phase. Thus Galileo's discovery finished the Ptolemaic system, but did it completely prove the heliocentric system? When Galileo appeared before St. Robert Bellarmine he claimed that he had convincingly proved the Copernican system by his discovery of the phases of Venus. St. Robert consulted the Jesuit astronomer Fr. Grienberger, who informed him that the phases of Venus could also be explained by the Tychonic system. You can see from the diagram on the board (lower left) that in the Tychonic system Venus also goes behind the sun. So St. Robert at the time (1616) allowed Galileo to hold the Copernican system as a working hypothesis but, because of Brahe's unresolved problem of stellar parallax, forbade him to claim it as a proven fact, at least until he could produce something more convincing than the phases of Venus.



Galileo soon came up with what he considered a final, conclusive proof of the Copernican system, his theory of the tides. Galileo was trying to show that the earth was moving through space, rather than stationary as in the Ptolemaic and Tychonic systems, so he compared the earth to a ship moving through the water. As a ship moved through the water, Galileo thought that the water in the bottom of the boat, the bilge, moved back and forth from one end of the boat to the other. So as the earth moved through space, it caused the oceans to move back and forth in their basins in the action called tides. What is hard to believe is that Galileo apparently never tested this theory by experiment. He must have gotten the idea of the water in the boat by hearsay from sailors. Galileo who was a genius at making experimental apparatus, could easily have rigged up something like a fishbowl on a hand cart, and then merely pushed the cart to see if the water moved back and forth in the bowl. He would have found that, if he started the cart off slowly, and had a smooth path, the water wouldn't have moved at all!

We have seen that Galileo's main opponents during his lifetime, what we would today call the Establishment, were the Aristotelians. Galileo despised Aristotelian science because it wasn't experimental but speculative, and often *a priori*. Now, here he is in what he would consider a typical Aristotelian type of argument, in complete violation of all his principles. What makes it worse is that Kepler had written him suggesting that the moon was the cause of the tides, the idea that Newton would later develop, but Galileo as usual spurned Kepler's proposal.

Armed with this new "proof," and with St. Robert Bellarmine now dead and a sympathetic Pope, Urban VIII, now reigning, Galileo hurried down to Rome to get permission to publish on the Copernican system. (He had been forbidden to publish by St. Robert.) He suggested to Urban that he present the problem in the form of a dialogue in which one speaker

presented the Ptolemaic system and another the Copernican. Urban agreed, but told him not to endorse either system, but to let the dialogue end in a draw, since there was the still unresolved problem of stellar parallax. Galileo agreed, but unfortunately did not live up to his agreement. He had his Copernican spokesman utterly demolish the Ptolemaic speaker, his final climactic argument being his theory of the tides. Urban was understandably furious, and after learning from the Jesuit scientists at the University of Rome that Galileo's theory of the tides was just bad physics, he ordered Galileo to be tried by the Inquisition.

Galileo was condemned and sentenced to confinement at his estate near Florence for the rest of his life. It was here that he wrote his greatest book, which is not on astronomy, but on physics, entitled *Dialogue Concerning Two New Sciences*, in which he worked out for the first time some of the movements of earthly bodies. You will remember that Kepler had already worked out the physics of the heavenly bodies. It only remained for Isaac Newton to put these discoveries together. Using the new mathematical tool which he had invented, calculus, Newton for the first time developed a physics that was the same for both the heavens and the earth. Of course, it is possible to speculate, that if Galileo had not been so arrogant, and had he been able to collaborate with Kepler, the great Newtonian synthesis could have been reached years earlier.

So I am sure that after considering the facts in the Case, any fair-minded person would agree that Galileo should have been called to task. Had he lived up to his agreement with Urban and treated each of the world systems in an equitable manner, there would have been no Galileo Case. Evidently he did not inform the censors of the substance of his agreement with the Pope, and thus was guilty of subterfuge in obtaining the *Imprimatur* ("Let it be printed"). Also possibly if he had been able to demonstrate the Copernican system convincingly, there would have been no Case, but his false theory of the tides was fatal.

The agreement that Galileo had made with Pope Urban was oral, and apparently there was no question of calling the Pope as a witness during the trial, but no Catholic will defend the questionable methods used by the Inquisition, especially the use of the alleged absolute injunction of 1616. However this injunction was probably not a plot, as Fr. Broderick suggests, but the work of some officious secretary of Cardinal Bellarmine, who drew it up and then wrongly placed it in the Galileo file, (bureaucrats like to build up their files) despite its never having been issued. Galileo was a good Catholic in spite of his faults, and immediately submitted in 1616 to St. Robert's injunction to refrain from teaching the Copernican system as an established fact, and no further action was called for at that time.

Let me read the Franciscan theologian, Fr. Peter Fehlner's excellent summary of the Case:

“1. The astronomical theories of Galileo touched points also mentioned in Scripture. His views propounded as proven fact, would seem to render Scriptural references to the earth either false or meaningless: the decision to place the works of Galileo on the Index of Forbidden

Books, and to forbid him to publish anything more on the subject, was not a condemnation of scientific theorizing as such; it was an insistence that his particular theory be held merely as a hypothesis, until such time as the Church should have resolved the exegetical questions; to publicize the same in circumstances where it might easily be taken as proven fact by the unformed would act to the detriment of their faith. One may discuss whether this was the best manner to handle the pastoral problem; but it hardly constitutes intellectual tyranny. And just as Galileo's celestial mechanics was not condemned, neither was Aristotle's canonized.

“2. The immediate concern of the Church was not the justification of astronomical theory, but of the guardianship of the deposit of faith and its correct interpretation (Council of Trent 36). Revelation does contain references to what seems to be the immobility of the earth. The Fathers of the Church, as St. Robert noted, also seem to attest to this fact. If the heliocentric theory is true, then as St. Robert observed, our understanding of these passages must be re-examined to discover the faulty interpretation, but it is not permissible in the meantime to say God has stated something false or engaged in pious deception. If the theory is merely possible, this is not a sufficient bases as yet for doubting the literal sense of Scripture attested by the Fathers.”¹⁷

Also any Catholic will admit that the heliocentric theory should not have been condemned, but will deny that the infallibility of the Church was involved in that condemnation. The decrees of a Commission of Cardinals, even if approved by a Pope, are not infallible. Only the decrees of an ecumenical council - that is, a council representing all the bishops of the world, which are approved by a Pope are infallible, and then only in matters of faith and morals. The Pope is also personally infallible when he speaks *ex cathedra* ["from the chair"]: that is, when he solemnly announces that he is speaking infallibly, as for example in the definition of the Assumption of Our Blessed Lady, but again only in matters of faith and morals.

