Scientific Freedom and the Cases of Galileo and Florensky

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Introduction. Scientific freedom and the Church

Everybody recognizes now that freedom of scientific research is one of the basic human rights. But, historically, one can find many cases when it was violated in one way or another, usually for political reasons or, more generally, in the name of preserving the common good, which could be potentially damaged either by the research itself or by its consequences. Nowadays, strange as it may sound, the ideal of scientific freedom in its most consistent form is being expressed by the Roman Catholic Church, whose leader, Pope John Paul II, has recently declared:

"Pure science is a good, deserving of respect because it is cognition and therefore the perfection of a human being in its intelligence. It should be honored for itself, quite apart from any technical applications, as an integral part of the human culture. Fundamental science is a common good which everybody should be able to cultivate, free from any form of international slavery or intellectual colonialism. «...» Fundamental research should be liberated from political and economic powers, which should cooperate in every way in its development, without hampering its creativity or subordinating it to their own purposes. Indeed, scientific truth is, as is any other truth, accountable only to itself and to the supreme truth which is God, creator of man and all things". *(1)*

It would be difficult to express the ideal of freedom of scientific research more precisely and completely. Nevertheless, we can't pass over some limitations implicitly contained in this formulation. First, the statement dealt only with "pure science" or "fundamental research", as opposed to "technical applications" or "applied research". At the same time it is not clear where the border between them runs, and to what extent applied science should (or could) be controlled by "political and economical powers". For example, aren't experiments on cloning man or on nuclear chain reactions, "Fundamental research". Second, the Pope assumes that in addition to scientific truths there are others, of which only one was mentioned, the supreme one that is God. Third, it is clear from his wording that scientific truth appears thanks not only to itself but also to God. Hence, natural science could, to some extent, be viewed as subordinate to the science of God.

On other hand, we have in the 20th century a quite different example, of a system which spoke strongly the favour of pure science and, as one would expect, in the favour of the freedom of scientific research, but, nevertheless, vehemently suppressed this freedom. Soviet Marxists declared science to be the only source of knowledge about the world, and opposed in principle any religion or religious institution. But we know very well that the victory of Marxism led to the most extreme form of intolerance and total ideological control upon the development of science.

The adoption of the Copernican system is a very interesting and instructive example in which, on the one hand, there was an explicit intent on the part of of religious (political) authorities to constrain the freedom of scientific research, and, on the other hand, there was the eventual public acknowledgement of this mistake.

The Galileo case

To begin with, I shall recall the events of 350-400 years ago, which led to the condemnation of Galileo, one of the most important events in the intellectual history of mankind (at least, of our civilization).

1597. Having received Kepler's book "Cosmographic mystery", Galileo writes him that he is also an adherent of Copernicanism, but that he is afraid to express his opinion openly because it could be ridiculed by his colleagues. Galileo did not support the theory for a long period of time, until in 1610, when he develops his telescope. With it he makes a lot of astronomical discoveries. In 1610 he also publishes a small work *Siderius Nuncius* (Starry Messenger) where reports his discovery of the moons of Jupiter, mountains on the lunar surface, complex structure of the Milky Way.

Here, for the first time, he cautiously suggests arguments for the motion of the earth. A bit later, in 1612 he makes further discoveries: the phases of Venus, the rings of Saturn (taken by Galileo for moons) and spots on the sun. These discoveries he describes in the Letters on Sunspots, published in 1613 in Rome. Here he argues more openly for the Copernican system but again only hypothetically.

1615. Some priests begin to discuss certain inconsistencies between Copernicanism and the Holy Scriptures. Accepting the challenge, Galileo openly declares himself an adherent of Copernicus and proposes certain theological explanations for these inconsistencies in two letters one to his pupil, a member of the Benedictine Order, Benedetto Castelli, and another to the Toscan Grand Duchess Christina of Lorraine. The first becomes a pretext for a denounciation to the Holy Inquisition from a Dominican monk Tommaso Caccini.

