

Lamalle's Historiographical Considerations in the Preface to Pio Paschini's *Vita e opere di Galileo Galilei* Comparing Historiographical Approaches

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Abstract. The case of the work on Galilei delivered by Pio Paschini in 1944 for printing but then published twenty years later is little known outside the Catholic ecclesial world. But it is a story that stimulates, even seventy years later, questions about the limits of scientific knowledge and the influence of scientific discoveries on both society and the relationship between science and religion. The book was published by the Pontifical Academy of Sciences, the same one that had decided twenty years earlier to archive it.

Fr. Edmond Lamalle, a Jesuit and historian of science, was commissioned to edit the publication, inserting appropriate updating notes required by the new historiographical lines. Lamalle not only introduced appropriate critical notes in his preface, he also inserted corrections and additions into the original text, highlighted by the attentive eye of Monsignor Pietro Bertolla and brought to the stage at the centenary congress of the Carnic prelate's birth. Lamalle's hand fits right in where the author recounts the development of the famous trial suffered by Galilei before the *Tribunale del Sant'Uffizio*, seen by the scientific world as proof of an irremediable conflict between science and religion. In this article, the author, fifty years after the publication of the Paschinian work, notes the need to reread the Jesuit scholar's judgments from within a world profoundly changed, above all by the technological connotation of our society and by new contributions and studies on scientific epistemology and the Galilei case. The rereading of his preface, therefore, lent itself to personal reflection.

Peraulis clăf. knowledge and scientific discoveries, historiographical lines, cosmology, tampering with the text, conflict between science and religion.

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1. Introduction 1964 marked four centuries since the birth of Galileo Galilei, and in the Vatican the work of the Council was coming to an end. The opening up to the world desired by John XXIII had been continued by Paul VI. Later, Pope John Paul II also took resolute steps to bring the Church closer to the scientific academies. Under the papacy of Paul VI, a favourable opportunity arose to take a concrete step towards openness: to print Pio Paschini's book on the life and works of Galileo Galilei, which in 1944 the Pontifical Academy of Sciences – presided over by Father Agostino Gemelli¹ – and the Secretariat of State had rejected on vague grounds, denying the *imprimatur* for publication².

However, historians agree that the decision to print Pio Paschini's posthumous manuscript was the first concrete step in the Catholic Church's rethinking of the "Galilei affair".

In the first lines of the preface to the two-volume book (see the cover of the first volume in Fig. 1) we read that the Academy is the legitimate heir of the Lincei Academy (which boasted Galilei³ among its members), almost as a warning of its legitimate role in evaluating writings that aspire to recognition of the scientific nature

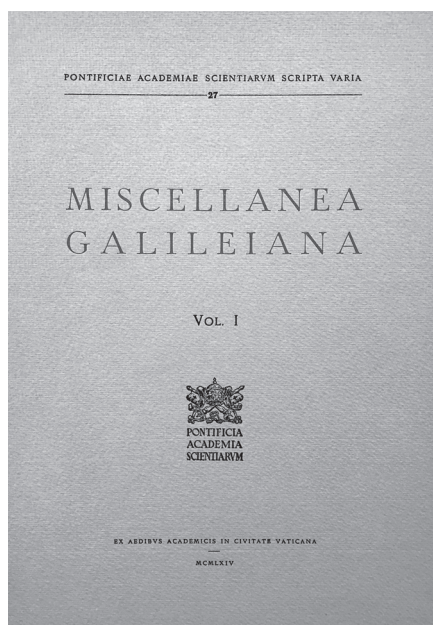


Figure 1. Cover of *Miscellanea Galileiana*, Volume 1.

of the works commissioned by its President.

2. Notes on the historiographical orientations of Pio Paschini. Pio Paschini earned his reputation as a critical historiographer, in contrast to the lazy habit of tradition, in the first decade of the 20th century, as a young professor at the Udine Seminary. The best way to present the cultural and

¹ Fr. Agostino (born Edoardo) Gemelli, (Milan, 1878 - Milan, 1959), Friar of the Franciscan order, physician and psychologist, was one of the founders of the Catholic University of the Sacred Heart of Milan. In 1936 he became the first President of the Pontifical Academy of Sciences, a position he held until his death, in 1959.

² Paschini did not want the manuscript to end up in the Vatican archives and asked for it to be returned, so today it is kept in the *Pietro Bertolla Library* of the Udine Seminary.

³ Galilei's signature appears in the list of Academicians on 25 April 1611 (and this was on the occasion of his second trip to Rome, as reported on p. 224 of the first volume of the *Miscellanea Galileiana*).

professional profile of the scholar from Carnia, later naturalised in Rome in the shadow of St Peter's dome, is in the lines left by the first speaker of the work programme of the Study Conference organised in Udine back in 1978, which I quote here:

Paschini, a young priest from Carnia, a pupil of Don Ellero⁴, had learned something during his brief stay in Rome for a degree in canon law at the Gregorian University: the lesson of two great innovators, Duchesne⁵ and Grisar. I would say he had absorbed their anxiety to remedy the history of his Friuli and its Patriarchs, lifting the former from the shoals of traditional tales, cleaning the latter of hagiographic embellishments, to truly see their face (Mior 1978)⁶.

A commitment, as we read, to the contents of ecclesiastical history, first in Friuli and later in Rome, all matured within a vocation to the priesthood and loyalty to the Seminary of Udine and the Roman See of the papacy. This peculiar field of enquiry, which constitutes a limitation when

a scholar, albeit of an established temperament, is called upon to investigate subjects other than his specialisation, has been highlighted in a secular and competent manner by Fantoli⁷ (2003, p. 233):

Paschini was a respected scholar of ecclesiastical history but not an expert in the Galilean field. His choice is therefore not surprising, as was the implicit wish that he complete such a demanding work in the shortest possible time. Entitled "Life and Works of Galileo Galilei", it was completed in only three years and is of considerable size. Despite its clear limitations, due to the author's lack of scientific preparation, as well as the brevity of his contact with the Galilean problem, this study by Paschini contained rich documentation accompanied by an honest assessment of events [...].