Although the Humanist Establishment has used the Galileo Case for years as a club to beat the Church, there have always been a few notable exceptions to this general rule. For instance, Thomas Henry Huxley, "Darwin's bulldog," went to Rome and examined the Case a little more thoroughly than the average humanist, probably intending to use it in his ongoing controversy with the Anglican Bishop, Samuel Wilberforce. In a letter written to Mivart (one of the first Catholic evolutionists) in 1885 he concluded, rather disappointedly, I presume - "I looked into the matter when I was in Italy and I arrived at the conclusion that the Pope and the College of Cardinals had rather the best of it."¹⁸

This opinion is much more common today among dissident humanists - Lewis Mumford for example. But the best story I have come across about the Galileo Case is one which concerns the English journalist, Sherwood Taylor. Taylor was a member of the anti-Catholic Rationalist Society, one of the forerunners of today's Humanist Society in England, of which Dr. Bronowski was one of the Directors. (Incidentally, this same Humanist Society is currently engaged in yet another well-financed propaganda and political campaign against the Catholic school system in England - so much for their cry of "freedom of thought.") Sherwood Taylor

was assigned by the Rationalist Society to write a book attacking the Church by means of the Galileo Case. After studying the Case, Taylor was converted and received into the Catholic Church - grace sometimes works in strange ways!

After having ridiculed for years the geocentrist position of the Church at the time of the Galileo Case, which seems to be the obvious sense of Holy Scripture, in favor of the heliocentric position of Copernicus, the secular humanists are now saying, at least implicitly, whether they know it or not, that the universe is neither geocentric nor heliocentric, but rather anthropocentric. Man is the center of the universe! This notion, an offshoot of the Big Bang Theory, they call the "anthropic principle." This principle has been eagerly picked up with all its evolutionary baggage by Catholic theistic evolutionists such as Fr. Stanley Jaki, O.S.B., who holds doctorates in both physics and theology. Let me quote from a review of his recent book *Cosmos and Creator*, by the Franciscan Father, Owen Bennett, which appeared in the *Homiletic and Pastoral Review* in December of 1983:

“The specific particular character of the universe thus evolved has a further most striking specificity: it is a universe for human life! On this Jaki comments:

”[This] specific cosmic evolution is dependent on conditions restricted to within narrow limits. One of them is the original ratio of photons to protons, neutrons and electrons. If that ratio had been slightly less than the value given above, much perhaps all of the hydrogen would have been turned into helium. In that case the universe would have been deprived of all organic life. Another of those conditions relates to the total number of those particles, that is, to the total mass of the universe. If the mass had been slightly more than indicated by the actual rate of expansion and other observations, the expansion would have, on account of the greater gravitational attraction, been too slow to permit the cosmic cooking of the peculiar relative percentages. With markedly more matter originally present, the expansion (and the cosmic cooking) would not have taken place at all. Had that mass been slightly less, the expansion would have been much too fast to maintain temperatures and pressures necessary for that cosmic cooking. The universe can indeed be said to have had a very narrow escape in order to become what it actually is. Indeed it may be said that the universe weighs as much as it does, because we humans are here: a most weighty consideration, which is encountered in recent cosmological literature under the label of the anthropic principle. The universe is indeed anthropocentric in a far deeper sense than the one which is discredited by the Copernican revolution.”¹⁸

This is of course just what is said in the Bible: "For thus saith the Lord that created the heavens. God himself that formed the earth, and made it, the very maker thereof: he did not create in vain: he formed it to be inhabited" (Isaiah 45:18).

But a Catholic should take this principle a step further. The universe is not only anthropocentric, it is Christo-centric. I don't mean this in any pseudo-mystical Teilhardian sense,

but in both the literal and spiritual sense. Since the Incarnation, and since Our Lord has remained with us in the Blessed Sacrament in tabernacles all over the world, this little planet is indeed the center of the universe for the whole court of heaven.

In conclusion, I agree with Fr. Staatz that it would probably be a good thing for the Church to review the facts in the Galileo Case, but the facts, not the myth. It is often claimed that science is autonomous, neutral, amoral, or whatever, but this is only in the abstract. In the real world, science is practiced by men possessed of a fallen nature like the rest of us. Scientific research should never become an end in itself, but always be subordinated to a higher good, the good of man, which is not always the good of science. This is no time for the Church to seem to abdicate its rightful duty to remind scientists of their moral responsibilities. Would that the Church still had the authority over scientists it possessed in the days of Galileo; we might not have the atomic bomb.

Rev. De Verne Swezey

Although Galileo is still considered a hero in establishment humanism, he is often considered a villain in counter-culture humanism. One of the favorite authors of many of the students with whom I work in my campus ministry is the philosopher and historian, the late Arthur Koestler. The students like him for the ease with which he deflates the dogmas of contemporary scientism. In 1959 Koestler brought out a wonderful book on the history of astronomy entitled *The Sleepwalkers*, which majors in the Galileo Case. We have just heard Mrs. Stepan's excellent attempt to "demythologize" the humanist version of the Case. Arthur Koestler begins in a similar fashion with a chapter entitled *A Digression on Mythography*:

“...In rationalist mythography [Galileo appears] as the Maid of Orleans of Science, the St. George who slew the dragon of the Inquisition. It is therefore, hardly surprising that the fame of this outstanding genius rests mostly on discoveries he never made, and on feats which he never performed. Contrary to statements in even recent outlines of science, Galileo did not invent the telescope, nor the microscope, nor the thermometer, nor the pendulum clock. He did not discover the law of inertia, nor the parallelogram of forces or motions, nor the sun spots. He made no contribution to theoretical astronomy, he did not throw down weights from the leaning tower of Pisa, and did not prove the truth of the Copernican system. He was not tortured by the Inquisition, did not languish in its dungeons...and he was not a martyr of science.”¹⁹

St. Robert Bellarmine is often presented by the humanists as one of the chief villains in the Galileo Case, usually with the concurrence of liberal Catholics such as Fr. Broderick, who should know better. Here is Koestler who is not a Christian, on Bellarmine:

“As an individual Bellarmine was the opposite of what one would expect from a formidable theologian who defied popes and kings. He was a lover of music and the arts; he had lectured on astronomy in his youth. He had a simple manner and led a simple, ascetic life, in

contrast to other princes of the Church; but above all he had a 'childlike quality that was noted by all who came in contact with him.' At the time of the Galileo controversy, he was writing a devotional book called *Lament of the Dove*, which his most ferocious opponent, James I, in his later years constantly carried about on his person, and described it as a wonderful aid to spiritual comfort.

“One of Bellarmine's official functions was that of a ‘Master of Controversial Questions’ at the Roman College. Here he was in constant touch with the leading astronomers of the capital, Fathers Clavius and Grienberger, who had been among the first converts to Galileo's telescopic discoveries and had acclaimed him on his first visit to Rome. Thus it can hardly be said that Galileo's opposite number in the drama was an ignorant fanatic. Bellarmine's independence of mind is further illustrated by the fact that in 1590 his *magnus opus* the *Disputationes*, was temporarily put on the Index of Forbidden Books.