1616. The investigation led by the Inquisition is finished. As a result, Copernicus' book has been formally prohibited and placed on the Index of Forbidden Books until it is corrected. In the same decree all books were prohibited which defended the thesis that the sun is at rest and the centre of the universe, while the earth moves. The decree did not touch Galileo directly, because he had never "defended" Copernicanism publicly and did so only in unpublished letters. Thus, none of his books were placed on the Index, but verbally he was warned not to teach, defend, or consider in any way the theory of Copernicus in his work.

1623. The situation changes. In the Holy See, Cardinal Maffeo Barberini, a protector of arts and as a member of the same Lincean Academy which Galileo entered in 1610 after his astronomical discoveries, is elected as a Pope Urban VIII. In 1616, as a member of the Index Congregation, he was opposed to the prohibition of Copernicus' book. (This should not be considered proof of his being a partisan of the theory. Quite the contrary. Nevertheless, he found this method of resolving the problem politically erroneous.) Many of Galileo's friends receive high positions in the Holy Palace. There is hope that the decree of 1616 might be canceled. However, this hope remained unrealized.

1632. Galileo publishes his book *Dialogue Concerning the Two Chief World Systems.* It was a direct violation of the interdiction of 1616, as was proved during the court investigation in 1633. As consequences Galileo was forced to declare his abjuration, the *Dialogue* was forbidden, and Galileo himself was put under house arrest. Thus, formally speaking, it was not Copernicanism itself that caused a condemnation, but the violation of a special order given personally to Galileo never to consider the theory in his writings. In addition, he was accused of insincerity, because he had tried to persuade the court that the *Dialogue* aimed at the rejection of Copernicanism and not its defense.

The resulting punishment was rather mild: house arrest and a prohibition against propagating further his astronomical views in Italy. However, Galileo retained the right to welcome occasional guests, among which was John Milton, and could publish his works. In 1638 a Latin translation of his *Dialogue* was published in Strasbourg, and another big work, known in English translation as *The Two new sciences,* appeared in the same year in Leiden. At the same time, the whole event deeply harmed the Catholic Church. Galileo was made a martyr and his case came to be used as evidence for the thesis that faith and knowledge are incompatible, that religion is in principal hostile to natural science, that it oppresses any form of rationality.

The books of Copernicus and Galileo remained in the Index until 1835 in spite of the fact that the heliocentrism had long since become the accepted view of the universe, corroborated by the success of Newtonian mechanics as developed by Euler and Laplace. Nevertheless, the formal interdiction did not hamper the reading and publishing of books. In contrast to Copernicus, Galileo himself was also condemned, and even the lifting his book from the Index did not resolve the question of his condemnation. Unlike many other cases, the Galileo trial was organized and carried out with the direct involvement of the pope and a number of the best theologians of the time.

Both sides, Galileo and the Inquisition, seemed to have acted in support of the Church. Nevertheless, there was confusion. Since the end of the last century it had become clear that the results of the trail had to be reevaluated and rethought, but the logical contradictions of the case were so deep that the Church for long time could not do so.

Reappraisal of Galileo in the 20th century

The issue was considered during the Second Vatican Council in 1965. When discussing the Pastoral Constitution *Gaudium et Spes* on preparatory stage, Cardinal Pietro Parente wrote: "Galilei. Not appropriate to speak of it in this document so as not to ask the Church to say: I have been wrong".*(2)* But the Council officially confirmed the right of science and culture to autonomy and expressed regret "in regards to some judgements", originating from insufficient comprehension of this autonomy, which led to the idea that "science and the faith are opposed to one another". Nevertheless, any mention of errors committed by the church in the past, or even of the name of Galileo, were absent in the official documents. Only years later was a call to rethink the Galileo trial made in the speach of Pope John Paul II, addressed to a plenary session of the Pontifical Academy of Sciences commemorating the centenary of the birth of Albert Einstein on November 10, 1979.