Twenty years later, having removed this obstacle, the Academy took upon itself the task of resurrecting a tome on which much dust had settled. Objectively this was necessary as already at the time in which Pio Paschini had immersed himself in

⁴ Giuseppe Ellero (Tricesimo, 1866 - Udine, 1925) was a priest and a teacher in the Udine Seminary. He was a professor of grammar, classical philology and ecclesiastical history. He was united with Pio Paschini by a deep friendship and was among the most ardent defenders of his theses on the history of the Church of Aquileia. Paschini's research, based on documentary evidence, did not attribute foundation to the supposed Marcan origin of the Aquileian cult, a thesis that in the anti-modernist climate of those years created much uproar in the Friulian ecclesiastical world.

⁵ Louis Marie Olivier Duchesne (Saint Servant sur Mère, 1843 - Rome, 1922) was a priest, philologist and teacher. The critical method he adopted challenged orthodox positions on the origin of the liturgical traditions of the early Church.

⁶ Prolusion delivered by Carlo Guido Mior on 27 September 1978, taken from the Acts on the centenary of Paschini's birth.

⁷ Annibale Fantoli is a contemporary astronomer, historian and author of the book *Il caso Galileo dalla condanna alla 'riabilitazione'. Una questione chiusa?*

writing the book, he had ignored the innovations of the first part of the century, and even more so of the second part, during which earth-shattering new physics had cast the remote scientific events of the seventeenth century in a new light.

3. Lamalle's preface to Paschini's book *Vita e opere di Galileo Galilei*⁸. It

is easy to imagine the embarrassment of the Academy, which was invited to reconsider the manuscript that it had rejected at the time. A few years earlier, there had been a change in the Academy's presidency, due to the death of the first president, who had been the main protagonist in the affair in which the Academy had first promoted and then rejected the project entrusted to Paschini. The initial surprise of revising the decision by overturning it was soon overcome by the thought that, after all, it was a matter of looking at the affair with fresh eyes: to carry out a *restyling* of the work and to bring it up to date in terms of the historiographical aspect alone. The task of choosing the editor fell to the President of the Academy, George Lemaitre⁹. He commissioned Fr. Edmond Lamalle who, having accepted the task and, as far as we know, reluctantly so, took the whole summer to revise the manuscript.

In his opening preface, Lamalle recounts that the Pontifical Academy of Sciences had already in 1942 intended to commemorate Galileo Galilei on the 300th anniversary of his death, but due to the global conflict it was not possible to gather scientists from the warring countries. The Academy, not wanting to drop the anniversary altogether, nevertheless wished to commemorate him by deciding to entrust the task of writing a book on the life and works of Galileo Galilei to a scholar, so to speak, within reach. Gemelli's hasty choice then fell on Pio Paschini. Lamalle laconically comments on the decision:

*[...] Puisque dans l'intervalle l'auteur était mort, [...] sans avoir revu son texte, la Présidence de l'Académie a demandé à l'auteur de ces lignes de voir quels soins l'ouvrage posthume de Mgr. Paschini demandait pour pouvoir paraître*¹⁰ (Lamalle 1964, VIII).

Lamalle glosses over the reasons for prohibiting the manuscript's publication twenty years earlier. He simply points out that the Academy's renewed attention to Galilei is a fitting tribute to a man renowned and esteemed by the popes and their collaborators, and that he was invested with the task of revitalising the work

⁸ The following critical and illustrative commentary is organised by extracting passages from the text non-linearly. Each block is followed by some comments.

⁹ George Lemaitre was a world-renowned scientist and a priest; today he is remembered for his theory of the expansion of the universe, together with Edwin Hubble and Arthur Eddington.

¹⁰ "Since the author had died in the meantime, [...] without having revised the text, the Presidency of the Academy asked the author of these lines to see how much care could be given to Msgr. Paschini's posthumous work so that it could be placed in the public domain" (Lamalle 1964, VIII).

with appropriate care before moving on to the printing of the volumes. In short, while it was prudent not to dwell on the previous perplexities around the scientific depth of the work (but never presented to the author with a clearly signed *referee*¹¹), one could not avoid doing so in the post conciliar era:

*La tâche ne laissait pas d'avoir des aspects délicats et tout d'abord parce que le travail portait la marque non équivoque de son âge*¹² (Lamalle 1964, VIII),

makes it clear in the preamble by Lamalle, echoing twenty years later the mood of the Academy and updating it, and warned in the sequel that new historiographical lines had been affirmed in the post-war period:

a reflection of the establishment of new university chairs, the birth of new scientific societies, new national and international publishing initiatives, and the organisation of numerous congresses. It was then a question of surmounting the previous negative judgement with another one prudently referring to the obsolescence of the product.

The concern around avoiding any impression that the publication was not just a tribute to a prestigious representative of the ecclesiastical world but also a reason to review the judgement on the scientific nature of the work, is also reflected in the plan to collate Paschini's book with other works in a single publication with the generic title of *Miscellanea Galileiana. Opera In Tre Volumi*¹³.

¹¹ The intricate affair is recounted in detail by Michele Maccarone in *Mons Paschini e la Roma Ecclesiastica*, in the Proceedings of the conference on the centenary of the birth of Pio Paschini cited in the bibliography; this note summarises the passages that best help to understand how thorny the task must have seemed for Fr. Lamalle. On 23 January 1945 Paschini wrote Fr. Mercati that the manuscript was ready for printing according to Pope Pacelli's wishes. However, the printing orders were not carried out. The manuscript passed from Mercati's hands to those of Chancellor Salviucci of the Secretariat of State who in turn entrusted it to the astronomer Armellini of the Academy for revision of the scientific part. No objections were raised, indeed a positive opinion was expressed, as Paschini himself wrote in a letter. Perplexities were raised on the historiographical level by the Secretariat of State and echoed by Gemelli, who had just returned from Milan, where he had been forced to stay for several months because of the war. Gemelli then took a step that Paschini would never have expected: he delivered the manuscript to the Sant'Uffizio, with a note stating that the Academy no longer intended to publish. With this decision, Gemelli reverses the judgement with which he had presented the author four years earlier. To Paschini's ears came whispers, which were never denied, that he had limited himself to 'the apologia of Galileo'. A judgement that clashes if we think of how the Carnic scholar was presented to the Academy by Gemelli: "*Pio Paschini [...] will present us with the figure of the great astronomer in his true light. [...] The projected volume will therefore be an effective demonstration that the Church did not persecute Galilei, but greatly assisted him in his studies. It will not, however, be a work of apologetics, for this is not the work of scientists, but of scientific and historical documentation*".