“Sixteen years before he became involved with Galileo, Bellarmine had been one of the nine Cardinal Inquisitors who participated in the trial of Giordano Bruno, and some writers have tried to see a sinister connection between the two events. In fact, there is none. Bruno was burned alive, on 16 February, 1600, under the most horrible circumstances on the Square of Flowers in Rome, as an impenitent apostate, who during seven years of imprisonment refused to abjure his theological heresies, and persisted in his refusal to the last moment. Giordano Bruno and Michael Servetus (burned in 1553, by the Calvinists in Geneva) seem to have been the only scholars of repute who became victims of religious intolerance in the sixteenth and seventeenth centuries - not of course because of their scientific, but because of their religious opinions. Coleridge's remark: ‘If ever a poor fanatic thrust himself into the fire, it was Michael Servetus,’ applies to the irascible and tempestuous Bruno as well. His teachings of the infinity of the universe and the plurality of inhabited worlds, his pantheism and universal ethics exerted considerable influence on subsequent generations; but he was a poet and a metaphysician, not a scientific writer, and thus does not enter into this narrative.”²⁰

If you remember; Dr. Bronowski claimed that Cardinal Bellarmine "had found the astronomical speculations of Giordano Bruno intolerable, and sent him to the stake." This is just not true. Let me go on with Koestler's summary of the trial:

“He was then told that, by the manner in which the subject was treated in the *Dialogue*, and the fact that he had written the said book, he was presumed to have held the Copernican opinion; and he was asked a second time to state the truth freely. He answered that he had written the book to confer a common benefit by setting forth the arguments for both sides, and repeated again ‘I do not now hold the condemned opinion, and have not held it since the decision of the authorities’ [Galileo is referring to Bellarmine's injunction of 1616]. He was admonished a third time that on the contents of the book he was presumed to hold with Copernicus, or at least to have done so at the time he wrote it, and that therefore ‘unless he made up his mind to confess the truth, recourse would be had against him to the appropriate remedies of the law.’ Galileo answered, ‘I do not hold, and have not held, this opinion of

Copernicus since the command was intimated to me that I must abandon it; for the rest I am here in your hands - do with me what you please.' When he was for the last time bidden to speak the truth, under the threat of torture, Galileo repeated, 'I am here to obey and I have not held this opinion since the decision was pronounced, as I have stated.'

"If it had been the Inquisition's intention to break Galileo, this obviously was the moment to confront him with the copious extracts from his book - which were in the files in front of the judge - to quote him on what he had said about the sub-human morons and pygmies who were opposing Copernicus, and to convict him of perjury. Instead, immediately following Galileo's last answer, the minutes of the trial say: 'And as nothing further could be done in execution of the decree, his signature was obtained to his disposition and he was sent back.'

"Both the judges and the defendant knew that he was lying; both the judges and he knew that the threat of torture (*territio verbalis* - as opposed to *territio realis* where the instruments of torture are shown to the accused) was merely a ritual formula which could not be carried out [old or sick people, and Galileo was both, could not be tortured]; and that the hearing was a pure formality. Galileo was led back to his five room apartment, and on the next day the sentence was read out to him. It was signed by only seven of the ten judges. Among the three who abstained was Cardinal Francesco Barbarini, Urban's brother. The *Dialogue* was prohibited; Galileo was to abjure the Copernican opinion; he was sentenced to 'formal prison during the Holy Office's pleasure'; and for three years to come, was to repeat once a week the seven penitential psalms. He was then presented with the formula of abjuration, which he read out. And that was the end of it.

"The 'formal prison' took the form of a sojourn at the Grand Duke's villa at Trinità del Monte, followed by a sojourn in the palace of the Archbishop Piccolomini in Sienna where according to a French visitor, Galileo worked 'in an apartment covered in silk and most richly furnished.' Then he returned to his farm at Arcetri, and later to his house in Florence, where he spent the remaining years of his life. The recital of the penitential psalms was delegated with ecclesiastical consent, to his daughter, Sister Marie Celeste a Carmelite nun."²¹

Of course Koestler agrees with Mrs. Stepan that the trial considered from a strictly legal point of view, was a miscarriage of justice, but like Mrs. Stepan (amazingly for a non-Christian) he denies that the verdict compromised the infallibility of the Church. But the whole point of the Galileo Case is that it was more than a mere legal trial.

"From the purely legal point of view the sentence was certainly a miscarriage of justice. If one works through the maze of verbiage, it appears that he was found guilty on two counts: firstly, of having contravened both Bellarmine's admonition, and the alleged formal injunction of 1616, and having 'artfully and cunningly extorted the license to print by not notifying the censor of the command imposed upon him'; and secondly, of having rendered himself 'vehemently suspect of heresy, namely of having believed and held a doctrine which is contrary to Sacred Scripture that the sun is the center of the world.' Concerning the first count, no more need be

said about the dubious character of the alleged absolute injunction; so for the second, the sun-centered universe had never officially been declared a heresy, since...the decree of the Congregation of 1616 had not been confirmed by infallible pronouncement *ex cathedra* or by ecumenical council. Had not Urban himself said that the Copernican opinion 'was not heretical but merely reckless.'

"On the other hand, the judgment hushes up the incriminating contents of the book stating that Galileo had represented the Copernican system as merely 'probable' - which is a whale of an understatement. It also hushes up the fact that Galileo had been lying and perjuring himself before his judges by pretending that he had written the book in refutation of Copernicus, that he had 'neither maintained nor defended the opinion that the earth moves,' and so forth. The gist of the matter is that Galileo could not legally be convicted without completely destroying him - which was not the intention of the Pope or Holy Office. Instead, they resorted to a legally shaky concoction. The intention was, clearly, to treat the famous scholar with consideration and leniency, but at the same time to hurt his pride, to prove that not even a Galileo was allowed to mock Jesuits, Dominicans, Pope, and Holy Office; and lastly to prove that, in spite of his pose as a fearless crusader, he was not the stuff of which martyrs are made."²²

Arthur Koestler does not agree that the final result of the Galileo Case was that the tradition of science fled the Catholic countries of Europe - the Samson analogy of Dr. Bronowski:

"The first open conflict between the Church and Science was the Galileo scandal. I have tried to show that unless one believes in the dogma of historic inevitability - this form of fatalism in reverse gear - one must regard it as a scandal which could have been avoided; and it is not difficult to imagine the Catholic Church adopting after a Tychonic transition, the Copernican cosmology some two hundred years earlier than she eventually did. The Galileo affair was an isolated, and in fact quite untypical, episode in the history of the relations between science and theology...But its dramatic circumstances, magnified out of all proportion, created a popular belief that science stood for freedom, the Church for oppression of thought. That is true only in a limited sense for a limited period of transition. Some historians, for instance, wish to make us believe that the decline of science in Italy was due to the 'terror' caused by the trial of Galileo. But the next generation saw the rise of Toricelli, Cavallieri, Borelli, whose contributions to science were more substantial than those of any generation before or during Galileo's lifetime; the shift of the center of scientific activity to England and France and the gradual decline of Italian science, as of Italian painting, was due to different historical causes. Never since the Thirty Years War has the Church oppressed freedom of thought and expression to an extent comparable to the terror based on the 'scientific' ideologies of Nazi Germany or Soviet Russia."²³

I have tried to point out that the so-called counter culture movement (an unfortunate phrase), is basically a religious movement. I mentioned how I prefer the sacral humanism of the

Koestler type, as opposed to the secular humanism of the Bronowski type. Accordingly Arthur Koestler sees the real tragedy of the Galileo Case in the resulting split between Science and Religion which he thinks has led to their mutual impoverishment.