The pope said: "The greatness of Galileo is well-known to everybody like that of Einstein; but, contrary to the one we honor today before the College of Cardinals in our Apostolic Palace, the former had to suffer a great deal — we cannot conceal the fact — at the hands of men and institutions of the Church. < ... > In a further development of the position taken by the Council [Vatican II], I would like theologians, scientists and historians, animated by a spirit of sincere cooperation, to study in depths of the Galileo case and, in faithful recognition of wrongs, from whichever side they come, to dispel the mistrust that still hinders, in many minds, a fruitful concord between science and faith". *(3)*

A special commission was created on 3 July, 1981. According to a letter sent on that day by the Vatican Secretary of State, Cardinal Casaroli, to the Bishop (now Cardinal) Paul Poupard: "The Galilean problem will have to be examined by four working groups: Monsignor Carlo Martini leading the exegetical group; H.E. Monsignor Paul Poupard leading the cultural group; H.E. Professor Carlo Chagas and the Rev. Father George Coyne leading the group on scientific and epistemological questions; and the Very Rev. Monsignor Maccarrone and Very Rev. Father Edmond Lamalle on historical and juridical questions. The aim of the various groups should be to rethink the whole Galileo question, with complete fidelity to historically documented facts and in conformity with the doctrine and culture of the time, and to recognize honestly, in the spirit of the Second Vatican Council and the speech of John Paul II, the rights and wrongs from whatever side they came. This is not a review of a trial or a rehabilitation, but a calm and objective reflection, in the context of today's historical- cultural epoch". *(4)*

The commission finished its work in 1992 and on 31 October its results were reported by cardinal Paul Poupard to the plenary session of the Pontifical Academy of Sciences and later published in official Vatican newspaper "Osservatore Romano" under the title "Galileo Case" Is Resolved". It was followed by an address by Pope John Paul II. Both addresses have been brilliantly analyzed by Michele Segre in his article "Light on the Galileo case?" in the *Isis*. Segre wrote:

"The Pope's initial intentions, as expressed in 1979 – to study the case as objectively as possible, shed light on it, and acknowledge mistakes made – should be praised and have no doubt contributed considerably to scholarship. The outcome, nevertheless, is disappointing. Important central issues pertaining to the freedom of thought, inquiry, and speech are neglected; the Pope's final speech is vague and a retreat from his earlier declarations". *(5)* In order to understand why he comes to such a critical estimation, I will turn to questions addressed to the Commission: to clear up what happened, how it happened and why it happened.

The first and second questions have been already answered above. So let's see Poupard's answer to the question "why?", or, more exactly "whose fault?" Poupard tries to impose equal parts of responsibility upon Galileo and his judges. In his opinion, the best solution of the problem was proposed in 1615 by cardinal Robert Bellarmine in his letter to Carmelite monk Paolo Antonio Foscarini, author of a Copernican book also put into the Index in 1616. Thus Poupard said: "According Robert Bellarmine, as long as there was no proof that the earth orbited round the sun, it was necessary to interpret with great circumspection the biblical passages declaring the earth to be immobile. If the orbiting of the earth were ever demonstrated to be certain, then theologians, according to him,

would have to review their interpretations of the biblical passages apparently opposed to the new Copernican theory". Galileo failed to find a final proof of the earth's movement. According to Poupard, proofs of this kind appeared only 150 years latter (parallax of stars). The only physical demonstration, which was considered definitive by Galileo himself, was his theory of tides and was not in fact completely correct. So theologians don't need to revise the accepted point of view and to look for a new interpretation of Holy Scriptures.

Galileo, in his turn, having broken "internal" Catholic rules, was partly responsible for the whole event both in regard to his own misfortune and in regard to subsequent misunderstandings of science and religion. As far as "Galileo's judges" were concerned, incapable of dissociating faith from an age-old cosmology, they believed, "quite wrongly, that the adoption of the Copernican revolution, in fact not yet definitely proven, was such as to undermine Catholic tradition, and that it was their duty to forbid its being taught. Then cardinal Poupard stressed that "this subjective error of judgement, so clear to us today, led them to a disciplinary measure from which Galileo "had to suffer much". These mistakes must be frankly recognized, as you, Holy Father, have requested".