¹² "The task was not without delicate passages and, moreover, the work bore the unmistakable sign of its age" (Lamalle 1964, VIII).

¹³ Pio Paschini's book *Vita e opere di Galileo Galilei* appears after the preface. The author was unable to obtain the third volume.

We read this from the following passage at the beginning of the preface:

Ayant choisi donc pour cet hommage la forme d'un volume de Miscellanea Galileiana, la Présidence de l'Académie Pontificale a repris tout naturellement, pour en faire l'élément principal, la monographie encore inédite et quelque peu massive de Mgr. Paschini, en la complétant par quelques études de moindre étendue. Puisque dans l'intervalle l'auteur était mort, à l'âge respectable de 85 ans (14 décembre 1962), sans avoir revu son texte, la Présidence de l'Académie a demandé à l'auteur de ces lignes de voir quels soins l'ouvrage posthume de Mgr. Paschini demandait pour pouvoir paraître¹⁴ (Lamalle 1964, VIII).

The editor hides his embarrassment by shifting attention to the presidency of the Pontifical Academy of Sciences. It is said that, while they were still discussing what form and content to include in a Miscellany on the works of Galilei dedicated to the memory of Pio Paschini, the Academy – more precisely, President G. Lemaître – ‘quite naturally’ included the proposal to make Paschini’s monograph, which remained in manuscript form, ‘the supporting element’ of the

miscellany. In reality, the Academy did not oppose, and how could it have, the pontiff’s initiative to pay a tangible homage to Paschini’s work by recuperating the decision taken by previous popes to respond with an editorial launch promoted by the Holy See to the many criticisms of secular origin, many of which took an anti-clerical stance. The passage closes with the note that, since it is a ‘mixture’, other lesser studies will be added to the Paschini monograph. But what these “*lignes directrices*” consist of is stated shortly afterwards:

L'histoire de l'astronomie, déjà mieux étudiée, a été moins renouvelée que celle, par exemple, de la physiques, surtout en ce qui concerne l'histoire des théories physiques. Noublions pas que les découvertes fondamentales de Galilée sont du domaine de la physique plus que de celui de l'astronomie¹⁵ (Lamalle 1964, VIII).

In these lines, the editor places astronomy in the domain of the experimental sciences, and physics in that of the theoretical sciences. It would have been better to say that astronomy is a branch of experimental physics that draws on the background of theoretical physics. Apart from

¹⁴ “Having therefore chosen the form of a volume of *Miscellanea Galileiana* for this homage, the Presidency of the Pontifical Academy has quite naturally taken Mgr. Paschini’s still unpublished and somewhat massive monograph as its main element, supplementing it with a few studies of lesser scope. Since in the meantime the author had died, at the respectable age of 85 (14 December 1962), without having revised his text, the Presidency of the Academy asked the author of these lines to see what care Msgr. Paschini’s posthumous work required in order to be published” (Lamalle 1964, VIII).

¹⁵ “The history of astronomy, already better studied, has been less renewed than that of physics, for example, especially as regards the history of physical theories. Let’s not forget that Galileo’s fundamental discoveries came more from physics than from astronomy” (Lamalle 1964, VIII).

these distinctions, Lamalle has a less developed picture of the historiography of astronomy, or astrophysics, than that of physics, which already in those years could count on many historical and epistemological reflections in the two fields that revolutionised physics: relativity and quantum mechanics. Lamalle tactfully observes that in order for Galileo's astronomical observations to confirm the Copernican theory, new technologies were needed that would go beyond the limited horizon of the optical telescope¹⁶. More frankly, Lamalle – as we read further on – emphasises less Pio Paschini's inadequacies in the disciplinary field but rather more the fact that he only rarely strayed from the sole bibliographic source from which he drew the materials to compose the book¹⁷. He was therefore unable to grasp the historiographical trends that would perhaps have changed his considerations at some points. This asymmetry can be seen in the pages in which the astronomical discoveries made with the telescope

are reported, material that Paschini reports without any of the critical comment that has emerged in modern historiography:

*La priorité absolue, matérielle, des découverts ne semble plus guère d'attention si leurs auteurs n'ont pas su en saisir la portée et les intégrer dans un système cohérent*¹⁸ (Lamalle 1964, VIII).

In this passage we find the junction around which all of Lamalle's subsequent reflection is articulated. It is not enough to discover new methods of investigation and the use of new equipment to interpret the scope of a discovery; it is essential to question the reason for the resistance of the educated men of the time to change their attitude. One senses in this note a criticism of the positivist attitude. The experimental datum does not define an insurmountable boundary, but it is necessary to construct a coherent theoretical framework within which to place the observable¹⁹:

¹⁶ The impermeability between the world of science and the ecclesiastical world, with particular reference to the education given in seminaries, can be highlighted by the lack of echoes on the fundamental work of the already mentioned priest-scientist George Lemaître. In 1927, he discussed his doctoral thesis entitled: *The gravitational field in a fluid sphere of uniform invariant density according to the theory of relativity*. The thesis described an unlimited but spherical universe of constant mass and continuous expansion from a primordial cosmic event, the cause of the recessional motion of galaxies. How far we are from the Ptolemaic and Copernican heavens! This was a religious man who in 1960 succeeded Gemelli as President of the Pontifical Academy of Sciences, yet in Pio Paschini's manuscript there is not the slightest reference to the new cosmological trends that would have provided him with ideas for escaping from the flattening of dated documents, in particular the monumental work of Antonio Favaro.

¹⁷ *Le opere di Galileo Galilei* (The Works of Galileo Galilei) in twenty volumes of Antonio Favaro's National Edition printed between 1890 and 1909.

¹⁸ "The absolute and material priority of discoveries does not seem to receive much attention if others have not been able to grasp their significance and integrate them into a coherent system" (Lamalle 1964, VIII).

¹⁹ In all likelihood, Lamalle is referring to Jupiter's satellites, sunspots and the phases of Venus.