“As a result of their divorce, neither faith nor science is able to satisfy man's intellectual cravings. In the divided house, both inhabitants lead a thwarted existence. Post-Galilean science claimed to be a substitute for, or the legitimate successor of, religion; thus its failure to provide the basic answers produced not only intellectual frustration but spiritual starvation. A summary recapitulation of European men's view of the world before and after the scientific revolution may help to put the situation into sharper relief. Taking the year 1600 as our dividing line or watershed, we find indeed virtually all rivers of thought and currents of feeling flow into opposite directions. The ‘pre-scientific’ European lived in a closed universe with firm boundaries in space and time of a few million miles in diameter and a few thousand years of duration...

“In this safely bounded world of comfortable dimensions, a well-ordered drama was taking its pre-ordained course. The stage remained static from beginning to end: there was no change in the species of animals and plants, no change in the nature, social order, and mentality of man. There was neither progress nor decline within the natural and spiritual hierarchy. The total body of possible knowledge was as limited as the universe itself; everything that could be known about the Creator had been revealed in Holy Scripture and the writing of the ancient sages. There existed no sharp boundaries between the natural and the supernatural;...natural law was interpenetrated with divine purpose; there was no event without a final cause. Transcendental justice and moral values were inseparable from the natural order; no single event was ethically neutral; no plant or metal, no insect or angel, exempt from moral judgment; no phenomenon was outside the hierarchy of values. Every suffering had its reward, every disaster its meaning; the plot of the drama had a simple outline, a clear beginning and end.

“This briefly, was our forebears view of the world less than fifteen generations ago. Then roughly within the five generations from Canon Koppernigk [Copernicus] to Isaac Newton, *homo sapiens* underwent the most decisive change in his history...

“The *uomo universale* of the Renaissance, who was artist and craftsman, philosopher and inventor, humanist and scientist, astronomer and monk, all in one, split into his component parts. Art lost its mythical, science its mystical inspiration; man became deaf to the harmony of the spheres. The Philosophy of Nature became ethically neutral, and ‘blind’ became the favorite adjective for the working of natural law. The space-spirit hierarchy was replaced by the space-time continuum.

“As a result, man's destiny was no longer determined from ‘above’ by a super-human wisdom and will, but from below’ by sub-human agencies of glands, genes, atoms, or waves of probability. The shift of the locus of destiny was decisive. So long as destiny had operated from a level of the hierarchy higher than one's own, it had not only shaped his fate, but also guided his conscience and imbued his world with meaning and value. The new masters of destiny were

placed lower in the scale than the being they controlled; they could determine his fate, but could provide him with no moral guidance, no values and meaning. A puppet of the gods is a tragic figure, a puppet suspended on his chromosomes is merely grotesque.”²⁴

In conclusion let me say that Arthur Koestler, who was not a Christian, appears to me in many ways closer to Christian values, than many of today's liberal Christians, who seem to be Christian in name only.

Dean Smalley

Our meeting tonight was on the fourth day of creation which deals with the origin of the sun, moon, and stars, and we thought it an appropriate place to discuss the famous Galileo Case.

Dr. Schonfield presented what might be called the establishment humanist version of the Case from Jacob Bronowski. Fr. Staatz concurred with this version, including Bronowski's somewhat dim view of Cardinal Bellarmine.

Mrs. Stepan on the other hand, made an attempt to "demythologize" the humanist version of the Galileo Case by what she called a "simple recital of the historical facts." These were, she said, that Galileo, despite his claim to the contrary, lacked scientific proof for the heliocentric system, and indeed his main "proof," the theory of the tides, was simply bad physics.

Rev. Swezey joined Mrs. Stepan's demythologizing efforts from the anti-Establishment critic Arthur Koestler. Koestler was not a Christian, but surprisingly completely supported Mrs. Stepan's recitation of the historical facts in the Case and concluded that this tragedy, which has led to the separation of religion and science, has resulted in their mutual impoverishment.

- 1 Jacob Bronowski, *The Ascent of Man*, Little, Brown and Co., Boston, 1973, p.205.
- 2 Bronowski, *Op. cit.*, pp.205,207.
- 3 Bronowski, p.213.
- 4 Bronowski, pp.214,215.
- 5 Bronowski, p.218.
- 6 Francis Nead, Preface to: Owen Garrigan, *Man's Intervention in Nature*, Hawthorne Books, New York, 1967, pp.7-9.
- 7 James Broderick, S.J., *Robert Bellarmine*, Newman Press, Westminster, MD, 1961, p.354.
- 8 Broderick, *Op. cit.*, pp.363-365.
- 9 Broderick, pp.376,377.

- 10 Robert Speaight, *Teilhard de Chardin*, Collins, London, 1967, pp.323,324.
- 11 Stanley Jaki, O.S.B., *Cosmos and Creator*, Scottish Academic Press, 1980, in U.S.A. Regnery Gateway Editions, New York, pp.40,41; cited in: *Cosmos: A Trap or a Home?* Owen Bennett, O.F.M., Conv., *Homiletic and Pastoral Review*, New York, December, 1983, p.52.
- 12 Speaight, *Op. cit.*, pp.14,15.
- 13 Pope John Paul II, Address to the Pontifical Academy of Science, *L'Osservatore Romano*, Nov. 26, 1979.
- 14 Msgr. Paul Glenn, *A Class Manual in the Philosophy of Organic and Rational Life*, B. Herder, New York, 1947, p.486.
- 15 St. Thomas Aquinas, *Summa Theologica* (I, Q96, a1, ad2), Benzinger Brothers, New York, 1947, p.486.
- 16 St. Thomas, *Op. cit.*, (I, Q69, a2, ad2), pp.344, 345.
- 17 Quoted in John Mckee, *The Enemy Within the Gate*, Lumen Christi Press, Houston, 1974, p.111.
- 18 Peter D. Fehlner, F.F.I. *In the Beginning, Christ to the World*, Rome, Vol. XXXIII (1988) Number 2, p.160.
- 19 Arthur Koestler, *The Sleepwalkers*, MacMillan Co., New York, 1959, p.353.
- 20 Koestler, *Op. cit.*, pp.443,444.
- 21 Koestler, pp.491-493.
- 22 Koestler, p.493.
- 23 Koestler, pp.522,523.
- 24 Koestler, pp.537-539.