According to Segre, in this passage Poupard accuses "Galileo's judges" of three different errors:

"1. A philosophical error: Galileo's judges were incapable of dissociating faith from an old cosmology (a charge analogous to that regarding Galileo's lack of proofs for the motion of the earth); 2. A theoretical error: Galileo's judges wrongly believed that heliocentrism undermined Catholic tradition; 3. A procedural error: Galileo's judges believed that it was their duty to forbid the teaching of Copernicanism (here Poupard carefully avoids accusing the judges directly but solicits a recognition of responsibility)".

The Pope's reappraisal of the Galileo case was a bit different, although it coincided with the Poupard's in the principal points. He was less categorical in blaming Galileo in the absence of decisive proof of the movement of the earth and more definite in reproaching Galileo's contemporary theologians, incapable of taking apart the whole of Scripture and its interpretations. Nobody can deny that everything said about Galileo during the period of work of the Commission is very important for a correct understanding of the position of the Roman Catholic Church not only in relation to the Galileo case but also in relation to scientific freedom in general.

This is the reason why the final discussion of 1992 didn't satisfy most of the scientific community, which preferred that "Galileo's judges" be named, in order to make clear whether they acted on their own behalf or on behalf of some Church authority (Pope Urban VIII, for example), and it be explained exactly which bureaucratic mechanism had been set off by "the incapability of Galileo's judges to take apart the whole of Scripture and its interpretations".

In Segre's article, mentioned above, which articulates this position very clearly, the author underlines that it is not possible to discuss scientific freedom without recognizing the right to hold any scientific views, even if they are wrong or dangerous for the Church or other social institutions. Besides, we may always doubt whether the conclusions which Poupard talked about are really final. We may say, together with Pierre Duhem: "Despite Kepler and Galileo, we believe today, with Osiander and Bellarmine, that the hypotheses of physics are mere mathematical contrivances devised for the purpose of saving phenom-

ena". It turns out, in fact, that attempts to rehabilitate the Ptolemean system have been made in this century.

Father Florensky against Galileo. Soviet Marxists against Father Florensky

Let's look at the issue from another point of view. In the 19th century the Galileo case became a kind of symbol in the fight against a religious conception of the world. It was the time when religion was considered as something hostile and opposed to science. Marxists even insisted that religion and science belong to quite distinct and conflicting social classes: the ruling class and the working class. Religion is necessary to the ruling class in order to keep the working class under ideological control. They argued that science, including scientific freedom, was necessary in order to liberate the working class.

One might expect that on coming to power Marxists would establish this freedom everywhere it had not previously existed. But the reality was just the opposite. As in the Galileo case, the movement of the earth was at issue. The renowned Russian mathematician and religious thinker, Pavel Florensky, published in a private editorial house "Pomorie" a book titled *Imaginary values in geometry.* He argued there that relativity theory gave grounds to claim that the Copernican and Ptolemean systems are equally possible from physical point of view.

Florensky argued, however, that the Ptolemean system is superior from point of view of common sense and that this would lead us to "rehabilitate" the geocentric system. He wrote: "In Ptolemean system of the world with its crystal heaven, the firmament, all phenomena must occur in the same way as in the Copernican system but with the advantage of common sense and fidelity to the earth, the terrestrial, the true experience, in full correspondence to true reason and, at finally, in accordance with geometry. But it would be an error to declare the two systems, the Copernican and Ptolemean equivalent manners of understanding the world: they are so only in their abstract mechanical aspect, but in the aggregate of the data it is the latter which is true, and the former which is false".

He came to this idea from a conception which he elaborated in the book about imaginary values in geometry "as they related to the theory of special and general relativity" which allowed a new interpretation of "Aristotelian- Ptolemean-Dantean conception which found its most complete expression in the *Divine comedy* . "This is not the place to evaluate Florensky's theoretical basis. We believe that the question of the motion of the earth is not an ideological or religious question. It must be resolved by scientific discourse.

Nevertheless, Florensky's point of view became a pretext for a series of ideological attacks against him. In the course of 11 years, from 1922 to 1933, he was arrested several times. The last arrest, in 1933, led to four years of slave labor and execution in 1937. In the period from 1931 to 1933 there appreard a variety of publications — from small papers to voluminous books — in which Florensky's arguments were appraised in the context of the Galileo case and the struggle between religion and science.