Les changements d'attitude mentale devant les phénomènes du monde physique se révèlent souvent, sinon plus importants que l'invention de nouveaux moyens d'investigation (y compris les progrès de l'outillage mathématique), du moins indispensables pour l'usage fructueux de ceux-ci. Les questions de méthode, les points de vue proprement épistémologiques ou gnoséologique retiennent donc beaucoup l'attention. Dans cette perspective, l'étude des savants de second et de troisième rang, de leurs solutions approchées et de leurs essais malheureux d'explication ne peut être négligée; elle seule révèle ce climat intellectuel dont nous parlions et permet de voir l'oeuvre des géants de la science sur le fond détaillé, singulièrement vivant, mobile et nuancé, qui correspond à la réalité historique²⁰ (Lamalle 1964, IX).

The great emphasis given by Paschini to astronomical discoveries, while reserving little space for the fundamental works written in the *Dialoghi* and the *Discorsi*, also conditions Lamalle, who articulates the whole of the continuation of his preface to the point of fatally falling into the clash of epistemologies that would have led Galilei to sign the

abjuration of the Copernican theory in 1633 before the judges of the Tribunal of the *Sant'Uffizio*.

Basically, Lamalle reiterates that the judgement of scientific insufficiency given twenty years earlier by the Academy was well-founded, and provides a number of reasons that had not been clearly stated previously by the Academy's reviewers.

Lamalle does not fail to mention that Pio Paschini's cultural education was alien to the themes of science, a vast "terra incognita" as he calls it. This was understood where he previously noted Paschini's failure to intercept modern trends with the historiographic thinking already present in his time. His resume in brief:

Dans son abondante bibliographie, on distingue d'emblée les deux domaines qui avaient jusque là fait l'objet principal des ses recherches: l'Histoire ecclésiastique des trois Vénéties et surtout du Frioul, puis (à la suite de son transfert à la chair d'histoire du Latran) l'histoire de la Reforme catholique et la vie ecclésiastique à Rome du XVe au XVIIe siècle²¹ (Lamalle 1964, IX-X).

²⁰ "Changes in mental attitude in the observation of certain phenomena of the physical world often prove to be decisive, if not prevailing over the use of new inventions (and among them, the advancement of mathematical language) are nonetheless indispensable. Questions of method, the strictly epistemological or gnoséological point of view, therefore require much attention. from this perspective, the study of the minor scientists, their approximate solutions and their fruitless attempts at explanation cannot be neglected; only it reveals this intellectual climate of which we speak and allows us to see the work of the giants of science against the detailed, singularly vivid, mobile and nuanced backdrop that corresponds to historical reality" (Lamalle 1964, IX).

²¹ "In his rich bibliography, one can immediately distinguish the two fields that had until then been the main focus of his research: the ecclesiastical history of the Three Venetias and especially of Friuli, and then, following his transfer to the chair of history at the Lateran, the history of the Catholic Reformation and ecclesiastical life in Rome from the 15th to the 17th century".

This limitation must have been well known to Gemelli who convinced him to accept the assignment. And we still wonder today how a scientist of his level could have overlooked the stakes that fenced off Paschini's intellectual possibilities. It is one thing to write an article and another to write a work.

Paschini, after his initial perplexity, was convinced, his limitations were masked by the assistance he had in being able to draw on the *Edizione Nazionale delle Opere di Galilei* by Antonio Favaro. Evidently Paschini, residing in the Roman Seminary, had the opportunity to consult a work within his reach. The circulation of twenty volumes must have been very limited then and still is today. It was a collection that he knew was critically examined and ordered, an already complete review that practically exhausted everything that could be gathered on Galilei. In Lamalle's own words:

[...] Msgr Paschini s'est trouvé dans la situation privilégiée d'avoir devant lui tout l'ensemble des sources de l'histoire du grand savant et tous ses écrits déjà réunis, critiquement examinés et classés, publiés intégralement dans un corpus fait

*de main de maître: l'Édition nationale des œuvres de Galilée, due aux soins d'Antonio Favaro*²² (Lamalle 1964, X).

Paschini himself states this in the author's preface²³.

Although Paschini was well versed in meticulously scrutinising documentary sources, the same method applied to a field foreign to him – with innumerable bibliographical references in which to appropriately place problems and deal with ancient and modern terminology of specialised disciplines – was an enormous effort, especially for a man of fairly advanced years.

But these certosine skills are not enough to produce a good historiographical work:

*Que la documentation de Mgr. Paschini soit restée substantiellement quel de Favaro, nous avons dit n'y voir aucune difficulté. Que son érudition et ses points de vue, – sa problématique –, soient aussi restés quel de Favaro, c'est évidemment beaucoup plus grave [...]: nous nous trouvons devant un bon ouvrage de la génération précédente, très honorable tant par la somme de travail qu'il représente que par la documentation abondante, triée et classée, qu'il renferme*²⁴ (Lamalle 1964, XII).

²² “[...] Monsignor Paschini found himself in the privileged position of having before him all the sources of the great scientist's history and all his writings already collected, critically examined and classified, published in their entirety in a masterfully hand-crafted corpus: the National Edition of Galileo's works, thanks to the care of Antonio Favaro”.

²³ Citations on the *Edizione Nazionale* and Antonio Favaro amount to more than 1,500 out of a total of nearly 1,900. The difference of three hundred refers to various authors. Scholars contemporary with Pio Paschini were probably almost all, if not all, included by Fr. Lamalle.

²⁴ “We have said that we have no difficulty with the fact that Monsignor Paschini's documentation has remained substantially as it was in Favaro. That his erudition and his points of view – his problematics

One cannot, Lamalle writes, take issue with Paschini over this; all the more so, he emphasises, because it involved sifting through no less than twenty volumes (sic!). A three-year effort that Lamalle shows his appreciation for:

*Le premier mérite du livre de Mgr. Paschini réside précisément dans l'objectivité avec laquelle il a fait passer dans son texte, même matériellement, les résultats de ce dépouillement. On peut le constater presque à simple ouverture du livre: l'exposé est fait souvent d'une abondance peu commune de longs extraits textuels, à peine reliés par quelques lignes d'une prose volontairement dépouillée*²⁵ (Lamalle 1964, XI).