THE SEVENTH MEETING

Extraterrestrial Intelligence

Dean Smalley

Tonight we will conclude our discussion of the fourth day of creation, which deals with the origin of the sun, moon, and stars. Our topic for this evening is the possibility of extraterrestrial intelligence. We will begin as usual by reading the Scriptural account of the fourth day of creation:

And God said, "Let there be lights in the firmament of the heavens to separate the day from the night; and let them be for signs and seasons and for days and years, and let them be lights in the firmament of the heavens to give light upon the earth," and it was so. And God made two great lights, the greater light to rule the day, and the lesser light to rule the night; he made the stars also. And God set them in the firmament of the heavens to give light upon the earth, to rule over the day and over the night, and to separate the light from the darkness. And God saw that it was good. And there was evening and there was morning a fourth day (Gen 1:14-19).

Dr. Arthur Schonfield

One of the world's leading authorities on the topic of extraterrestrial intelligence is Carl Sagan; and although all his books deal with this subject, I prefer his treatment in *Broca's Brain*. Chapter twenty-two is entitled *The Quest for Extraterrestrial Intelligence*, and it significantly appears just before Part V, *Ultimate Questions*, which we have already seen:

“Throughout all of our history we have pondered the stars and mused whether humanity is unique or if, somewhere else in the dark of the night sky, there are other beings who contemplate and wonder as we do, fellow thinkers in the cosmos. Such beings might view themselves and the universe differently. Somewhere else there might be very exotic biologies and technologies and societies. In a cosmic setting vast and old beyond ordinary understanding, we are a little lonely; and we ponder the ultimate significance, if any, of our tiny but exquisite blue planet. The search for extraterrestrial intelligence is the search for a generally acceptable cosmic context for the human species. In the deepest sense the search for extraterrestrial intelligence is a search for ourselves.”¹

Carl Sagan is by profession a highly respected radio astronomer and only incidentally a popularizer of science lore. He estimates that there are about a million advanced civilizations, which he defines as civilizations capable of radio astronomy in our Milky Way Galaxy. This

number is arrived at first by estimating the number of stars in our galaxy, now thought to be about 250 billion; then the rate of formation of planetary systems; then the likelihood of the origin of life; and finally the probability of the evolution of intelligence - all matters about which Sagan admits we know very little.

The only practical way for us to begin the search for extraterrestrial intelligence at this time is by radio astronomy, that is by listening for radio signals from outer space. As Philip Morrison of the Massachusetts Institute of Technology said: 'God knows how to make light but he doesn't know how to make [radio] microwaves. They're made on earth by people.' The search was begun by the American astronomer, Frank Drake, later a close collaborator with Sagan, in 1959 and 1960 at the National Radio Astronomy Observatory in Greensbank, West Virginia. He listened to two nearby stars, Epsilon Eriani and Tau Ceti, for several weeks with negative results. In 1983 a more ambitious program was launched by Harvard astronomer Paul Horowitz using an 84 foot radio telescope in Harvard, Massachusetts.

Sagan estimates that out of the 250 billion stars in our galaxy there could be a million advanced civilizations. This means that we have only made a tiny fraction of the required effort. The search continues, and it could take many, many years; or we could make a lucky hit at any time.

The most important aspect of the quest for extraterrestrial intelligence, Sagan says, is that eventually we will be able to give more satisfactory answers to the "ultimate questions" than are available at present:

“The detection of intelligent radio signals from the depths of space would approach in an experimental and scientifically rigorous manner many of the most profound questions that have concerned scientists and philosophers since prehistoric times. Such a signal would indicate that the origin of life is not an extraordinary, difficult, or unlikely event. It would imply that, given billions of years for natural selection, simple forms of life evolve generally into complex and intelligent forms, as on earth; and that such intelligent forms commonly produce an advanced technology, as also has occurred here. But it is not likely that the transmission we receive will be from a society at our own level of technological advance. A society only a little more backward than ours will not have radio astronomy at all. The most likely case is that the message will be from a civilization far in our technological future. Thus even before we decode such a message, we will have gained an invaluable piece of knowledge: that it is possible to avoid the dangers of the period through which we are now passing.

“There are some who look on our global problems here on earth - at our vast national antagonisms, our nuclear arsenals, our growing populations, the disparity between the poor and the affluent, shortages of food and resources, and our inadvertant alterations of the natural environment - and conclude that we live in a system that is destined soon to collapse. There are others who believe that our problems are soluble, that humanity is still in its childhood, that one day soon we will grow up. The receipt of a single message from space would show that it is

possible to live through such technological adolescence: the transmitting civilization, after all has survived. Such knowledge, it seems to me, might be worth a great price.”²

Sagan feels that the search for extraterrestrial intelligence should be given the highest priority, because the first message we receive might well tell us how to avoid a nuclear holocaust.

“In particular, it is possible that among the first contents of such a message may be detailed prescriptions for the avoidance of technological disaster, for a passage from adolescence to maturity. Perhaps the transmissions from advanced civilizations will describe which pathways of cultural evolution are likely to lead to the stability and longevity of an intelligent species, and which other paths lead to stagnation or degeneration or disaster. There is of course no guarantee that such would be the contents of an interstellar message, but it would be foolhardy to overlook the possibility. Perhaps there are straightforward solutions, still undiscovered on earth, to problems of food shortages, population growth, energy supplies, dwindling resources, pollution, and war.

“While there surely will be differences among civilizations, there may be laws of development of civilizations which cannot be glimpsed until information is available about the evolution of many civilizations. Because of our isolation from the rest of the cosmos; we have information on the evolution of only one civilization - our own. And the most important aspect of that evolution - the future - remains closed to us. Perhaps it is not likely, but it is certainly possible that the future of human civilization depends on the receipt and decoding of interstellar messages from extraterrestrial civilizations.

“And what if we make a long-term, dedicated search for extraterrestrial intelligence and fail?...Such a finding will stress, as nothing else can, our responsibilities to the dangers of our time: because the most likely explanation of negative results, after a comprehensive and resourceful search, is that societies commonly destroy themselves before they are advanced enough to establish a high-power radio-transmitting service.”³

But despite this sobering possibility, Sagan concludes on a characteristically optimistic exhortation.

“But we will not know the outcome of such a search, much less the contents of messages from interstellar civilizations, if we do not make a serious effort to listen for signals. It may be that civilizations are divided into two great classes: those who make such an effort, achieve contact, and become new members of a loosely tied federation of galactic communities; and those who cannot or choose not to make such an effort, or who lack the imagination to try, and who in consequence soon decay and vanish. It is difficult to think of another enterprise within our capability and at a relatively modest cost that holds as much promise for the future of humanity.”⁴

Let me say in conclusion, that I think the most significant line in these few brief excerpts from Carl Sagan was: "the search for extraterrestrial intelligence is a search for ourselves." Whether or not we finally discover other intelligent beings besides ourselves, and the great likelihood is that we will, we will soon be able to answer in a more rigorous manner the "ultimate questions" concerning the meaning, or lack of meaning, of life.