One of most prominent writers among those who wrote against Florensky was Ernest Kol'man, the most significant figure to attack the founders of the Moscow school of the theory of functions. In 1933 he wrote in the journal "Bol'shevik": "After three centuries

of "Time of Troubles" during which the heretical Galilean views dominated minds, now, once again, the truth of the Holy Inquisition is being declared from of the mouth of Pavel Florenski, and the earth is being situated again at the centre of the universe. Nothing to add".

It may be remarkable that the ideological background of the issue was not kept hidden, but, on contrary, was openly proclaimed. "The class struggle takes, at this stage of socialist construction, particular forms". It was not a question about whether the earth or the sun is situated in the centre of the universe. It was just the trick aimed to "pollute the mind of the soviet reader with ideological drivel". By this kind of agrgument, Kol'man was, in effect, justifying the point of view that condemned Galileo in 1633. Indeed, if the question of whether or not the earth was situated at the centre of the universe was an ideological one, and if it was benificial for the working class to argue, together with Galileo and Kol'man, that it was the sun instead, then the Inquisition acted wisely in trying to defend the interests of the ruling class. Thus, Kolman in fact denied scientific freedom altogether, arguing that beyond any scientific issue lay the hidden question of class interests.

Two books theory and Italian humanistic tradition

According to Galileo, as he states his views in the letter to Christina of Lorraine, God supplies mankind with two different sources of knowledge: the book of nature and the Holy Scriptures. The Holy Scriptures gives an absolute truth which is not complete. People can learn from the Holy Scriptures how to get to heaven, but not how they move. And evidently this was not by chance: if knowledge of the laws of nature had been necessary for salvation, the Bible would have paid more attention to them. Any affirmation learned from the laws of nature, which can be proved or demonstrated, can be interpretated in such a way that any apparent contradiction will eventually be removed. So everything about nature could be learned from mathematical reasoning and experiment, everything about salvation could be known from the Holy Scriptures. This is how Galileo defined the domain in which scientific freedom had to be accepted. It is not absolute, its a limited domain. For instance, no ethical question may be the object of scientific analysis.

But the domain contains two very large spheres: first, knowledge of all natural phenomena; second, the decision about which problems are to be resolved by scientific methods. The model arising from marxist writings gives much less place for scientific freedom: a problem can be analyzed simply by scientific methods solely in the case when it has been established that the answer could not be profitable for exploiting class. Otherwise, science must submit to ideological control. Thus, the epistemological dualism of Galileo is replaced with a kind of monism, which, having started from the thesis of the universality and omnipotence of science, comes to the negation of any independence for science. According to the internal logic of this monism, the whole conception of the world is knitted in a knot and an answer to the main philosophical question about the priority of substance is connected to the victory of the proletarian revolution. The latter is incontestable, so any "incorrect" interim link is a demonstration of ideological disloyalty.

For Galileo all knowledge is divided in two categories: in one freedom is necessary, in the another freedom is impossible. This division could hardly be accepted by the Church of his time, and sometimes the Church has difficulties in accepting it now. But it was not Galileo who invented this division. He took it from Florentine humanists of 15th century. The first discussion of the issue goes back to Francesco Petrarca. In his *Invective in medicum quendum,* when arguing for superiority of rhetoric over medicine, he wrote, for example:

"Fai il tuo mestiere, meccanico, ti prego, se ci riesci ; cura i corpi se puoi e altrimenti uccidi e fatti pagare mercede del tuo delitto... Ma come potresti osare con inaudito sacrilegio di subordinare la ritorica alla medicina, la padrona alla serva, un'arte liberale a un'arte meccanica ?" "Compito vostro e la cura dei corpi ; lasciate ai veri filosofi e agli oratori la cura e la educazione delle anime".