An abundant documentary excavation carried out in an impersonal, rich and orderly style.

On the other hand, the judgement on the lack of bibliographical citations by both Galilei's and his contemporaries who had considered the same subject is another matter:

Qu'il suffise de mentionner, entre autres, les éditions monumentales, toutes les deux en voie d'achèvement, des Johannes Kepler

*Gesammelte Werke et de la Correspondance du P. Marin Mersenne (ignorées l'une e l'autre par Mgr. Paschini) [...] pour les péripéties biographiques que pour les exposés de théories scientifiques*²⁶ (Lamalle 1964, X-XI).

To compensate for these shortcomings, Lamalle, recalling that the book had previously been rejected, recognises its merits. There is *pathos* hidden in his personal approach to expounding the flow of documents. That bare and cold Galilean method combined with a close comparison of opposing writings draws the reader in emotionally in a way no explanatory commentary could. And he succinctly gives three examples:

[...] la fatigue à laquelle Galilée dut se soumettre, après le coup de clairon du Nuntius Sidereus, pour répondre aux demandes de lunettes astronomiques venant des principales sommités politiques et culturelles de l'Europe; ou encore la correspondance entre Rome et Florence qui précéda set suivit immédiatement la publication du Dialogo sui massimi sistemi mettant en pleine lumière les responsabilités essentielles de la condamnation; ou enfin la série des mesures inutilement tracassières à

- have also remained as they were in Favaro's work is obviously much more serious [...]: here we have a good work of the previous generation, highly creditable both for the amount of work it represents and for the abundant, sorted and classified documentation it contains [...].

²⁵ "The first merit of Msgr. Paschini's book lies precisely in the objectivity with which he has conveyed the results of this analysis, even materially, in his text. This can be seen almost as soon as you open the book: the presentation is often made up of an unusual abundance of long textual extracts, barely linked by a few lines of deliberately spare prose".

²⁶ "Suffice it to mention, among others, the monumental editions, both nearing completion, of the *Johannes Kepler Gesammelte Werke* and of the *Correspondence of Fr Marin Mersenne* (both ignored by Mgr Paschini) [...] for the biographical events as well as for the expositions of scientific theories".

*l'égard du vieux savant confiné à Arcetri*²⁷ (Lamalle 1964, XI).

I will dwell on the first example, which recalls a disciplinary content on which it is worth digressing. The first lenses were produced where glassmaking was flourishing: not in Murano as one would have expected, but in Holland. There is no documentary evidence of lenses being produced according to the known laws of refraction, but solely by the craftsmanship of glassmakers. They were adapted to produce the first spectacles, as the phenomenon of increasing the size of objects while maintaining their relative proportions helped correct the visual defect of myopia. Those who had conducted studies in optics – the Paschini text cites Daniele Barbaro and Ignazio Danti describing the camera obscura as well as the Neapolitan Gian Battista della Porta and Kepler – failed to formulate a theory with laws that could lead artisans to develop a perfect design. Galileo himself claims to have produced functional lenses by relying on experience and manual skill. The construction of lenses was thus, as Paschini rightly writes, “[...] a handling of lenses, directed to other purposes and due to daily practice [...]”. The chapter *Il Cannocchiale* (1609-1620), in

addition to highlighting the state of the art and Galileo's ability to work on lenses, continues with a long list of the labours that Galileo's workshop in Padua had to undergo to satisfy the demands of the courts, and of the philosophers who were passionate about astronomy (it is improper to call them by the modern term “scientists”). Lamalle rightly believes that Paschini missed the opportunity to comment on the reason for disagreements over the interpretation of what Galilei wrote he had observed in *Sidereus*. Evidently the lack of a theory structured by precise laws accompanied by a disparate number of observations conducted with telescopes and lenses of unequal workmanship hindered the achievement of an unambiguous judgement. The difficulty in ascribing shared objectivity to observed celestial objects prevented scholastic philosophers educated in the method of “saving appearances” from “changing their attitude”. They could only present a healthy distrust of such an approximate technology, especially one that they felt threatened the pillars of peripatetic philosophy and undermined trust in traditional teachings. However, concerns were not only expressed by secondary characters or academics; there were also sceptical reactions from famous

²⁷ “[...] the fatigue Galileo had to undergo, after the trumpet blast of *Sidereus Nuncius*, in order to respond to requests for telescopes from the main political and cultural authorities of Europe; the correspondence between Rome and Florence that preceded the publication of the *Dialogo sui massimi sistemi* and the responsibilities that followed immediately after the condemnation; and finally the series of unnecessarily annoying measures against the old scientist confined to Arcetri”.

astronomers who had also had the opportunity to cast their gaze through the lenses of the Galilean telescope.

After hinting at the problem of the telescope alongside the uncertainty among contemporaries to accept a reality behind the instrument's filter, Lamalle then re-enters the field of historiography by touching a still raw "nerve", namely Paschini's objective flattening of the development of the controversy over heliocentrism on Favaro's correspondence. He writes:

*La division des personnages du drame entre 'amis' et 'ennemis' de Galilée, l'explication des procès et de leur dénouement par un jeu de 'basse intrigue', ou les Jésuites ont naturellement leur rôle, sont des interprétations vieillottes, trop simplistes, qui naissent de l'emploi sans contrôle de sources unilatéral de ce genre*²⁸ (Lamalle 1964, XII).

Having approached the documentary examination based on a single author, with brief excursions into other sources, he faced the accusation of having endorsed a 'conspiracy' thesis, something that could have been avoided had the esteemed historiographer consulted authors closer to his own era. There were some, Lamalle seems to suggest between the lines. Later in the preface,

Lamalle recounts how he had intended to 'update' Pio Paschini's dated work. He speaks of it in the third person plural and so one logically deduces that the choice was agreed upon by members of the Academy.