Fr. Robert A. Staats

As far as I know, no Catholic theologian or philosopher has made an extensive study of the possibility of extraterrestrial intelligence, but many short articles have appeared on the subject in various Catholic periodicals. For example, the Jesuit national weekly *America* has reprinted two such articles in a pamphlet entitled *Rational Life in Outer Space*. Let me read a few excerpts from one of the articles humorously entitled *Are There Others Out Yonder?* by the Jesuit, L.C. McHugh, a professor of theology at Georgetown University. Fr. McHugh first examines the possibility of extraterrestrial intelligence from the point of view of science:

“Serious astronomers are striving to find meaningful patterns amid all the random static that pours into the dish of a big radio telescope in West Virginia. Project Ozma's outlay of tax money is not a boondoggle. It stems from statistical implications and the intuitional thrust of modern cosmogony and biochemistry.

“Increasingly, biochemistry favors the view that life will arise as a normal result of chemical evolution whenever conditions are right. If favorable circumstances prevail over sufficient aeons of time, the evolutionary quality of life verges naturally toward higher and eventually rational forms. As for astronomy, current theories of cosmic development generally suggest that planet formation is a common event in the evolution of the quintillions of stars that lie within our view. It is exceedingly probable that billions of planets occupy the ‘golden zones’ of distant suns where temperature and other energy factors favor the emergence of life. Perhaps then the highest forms of organic existence are a widespread climax of cosmic history, rather than an isolated discontinuity that has appeared just once as a sort of ‘contamination’ of the earth's mantle.”⁵

So much for the possibility of extraterrestrial intelligence from the view point of science; McHugh then examines the possibility philosophically:

“...Where science talks of statistical probability that life may arise by chance and develop through random variations, the Catholic philosopher holds that there can be no real chance in a world created by God. There are only lines of causality unintelligible to us but unified in the divine Mind and somehow expressive of His purposes. On the other hand, since we increasingly regard the origin of life as an event of the natural order rather than as a metaphysical problem demanding the miraculous intervention of creative power, there is no insurmountable difficulty in granting that life may arise whenever the apt conditions are present.

“Moreover, in life as we know it, there are remarkable powers of adaptability, differentiation, and movement toward rational organization. Organic life on earth evolved toward a specialized animal form that in God's design was apt material for the infusion of a spiritual soul, while at the same time the lower forms were ordained to serve as a substratum for rational existence and its needs. Why should these things not be generally true in a physical universe characterized by uniformity of law and process? Hence, where suitable conditions exist on a planetary mantle we may expect life to emerge, perhaps as a normal aspect of development. Where the conditions persist for billions of years, may not we expect that God is preparing for a divine incursion of the biosphere that will manifest His glory in the phenomenon of man?”⁶

These ideas of course, are similar to those of Teilhard de Chardin. McHugh goes on from philosophy to theology:

“In his *Contra Gentes*, while discussing the providence of God, Thomas Aquinas notes ‘that the first thing aimed at in creatures is their multiplication... and to the gaining and securing of this end all things seem to be subordinated.’ Aquinas held this position within the narrow framework of Aristotelian physics and astronomy. If he had considered the hierarchy of being within the framework of an expanding universe, how would he have expressed himself? Would he perchance have suggested that the irrational creation, where numbers proliferated, cannot meaningfully establish and conserve that to which it is ordained, unless rational life is also common in the physical universe?

“...If he had possessed our knowledge of the cosmos, would he perhaps have held that a few billions of our human stock, inhabiting an isolated corner of creation, inadequately manifest the goodness of God as it can be shown in rational animals? ‘Multiplication and variety were needful to creation, to the end that the perfect likeness of God might be found in creatures according to their measure.’

“Perhaps, then, there are races that were elevated to grace. We sons of Adam are a race elevated, fallen, and redeemed - a testimony to His mercy. Who will say there are no races elevated but not fallen, as testimony to His holiness? Who can say that there are no races elevated fallen, but forever without redemption to show forth the mystery of his justice? [These notions were developed extensively by C.S. Lewis in his science fiction.]

“I am not aware of any grave theological objections to the probabilities I have described. The purpose of revelation was to teach us what we needed for salvation, not to instruct us in science and philosophy.

“I am not perturbed, for example, at the imagination of a second Mother of God, for I do not even find difficulty in conceiving even a thousand incarnations of each or all of the Persons of the Trinity. Aquinas discussed several such possibilities centuries ago and found none of them repugnant to sound theology, though of course he did not suggest that they were actually realized.”⁷

So there seems to be no serious problem regarding the possibility of extraterrestrial intelligence from the point of view of science, philosophy, and even theology. If, then, extraterrestrial intelligence is actually discovered, what will this mean for the Church?

“Why do we normally resist the thought that man might not be alone in the universe? I think that our perennial jealousy of our status largely springs from the erroneous science that long ago placed us at the center of the visible creation. It was inevitable that we regarded ourselves as unique, when all the obvious signs indicated that the heavens revolved about us night and day.

“During the course of the years, as we know, the supposed center of the cosmos moved from the earth to the sun, from the sun to the galaxy, until today man resides he knows not where in a metagalaxy of undisclosed structure and extent. Yet now that we know that we have lost our physical centrality, we still cling to the prejudice that we are unique, solely on the grounds of our intellectual superiority.

“Where does the evidence for uniqueness lie? Man as such has no centrality in the total creation. The hub of that complex lies in the angelic world, not in any aspect of material creation. We on earth cannot argue uniqueness from the fact that we are images of God in a material mold: for the dignity of being such an image is endlessly shareable. And neither does our worth give any ground for complacency; the redemptive love that the Father showed us in sending His Only-Begotten Son was a proof of His generosity in the face of our desperate need, not an indication that God found some vein of gold in the corruption of our fallen nature.

“Despite our lowliness, I feel sure that even our race has a destiny in space. We may not be able to assign a farthest limit to our lordship over nature, but it will not be limited to the earth alone. Earthly man will go as far as his ambition and inventiveness can carry him. And since he will take the Mystical Body with him, wherever he goes, his colonization of space may be looked upon as a providential extension of the Incarnation in space and time. The Church, perhaps, has a physical dimension beyond our ken.”⁸

Mrs. Maria Stepan

The idea that there are other inhabited worlds besides our own was taught by many of the ancient pagan philosophers of Greece and Rome, such as Democritus and Lucretius. With the revival of pagan learning at the time of the Renaissance, the idea was again proposed by the Greek Cardinal, Nicholas of Chusa. Later Giordano Bruno incorporated the notion into his pantheistic world system. St. Robert Bellarmine allowed Bruno to speculate philosophically on the possibility of extraterrestrial intelligence - it is of course possible that God could have created other inhabited worlds besides our own. This is legitimate philosophical speculation, but it is an entirely different matter to claim it as a fact, which Bruno eventually did. Bruno, who in

many ways reminds me of Teilhard de Chardin, was unfortunately burned at the stake, not for this notion, but for refusing to abjure his theological heresies.

Let us see what the Tradition and Magisterium of the Church teach concerning the possibility of extraterrestrial intelligence. St. Thomas Aquinas also speculated philosophically on the possibility of other worlds, but rejected the idea as an actual fact.

“Whether There Is Only One World?”