We find here also traces of Plato's argument that medicine cures the body as philosophy does the soul. But then Petrarca faults medicine because of the uncertainty of its knowledge. Physicians seldom share views with each others and change their own views frequently. Philosophy, on the contrary, is necessary in order to wish today what was wished yesterday. Further humanists developed the ideas. Their most elaborated form is found in Coluccio Salutati. In his *De nobilitate legum et medicinae* he continues the subject:

"Fine della speculazione è il sapere, il cui oggetto è il vero ; fine delle leggi è la direzione delle azione umane. L'oggetto loro è dunque il bene, e non un bene qualunque, ma quel divinissimo bene que è il bene comune. Non è, il bene comune ricercato dalle leggi, quel bene per cui noi siamo il bene, ma quel bene che ci fa buoni. Il primo è bene di natura, e per esso non siamo degni di lode Quella lode che meritiamo, invece, per il bene che faciamo". *(6)*

Coluccio claims that there are essential differences between the laws of nature and social laws in two different aspects. On one hand, knowledge of the laws of nature means acquisition of the truth. On the other hand, social laws bring us to the good and, more precisely, to the most valuable of all goods, to the common good. This doesn't mean the acquisition of something material, as would follow from knowledge of the laws of nature, but it makes us better people, which must be more appreciated. On other hand, natural science, medicine for example, can never give a complete and final knowledge because the laws of nature don't depend on human will and can only be comprehended by human wit, disposed to errors:

"I principi della medicina ... se vien meno l'essperienza, sono incerti e possono ingannare, anzi ingannano, ne ci mostrano quella mone ragione, ne danno gli effetti desiderati".

The mind of healthy person cannot be wrong about juridical laws and can grasp them in its completeness because these laws are given to people by the God. Their sense reveals itself in what is usually called "justice":

"Le leggi hanno l'infallibilità dell'umana promulgazione, e contengono isita la ragione naturale che ogni uomo di mente sano vede, o può ritrovare meditando e discutendo".

Coluccio is very modern in this reasoning. And although he doesn't say, as Popper does, that scientific theories can always be falsified but never justified, he stresses the relative character of the cognition of nature. Every time a doctor (Coluccio talks only

about doctors but his reasoning can easily be extended to any natural science) draws his conclusion about the nature of a disease, it can be regarded only as probable. We can never be sure that tomorrow he will not draw another, perhaps even an opposing, conclusion about the same disease. Social laws have been determined by the God, they are stamped in the human soul, and therefore are known exactly and a priori. The laws of nature reveal themselves in experience (negli eventi dell'esperienza), and therefore cognition of them cannot be other than accidental, inexact, transient. Galileo alters only one feature of this reasoning. He ascribes to experience the power of final proof. According to him, a truth once discovered then becomes evident and is eventually accepted by everybody. At this point he approaches the idea of anamnesis by Plato who argued that at one time human beings knew everything but then forgot it, and the problem is to recall lost knowledge.

"Thousands of Demosthenes and thousands of Aristotles will be knocked out of the saddle by any mediocre mind that was lucky enough to discover the truth", he write, without any doubt that the mediocre mind would need some eloquence in order to prove it. In his division of humanitarian and natural sciences, Galileo is inclined rather to contrast arbitrariness and necessity, even forgetting to connect the former with a universal justice, "given by God". In his *Dialogo* bright and clever Salviati stated explicitly that in the social sciences "nothing is true nor false", it suffices to rely upon the subtlety of mind and oratory. On the contrary, in natural sciences there is a law independent of human conscience. There is also the inevitable necessity which is a consequence of the fact that it is not a human being to whom the law is addressed.

In Galileo's opinion, social laws and natural laws have the same origins. But the former are addressed to human conscience and their discharge depends on the openness of conscience to God. Natural laws are addressed to natural objects, in relation to which a human being can be only an observer and can never prevent them from following the laws. But from this inevitable necessity the necessity of scientific freedom immediately follows.