Having discarded the idea of intervening on the purpose of the book:

*Il eût été aussi aisé d'en écrire un autre, qui aurait d'ailleurs été sensiblement plus condensé*²⁹ (Lamalle 1964, XII).

two others were considered. The inclusion of footnotes at the bottom of the page reporting the results of the most recent studies. But at what price? A dense hemming that would have been perceived by the reader as a second book with the risk of deceiving or at least disorienting him. It was then felt that the best compromise was to refer to studies that the author would have taken into consideration had he been aware of them. A polite way to mitigate the previous criticism with the extenuating circumstances of isolation. In concrete terms, the decision was:

Aussi nos interventions, soit dans le texte soit dans les notes, ont-elles été volontairement très discrètes, se limitant aux quelques rectifications qui nous ont paru indispensables et à un minimum de

²⁸ "The division of the play's characters into 'Friends' and 'enemies' of Galileo, the explanation of the trials and their outcome with a game of 'low intrigue', in which the Jesuits naturally play their part, are old-fashioned, over-simplistic interpretations, resulting from the uncontrolled use of a single source" (Lamalle 1964, XII).

²⁹ "It would have been just as easy to write another, which would have been considerably more condensed" (Lamalle 1964, XII).

*rajeunissement bibliographique*³⁰ (Lamalle 1964, XIII).

We will return to this decision at the end because those “*très discrete*” notes in Paschini’s text turned out to be anything but discreet.

We are almost at the end of the nine-page preface and Lamalle, almost as if to justify the intrusion into the pages of the book, lists scholars contemporary to Paschini who had expounded the innovative contents of scientific historiography. The first is the physicist Vasco Ronchi, who founded the National Institute of Optics in Arcetri and whose numerous writings have been published. These include lectures, research and essays, including one that historically and scientifically popularised the invention of the telescope and its use by Galileo and his 17th-century contemporaries. In this regard, Lamalle writes:

En l’occurrence il s’agissait, pour le premier point, de vaincre le préjugé qu’une reconnaissance comme valable que l’observation visuelle immédiate, rejetant comme fallacieux tout

*instrument intermédiaire (défiance qui avait sa justification, en dernière analyse, dans l’insuffisance éprouvée des anciens instruments). Tant que Galilée ne put faire admettre la conception moderne de l’observation et de l’expérience, tous ses rapports sur ses découvertes, devaient être rejetés a priori*³¹ (Lamalle 1964, XIII-XIV).

He continues

*[...] le grand mérite de Galilée ne fut pas dans le geste élémentaire qui lui fit braquer sa lunette vers le ciel, mais dans une intuition géniale : l’observation astronomique ne se contentait pas de lentilles quelconques, mais exigeait une optique fine, [...]. On ne se fera qu’une idée très inexacte de la nature des oppositions faites au XVII^e siècle aux théories de Galilée si on ne tient pas compte de ce double facteurs, épistémologique et technique*³² (Lamalle 1964, XIII-XIV).

The passage is clear evidence that Lamalle was bringing the Academy’s old thesis of twenty years earlier up to the present day; in other words, in order to prove to the scholastic theologians that he interpreted the

³⁰ “[...] our interventions, both in the text and in the notes, were deliberately very discreet, limiting ourselves to a few corrections that seemed essential to us and with a minimum of bibliographical updating” (Lamalle 1964, XIII).

³¹ “In this case it was, firstly, a matter of overcoming the prejudice that recognised only immediate visual observation as valid, rejecting all intermediate instruments as fallacious (a mistrust that found its justification, in the final analysis, in the proven insufficiency of the old instruments. As long as Galileo could not get the modern conception of observation and experiment accepted, all his accounts of his discoveries had to be rejected a priori” (Lamalle 1964, XIII-XIV).

³² “[...] Galileo’s great merit was not in the elementary gesture that made him point his telescope at the sky, but in a brilliant intuition: astronomical observation was not satisfied with just any lenses, but required fine optics, [...]. We do not form a very precise idea of the nature of the opposition that was directed against Galileo’s theory in the 17th century if we do not take into account this twofold factor, epistemological and technical” (Lamalle 1964, XIII-XIV).

Holy Scriptures in a literary sense at points where the physical problem of the world was dealt with, Galileo had to consistently present a certain experimental demonstration. Since Galileo had no real proof, the scholars had no choice but to maintain their traditional adherence to immediate sensible experience.

The others mentioned, also contemporaries of Paschini, are Herbert Butterfield, a Protestant historian who wrote a book on the origin of modern science, and Filippo Soccorsi, a mathematician and physicist Jesuit who was director of Vatican Radio from 1934 to 1953 and wrote a book on the trial of Galileo.

Finally, Lamalle closes his introduction to Pio Paschini's book by introducing the reader to an unknown contemporary of Galilei, a young Jesuit who was a mathematician and teacher before joining the company: Charles Malapert (1581-1630). Biographical notes mention him as a convinced advocate of the importance of applying mathematics to astronomical observations and he was among the first to use the Galilean telescope. His observations of sunspots led him to an interpretation supporting geocentrism. A tenacious defence of the traditional viewpoint while adopting the Galilean method of experimental observation of the sky with the telescope:

*[...] il s'attache à des points qu'il a observés lui-même plus longuement, comme les taches du soleil, pour lesquelles il ébauche une explication personnelle. C'est un spectacle intéressant de voir ce jeune esprit sérieux, sans génie mais par là peut-être révélateur de son milieu, dire son enthousiasme et tenter de concilier la liberté de la recherche scientifique avec le respect pour l'école philosophique qui l'a formé*³³ (Lamalle 1964, XV).

Lamalle chooses Malapert as a model man of science who, while inductively searching for proof of Copernicanism without finding anything convincing, shows respect for the school that had formed him, a conclusion that also sounds like a cautionary warning to sailors of uncharted oceans. The trial of Galileo could only have curbed the freedom of research by forcing conclusions into research that in a climate of Freedom and respect for man and the recognition of the autonomy of science would have led to different outcomes. Even Lamalle dares not say more. This is a sign of the reservations that still existed in the 1970s with regard to freedom of research, and the raids on Lamalle's text, over and above the content, reveal the hierarchical difficulties in accepting a frank confrontation with the world.

In the appendix of his speech at the Tolmezzo conference, Msgr.

³³ "[...] He focuses on points that he himself has observed at greater length, such as sunspots, for which he sketches out a personal explanation. It is interesting to see this serious young mind, without genius but perhaps revealing of his environment, express his enthusiasm and try to reconcile the freedom of scientific research with respect for the philosophical school that trained him" (Lamalle 1964, XV).