“Objection 1. It would seem that there is not only one world, but many. St. Augustine says, that it is unfitting to say that God has created things without a reason. But for the same reason he created one, He could create many, since His power is not limited to the creation of one world; but rather it is infinite...therefore God has produced many worlds.

“On the contrary. It is said (John 1:10): ‘The world was made by Him,’ where the world is named as one; as though one existed.

“I answer that, the very order of things created by God shows the unity of the world. For this world is called one by the unity of order, whereby some things are ordered to others. But whatever things come from God have a relation of order to each other, and to God Himself...Hence it must be that all things should belong to one world. Therefore, those only can assert many worlds who do not acknowledge any ordaining wisdom, but rather believe in chance, as Democritus, who said that this world, besides an infinite number of other worlds, was made from a casual concourse of atoms.”⁹

So while St. Augustine did not object to speculating philosophically on the possibility of extraterrestrial intelligence, St. Thomas, who seldom disagreed with St. Augustine, in this case did not agree. St. Thomas thought that, while many worlds were certainly compatible with God's power, they were not compatible with His wisdom.

In 1459 Pope Pius II in his encyclical *Cum sicut accepimus*, condemned the following proposition:

“That God created another world besides this one, and that many other men and women existed at this time, and consequently, that Adam was not the first man.”¹⁰

We heard Fr. Mchugh say in the course of his theological speculations, "I am not perturbed...at the imagination of a second Mother of God." But I must say that **I am perturbed** at such an imagination, and in the light of what I have just read from Tradition and the Magisterium, I would also like to engage in a little theological speculation. Fr. McHugh stated, "the redemptive love that the Father showed in sending His Only-Begotten Son was a proof of His generosity in the face of our desparate need, not an indication that God found some vein of

gold in the corruption of our fallen nature." But Our Lady is that solitary "vein of gold" that God found in our corrupted nature.

When Our Lady appeared at Lourdes in 1858, she said to St. Bernadette, not "I am the one who was immaculately conceived," but "I am the Immaculate Conception." Our Lady meant by this that she was the whole singular idea in God's mind. But let me read this point about the Immaculate Conception from some who can make it much better than I, St. Maximilian Mary Kolbe:

"To Bernadette's repeated request, the *Immaculata* replied by revealing her true name when she said, 'I am the Immaculate Conception.' To no one else does such a name properly belong.

"When God revealed his name to Moses, he said: 'I am the One who is' (Ex 3:14). For God exists from all eternity and to all eternity. His being is unlimited, transcending all time under whatever aspect. Whatever exists apart from God is not 'being' itself, but receives its being from him. Thus the *Immaculata* also began to exist in time.

"Among the creatures which began to exist, the angels and our first parents came into being without having been conceived. Mary, on the contrary, like all ordinary humans, began to exist when she was conceived. Jesus Christ, the Man-God, also began his human life by an act of conception. But we should rather say of him that he was conceived, not that he is a 'conception,' because as the Son of God he exists without a beginning, whereas Mary, since she began in a conception, is different from him, and like all other human beings. But from the first instant of her existence she was distinguished from all the rest of humankind by the fact that their conceptions are sullied by Original Sin, since they are conceived by descendants of our first parents who sinned; Mary's conception, on the contrary, is entirely exempt from this general law; her conception was immaculate.

"She does therefore have a full right to the name "Immaculate Conception," this is indeed her true name."¹¹

St. Maximilian Mary also said, "She was immaculate because she was to become the Mother of God; she became the Mother of God because she was immaculate." So as there is only one Immaculate Conception, there can be only one Mother of God, and therefore only one Incarnation. A single Incarnation would seem to preclude the possibility of other inhabited worlds.

We heard Carl Sagan say that he hoped that the first message we receive from an extraterrestrial creature will tell us how to avoid a nuclear disaster. But we have already received such a message from an extraterrestrial creature - Our Lady of Fatima. The story of Our Lady of Fatima was the subject of a popular movie a few years ago entitled *The Miracle of Fatima* which was very well received by believers and non-believers alike - I'm sure that

many of you remember it. Let me conclude with a brief summary of that message by Msgr. William McGrath from an article entitled *The Lady of the Rosary*:

“It still rests with Mary's children to avert appalling disaster for the world...Her diagnosis of such a disaster is as true today as when she first flashed out of the skies of Heaven in 1917. The cause is revolt against God, and today that revolt is fast assuming the proportions of universal apostasy. There are many who believe that the situation is now out of human hands; that we have passed the point of no return; that only the direct Divine intervention can now resolve the terrible impasse. Such intervention may truly be apocalyptic, and it is in the Hands of God to permit - or prevent - a nuclear war that could wipe out our civilization, or world Communism that would mean universal slavery and martyrdom. ‘The Hand of my Son in Heaven is now so heavy that I cannot hold it back any longer.’...

“Fidelity to the message of Fatima; daily recitation of the Rosary; a serious determined effort at personal sanctity; the devotion of the First Saturdays and consecration to her Immaculate Heart; this on the part of her children, may still lighten the Hand of God and strengthen the arm of Our Blessed Mother as she tries to save us from ‘suffering such as humankind has never known before.’”¹²

Rev. De Verne Swezey

Carl Sagan claimed that of the estimated 250 billion stars in the Milky Way Galaxy at least one million should have advanced civilizations. This conclusion, he says, is based on a statistical analysis of the number of stars, plus scientific speculation on the formation of planetary systems, the origin of life, and the evolution of intelligence. But statistics requires a large sample, and in this case we have a sample of only one - the earth - so statistics do not apply. Here again is Dr. Morris:

“So far as we know, in fact, the solar system is quite unique in the universe. There is an almost innumerable quantity of stars, but that does not mean any of them necessarily have planets. Evolutionary astronomers assume that many do, but the only reason for thinking so is what might be called evolutionary statistics. That is, they reason if our sun somehow evolved a planetary system by natural processes, then surely those same processes must have evolved similar planetary systems around at least a certain number of stars.

“This kind of logic, however, begs the whole question. The only solar system about which we have any information is our own, and one does not use statistical analysis when his data consist of only one of a kind. No astronomer has ever viewed any other planet outside the solar system in his telescope and has no real evidence that any exists.”¹³

Not only has the search for extraterrestrial intelligence by means of radio astronomy proven negative to date, but also the search for life in any form on Mars and other planets in our

solar system has also produced negative results. Dr. Morris says that these results were predicted by the creation model:

“...Some of the definite predictions from the creation model are as follows:

1) Since the earth, moon, and planets were created for a specific purpose, each would have a distinctive structure. They would not all be essentially of the same composition and structure, as would be the case if they had all evolved together from a common source.

2) Only the earth would be found to have a hydrosphere capable of supporting life as we know it.

3) Only the earth would be found to have an atmosphere capable of supporting life as we know it.

4) No evidence of past or present life would be found anywhere in the solar system except on earth.

5) Evidence would be found of decay and catastrophism on other planets and moons, but not of evolutionary growth in order and complexity.