When a researcher reveals a truth, when it becomes evident to him, he can do nothing with it. He is simply in no position to change his mind. To give an order is, in such a case, as impotent as a giving an order to the earth to stop attract the moon. To be rid of the Copernican theory, continues Galileo, it is not sufficient to ban his book and the books of all authors with the same views. It is necessary also "to ban all astronomical science completely; moreover, one would have to forbid men to look at the heavens". "It is not within the power of practitioners of demonstrative sciences to change their opinion at will, choosing now this and now that one"; there is "a great difference between giving orders to a mathematician or a philosopher and giving them to a merchant or a lawyer". And thus he comes to the idea that "Demonstrated conclusions about natural and celestial phenomena cannot be changed with the same ease as opinions about what is or is not legitimate in a contract, in a rental agreement, or in commerce".

In both cases, neither Galileo nor Florensky could change their opinion once they had accepted them, without scientific reasons as weighty as those which led them to their opinion. Both of them, Galileo, standing up after the abdjuration, Florensky, on his way to build the White See Canal, understood the nonsense of what was going on. They could no more change their convictions than they could change the law of free fall.

Notes

(1) La scienza pura è un bene, degno di essere molto amato, perche è conoscenza e quindi perfezione dell'uomo nella sua intelligenza : essa deve essere onorata per se stessa, ancor prima delle sue applicazioni tecniche, come parte integrante della cultura. La scienza fondamentale è un bene universale, che ogni popolo deve poter coltivare con piena libertà da ogni forma di servitù internazionale o di colonialismo intelletuale.

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La ricerca fondamentale dev'essere libera di fronte ai poteri politico ed economico, che debbono cooperare al suo sviluppo, senza intralciarla nella sua creatività o aggiogarla ai propri scopi. La verità scientifica, infatti, e, come ogni altra verità, debitrice soltanto a se stessa e alla supreme verità che e Dio, creatore dell'uomo e di tutte le cose.

(2) Cf. Anibale Fantoli, *Galileo Copernicanism and for the Church* , Vatican, Vatican Observatory Foundation, 1994, p. 482.

(3) Ci sià concesso di deplorare – è scritto al n. 36 della Constituzione conciliare *Gaudium et Spes* certi atteggiamenti mentali, che talvolta non mancarano nemmeno tra i cristiani, derivati dal non avere sufficientemente percepito la legitima autonomia della scienza, e che, susciatando contese e contraversie, trascinarono molti spiriti a tal punto da ritenere che scienza e fede si oppongano tra loro.

(4) La grandezza di Galileo e a tutti nota, come quella di Einstein; ma a differenza di questi, che oggi onoriamo di fronte al Collegio cardinalizio nel nostro palazzo apostolico, il primo ebbe molto a soffrire – non possiamo nasconderlo – da patre di uomini e organismi di Chiesa. Il Concilio Vativano II ha riconosciuto e deplorato certi indebiti interventi : "Ci sià concesso di deplorare - è scritto al n. 36 della Constituzione conciliare *Gaudium et Spes* – certi atteggiamenti mentali, che talvolta non mancarano nemmeno tra i cristiani, derivati dal non avere sufficientemente percepito la legitima autonomia della scienza, e che, susciatando contese e contraversie, trascinarono molti spiriti a tal punto da ritenere che scienza e fede si oppongano tra loro". Il refiremento a Galileo è reso essplicito dalla nota aggiunta, che cita il volume Vita e opere di Galileo Galilei, di Mons. Paschini, edito dalla Pontifica Accademia delle Scienze. A ulteriure sviluppo di quella presa di posizione del Concilio, io auspico che teologi, scienziati e storici, animati da uno spirito di sincera collaborazione, approfondiscano l'esame de caso Galileo e, nel leale riconoscimento dei torti, da qualunque parte provengano, rimuovando le diffidenze che quel caso tuttora frappone nella mente di molti, alla fruttuosa concordia tra scienza e fede, tra Chiesa e mondo. A questo compito, che potrà onorare la verita della fede e della scinza, e dischiudere la porta a future collaborazioni, io assicurò tutto il mio appogio.

(5) Michael Segre, "Light on the Galileo case?", *Isis* , 88 (1997), p. 484-504.

(6) Italian translation of Salutati's text is taken from Eugenio Garin, *Lumanesimo italiano,* Roma-Bari, editori Laterza, 1978, p. 38-46.