Tabelle 1. Differences between the manuscript and the book, part 1 (Bertolla 1978).

Manuscript	Book
p. 385	p. 317
<i>È innegabile che a questo proposito egli espone i giusti principi mentre i teologi si mostrarono preoccupati di salvare le sentenze che per loro erano diventate tradizionali attraverso la scolastica.</i>	<i>È innegabile che a questo proposito Galileo espone, nell'insieme, i giusti principii, quelli che si sono poi fatto strada presso gli esegeti cattolici. Ma sarebbe completamente antistorico di tacciare semplicemente di miopia intellettuale e di testardo attaccamento alle sentenze tradizionali l'atteggiamento dei teologi che non accettavano le sue conclusioni.</i>
It is undeniable that in this regard he expounded the right principles in this regard, while the theologians were worried about saving the rulings that had become traditional for them through scholasticism.	It is undeniable that in this regard Galileo expounds, on the whole, the right principles, those that have since made their way into Catholic exegesis. But it would be completely anti-historical to simply brand the attitude of theologians who did not accept his conclusions as intellectual shortsightedness and stubborn attachment to traditional rulings.

Tabelle 2. Differences between the manuscript and the book, part 2 (Bertolla 1978).

Manuscript	Book
p. 396	p. 323
<i>Di tutti questi maneggi il Galilei...</i>	<i>Di tutti questi procedimenti il Galilei...</i>
Of all these manoeuvres, Galilei...	Of all these processes, Galilei...

Bertolla set out in two columns the passages from the manuscript and the “updates” to the book. It is evident that these are not ‘discrete’ notes but invasive interventions. Some passages are true remakes that Pio Paschini would certainly have rejected³⁴.

We have collected some of the steps in tables 1, 2, 3, 4 e 5. Discrete notes, perhaps yes, but in an appendix and not tampering with the text by making it say things that the historical Paschini would never have said, Bertolla concludes.

³⁴ On all passages, we cite the most obvious remake on pages 193, 194 of the Acts of the Study Conference on Pio Paschini on the centenary of his birth.

Tabelle 3. Differences between the manuscript and the book, part 3 (Bertolla 1978)

Manuscript	Book
p. 413	p. 341
<i>[...] dirigersi contro la dottrina copernicana e giungere a la condanna con una sentenza pronunciata con una leggerezza del tutto insolita da parte dell'austero Tribunale. [...]</i>	<i>[...] dirigersi contro la dottrina copernicana e giungere a la condanna con una sentenza, che sorprende oggi in un così ponderato ed austero Tribunale, [...]</i>
[...] to go against the Copernican doctrine and arrive at condemnation with a sentence pronounced with entirely unusual ease by the austere Court. [...]	[...] to go against the Copernican doctrine and arrive at condemnation with a sentence, which is surprising today in such a thoughtful and austere Court, [...].

Tabelle 4. Differences between the manuscript and the book, part 4 (Bertolla 1978)

Manuscript	Book
p. 666	p. 548
<i>Così si concluse questo che fu il vero processo di Galileo. Quanto a le responsabilità si può dire francamente che: "i grandi colpevoli della condanna agli occhi della storia sono quei difensori di una scuola antiquata i quali vedendosi cadere dalle mani lo scettro della scienza e non potendo soffrire che non fosse più ascoltato religiosamente l'oracolo uscente dalle loro labbra si servirono di tutti i mezzi, di tutti gli intrighi per restituire al loro insegnamento quel credito che perdeva: [...]"</i>	<i>Così si concluse questo che fu il vero processo di Galileo. Per non farsi un'idea completamente inesatta, si deve aver cura di non includervi delle certezze o dei punti di vista che si sono imposti solo nei secoli seguenti. Per aver perso di vista questa cautela, si è facilmente creduto, nel '700 e '800, che Galileo portasse prove lampanti delle sue teorie e che i giudici si fossero chiusi gli occhi per non vederle; tutto si riduceva quindi a una lotta fra il genio e l'ignoranza o il fanatismo [...] i grandi colpevoli della condanna [...]</i> <i>Nessuno storico serio potrebbe ancora sottoscrivere semplificazioni di questo genere.</i>

Thus ended what was the real trial of Galileo. As for responsibility, one can frankly say that: "the great culprits of the condemnation in the eyes of history are those defenders of an antiquated school who, seeing the sceptre of science fall from their hands and being unable to bear that the oracle issuing from their lips was no longer listened to religiously, used every means and intrigue to restore to their teaching the credit it was losing: [...].

Thus ended what was the real trial of Galileo. In order not to get a completely inaccurate idea, one must take care not to include certainties or points of view that were only imposed in the following centuries. For having lost sight of this caution, it was easy to believe, in the 18th and 19th centuries, that Galileo brought blatant proofs of his theories and that the judges closed their eyes so as not to see them; everything was thus reduced to a struggle between genius and ignorance or fanaticism [...]. "the great culprits of the condemnation *ibid* [...]"

No serious historian could still subscribe to such simplifications.

Tabelle 5. Differences between the manuscript and the book, part 5 (Bertolla 1978).

Manuscript	Book
p. 440	p. 366
<i>In conclusione purch� rimanesse inconcusso il principio che la terra era stabile ed il sole mobile intorno ad essa, si accettava qualunque ipotesi sulla costituzione dell'universo.</i>	<i>In conclusione, ritenendosi obbligati, in vigore dei decreti della Congregazione dell'Indice, a mantenere inconcusso il principio che la terra era immobile ed il sole mobile intorno ad essa, si cercavano faticosamente ipotesi accettabili sulla costituzione dell'universo.</i>
In conclusion, as long as the principle remained unchallenged that the earth stood still while the sun moved around it, any hypothesis on the constitution of the universe was accepted.	In conclusion, believing themselves obliged by the decrees of the Congregation of the Index to preserve as unchallenged the principle that the earth stood still while the sun moved around it, they struggled to find acceptable hypotheses on the constitution of the universe.

4. Conclusions. The intricate story of Pio Paschini's book spans almost a quarter of a century. From the *Epistolario* we read that he was commissioned to write a scientific biography on the Tuscan scientist, astronomer and philosopher in 1941. The revision of the manuscript took place in the summer of 1964 and the publication that same year. The years in which Pio Paschini worked were eventful and politically dramatic. We do not know how much living in a city first liberated by the Fascist regime, then occupied by the Germans and finally liberated by the Allies affected the pace of his work.