“All these predictions have been clearly confirmed by the moon landings and by the probes to Mars, Mercury and Venus. Although some evolutionary scientists still cling to the hope that some evidence might yet be found which could support the existence of life in the distant past or distant future on one of these planets, the fact is that no such evidence has been found.”¹⁴

I was a little disappointed that Dr. Schonfield didn't give any examples of just what he thought extraterrestrial life might be like, so let me read from just one typical example of humanist speculation on the subject. This is from an article on the planet Jupiter by Hal Clement, who is both a scientist (a chemist), and a science fiction writer. It appeared in *Closeup: New Worlds*, an anthology edited by Ben Bova:

“Jovian life won't be much like ours...Mechanically, I would expect ocean-type life, floating or swimming (flying?) free in an environment something like ocean and something like air, with no sharp distinction between the two at the greater depths; Arthur C. Clarke, in his classic *A Meeting with Medusa*, probably called the shot pretty close here.

“I am offering this as a serious prediction, not a casual speculation, I hope to live long enough to see it checked. I recognize the present negative attitude toward research in general and space research in particular; many people actually seem to believe that mankind already has enough knowledge to keep the present population alive indefinitely rather than the few decades we could actually manage. People complain about the ‘waste’ of money spent on space.

“I realize that such research is expensive; a single Apollo moon flight would keep the population of this country in cigarettes for fully fifteen days, and even in liquor for nearly six. I wonder what the Jovians, who well may not know what property lines are, would have for a social system? Maybe the dolphins would understand them and vice-versa better than we could.

“John Campbell...spoke of Jovians looking wistfully and hopelessly at other worlds, from which they were forever barred by an environment which keeps intelligent species from exploring and discovering.

“And, since I am still optimistic about human nature in spite of half a century's experience, I feel hopeful about living to see at least a photograph of a Jupiter life form. Intelligence applied to the real universe can do some wonderful things.”¹⁵

"Maybe the dolphins would understand them and vice versa"!! How do these men get this way? I am sure that Hal Clement is a completely rational person, yet here he is talking utter nonsense.

Let me read one humorous explanation of these phenomena by Jack Catran from an article which appeared recently in the *Los Angeles Times*. Catran is a scientist who worked on the Apollo and other space shots, and is the author of *Is There Intelligent Life on Earth?*

“At this moment, riding aboard the Voyager I and II spacecraft, there are recordings of Bach, Beethoven, Louis Armstrong and Chuck Berry, just in case there may be someone out there hip to rock 'n' roll, all deposited aboard the spacecraft at the suggestion of Carl Sagan. Aboard Pioneer 10, which will take about 80,000 years to reach our nearest star - which it will miss because it is not headed that way - there is a plaque featuring Earthman and Earthwoman waving greetings, another Sagan idea.

“The Voyager recordings are based on a false premise. There are no space aliens out there waiting to listen to Chuck Berry. Neither are there E.T.S available to view those drawings aboard Pioneer 10. Yet it is understandable how such a comic strip view of the universe can arise; the study of any science always begins that way. Strange explanations precede the valid. Chemistry began as alchemy, astronomy as astrology and medicine as witchcraft. And the field of exobiology still has its astrologers and medicine men.”¹⁶

In the 1976 Supplement to the *Encyclopedia Britannica*, there is a very interesting article by Lawrence K. Lustig entitled *Science and Superstition: An Age of Unreason*. Lusting tries to examine the reasons for the current popularity of phenomena like UFOs, ESP, astrology, Uri Geller, the Bermuda Triangle, etc., etc. In this so-called scientific age, why are so many people turning back to mystery and superstition?

“Any objective appraisal of the literature, reports, and events...leads inexorably to one basic question, namely: why? Why do large numbers of people in society deliberately choose mysteries, supernatural, and delusionary explanations in lieu of tried and tested rational patterns of causality? Some would answer, as did the eminent psychologist Carl Jung after an analysis of UFO sightings (*Flying Saucers*, 1959), that people do so simply because it suits them - because they want to believe in the mysterious...This suggestion is obviously unacceptable to supporters of the phenomena described here, and the question that remains is why people wish to believe that the unreal is real.

“Elizabeth Janeway and others have said that the world of modern science and technology is too complex to be conveyed decently to the lay public by those who speak the language of science. Hence the multitudes withdraw to the mysterious, for here, at least, they can feel as one - both with the author or performer in question, and with their own peers...The truth may well comprise elements of each of these explanations. But whatever the cause it is quite clear that we may awaken tomorrow to learn that some clever promoter has discovered a new and intriguing solution to the question of how light is transmitted. The dust jacket on a first edition of a million copies may ask: ‘Is there evidence that light is transmitted as an infinite series of invisible aardvarks whose tails glow when activated by a mysterious intelligence from outer space?’ If we greet this absurd proposition with anything other than the ridicule it so richly deserves, then we will have moved one step further along a path of unreason that may well lead to one of darkness.

“Those who doubt that this is so might ponder the fact that the fall of Phnom Penh, and thus of all Cambodia, was hastened by belief of the defenders in the existence of an invisible dragon beneath the city's outskirts. Obeying the portents of the stars, they severed their own supply road to relieve the pressure on this beast's tail. Obviously their astrologers failed them in this instance.”¹⁶

Of course, Lustig didn't dare attack extraterrestrial intelligence; it is too much a part of the humanist Establishment. His article wouldn't have appeared in the *Britannica* if he had. The basic explanation for this phenomenon is religious - get rid of the uniqueness of man in the universe, and God and His grace become unnecessary. Lustig's psychological and sociological explanations of the popularity of various phenomena like UFOs, TM, etc., are all valid, but any Christian could give a better explanation. All this turning back to mystery and superstition - and I would put extraterrestrial intelligence in the category of superstition - is a sort of backhanded compliment to the nature of man. Man is indeed a rational animal, but the whole man needs mystery as well as reason. Man was made for the mysteries of God, and if he won't look for mystery in God, he will look for it somewhere else.

Dean Smalley

Our topic for this evening was the possibility of extraterrestrial intelligence.

Dr. Schonfield presented the scientific case for extraterrestrial intelligence which was based on a statistical analysis of the number of stars, plus scientific speculation on the formation of planetary systems, the origin of life, and the evolution of intelligence, all matters about which he admitted, we know very little.

Fr. Staatz accepted the scientific case, such as it was, for extraterrestrial intelligence, and added that if chance is excluded, it offers no serious problems in either Christian philosophy or theology.

Mrs. Stepan admitted the philosophic possibility of extraterrestrial intelligence, but denied that it offered no serious problems in theology. She claimed that the dogma of the Immaculate Conception precluded the possibility of another Mother of God, and another Incarnation, and therefore the likelihood of other inhabited worlds.

Rev. Swezey rejected the statistical case for extraterrestrial intelligence, saying that statistics do not apply when the sample is only one - the earth. He added that the creation model had actually predicted that Project Ozma and other similar ventures would not detect intelligent radio signals from outer space, and that life in any form would not be discovered on Mars nor any other planet in the solar system.

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