The decision not to ignore the anniversary of 1942 was already a sign from the institutional Catholic Church to respond directly, investing its scholars – or, in more secular terms, its organic intellectuals – with the task of countering the attacks and

criticism from the “secular world” of being a brake on scientific progress.

The Academy that had been entrusted with the job at the time now re-entered the scene with the same task. In the meantime, Gemelli had been succeeded by Lemaître, who, at the urging of the Curia, confirmed the commitment to publish the work that his predecessor had in fact rejected. It was, as previously pointed out, a recovery operation dictated by pastoral and image motives. With the Second Vatican Council, the Catholic Church opened up to the world and to dialogue with non-believers. Its intention was to remove critical arms from the neopositivist movement, well-rooted in the academic world, that considered Galileo Galilei a martyr of science and saw the trial of 1633 as the start of a brake on the advancement of scientific knowledge. This sentiment

found broadly popular expression in Bertolt Brecht's play, *Leben des Galilei*, the first version of which dates back to 1938. A broad front of consensus coagulated around this work, exposing what was perceived as an obscurantist operation and a threat to freedom of thought.

Entrusted with the task of taking over the burning manuscript branded with an apologetic accent and scientific poverty, and freeing it from the ever-present webs to be found in unswept corners and the dust that had penetrated the interstices of its pages, was Fr. Edmond Lamalle. If the Academy's concern was to subject the work to a process of rejuvenation, if not a facelift, then at least a minimally invasive retouching, what could we say today, well into the 21st century, of Lamalle's preface, more than fifty years after his writing it?

What has happened in the meantime? No revolution in scientific thought, as occurred in the first half of the 20th century, but an exceptional leap forward in the field of technology, now capable of scrutinising the infinitely small and the infinitely large on scales unimaginable only a few decades ago. Let us mention the main ones. Astronomical observations with the *Hubble* Telescope (HST Hubble Space Telescope), an evolution of Galileo's rudimentary telescope, now make it possible to observe the deep universe of space and time, surrounded by galaxies and drilled with black holes. The *LHC* (Large Hadron Collider) particle accelerator recently revealed the evanescent trail, left by the so-called "God particle", the Higgs

boson. And the rippling of space-time caused by the merger of two black holes, revealed by interferometers such as VIRGO in the Pisa plain, have confirmed the predictions of the general theory of relativity.

The new discoveries, profoundly distant from immediate perception, have a common denominator: a technology that has replaced the intuition of the scientist relying on the approximate experiments of the craftsman's laboratory and on the rigorously codified ceremony around discovery through experiment, with environments built with new super-cool materials and assisted by super-fast processors – new properties foreseen by the theory.

A modern historian cannot fail to register this shift from the laboratory guided by intuition, by trust in the mathematical instrument that mirrors truth, and by the flair of the scientist/craftsman, to the laboratory of techno-science where the *team* led by the scientist/technologist turns to the experimental set-up of the sense-making machine.

For Galilei, the physical law was a conquest of thought trained in mathematical demonstration, while the experiment, considering the primitive technology, constituted an empirical investigation, necessary but at best giving strength to the demonstrative procedure. The discoveries of 1610 could not have been decisive if placed in front of the certainties derived from the old and reliable Ptolemaic theory (including the contents of the Copernican *De Revolutionibus* if reduced to the mere

tool of calculation). It was physical mathematics that convinced Galileo and the Copernicans to support the heliocentric theory, not the use of experiment. But in the absence of unanimously accepted evidence, his opponents considered the two to be equivalent. That the theory of the Earth's immobility was in accordance with Holy Scripture was one more, and decisive, reason for the theologians to reject Copernicanism. The role of experiment in corroborating a theory in the most advanced fields of physics is commonly accepted. The experiment is crucial, or at least that is how it is presented. No one in the scientific community today shouts their scepticism about the experimental evidence for the expansion of the universe, the existence of gravity waves and the Higgs particle originating in the masses of all particles. It is experimentation that corroborates the theory precisely because it has incorporated the Platonic spirit of thought now implemented in the algorithms of super processors.

Lamalle rightly points out that the doctrinal hardening of the theologians was not undermined by the telescope, which did show true images, nor even by the lack of proof of the Earth's motion, but by the controversial interpretations of the observations. The same fate befell Isaac Newton, who failed to convince all of his

contemporaries, and some only after a long time, that colours make up the contents of light.

In short, one must always give the entire scientific community time to experiment and ascertain for themselves before they will give up their comfortable positions or move out of the obstinate generation that "doesn't want to see".

In Paschini's work, one does not find the reasons that changed attitudes towards discoveries. In the 16th century, the demonstrative theory preceded the experiment, and for Galileo demonstrating meant asking the "right questions" of nature in the form of mathematical theorems and experiments. Even Aristotle, whom Galileo respected, asked questions about how things really were, but his reasoning remained on a qualitative level and he was not a man to approach an experiment and put his hands to it, so to speak.

The little space devoted by Paschini to Galileo's fundamental work, *Discorsi e dimostrazioni matematiche intorno a due nuove scienze attenenti alla meccanica e i movimenti locali*³⁵, is also reflected in Fr. Lamalle's preface. The Physics presented at school in the early years is that of the book written by Galilei in his exile at Arcetri and not in the *Dialoghi*, if we exclude the principle of inertia. In contrast, Astronomy finds no place. But it is necessary to add

³⁵ G. Galilei, *Discorsi e dimostrazioni matematiche intorno a due nuove scienze attenenti alla meccanica e i movimenti locali* (Discourses and mathematical demonstrations concerning two new sciences relating to mechanics and local motion).

that in the Physics of the *Discorsi*, and much more so than in the *Dialoghi*, Galileo's scientific method emerges, which merges the Platonic spirit with the Archimedean and Democritical spirit. On the contrary, in Paschini's book there is a preponderant focus on astronomy. And conversely in the physics textbooks of post-unification Italy, geography and astronomy had their own weight. In this field, Paschini had an adequate schooling. However, the fact remains that it is the events of the process that are placed at the centre and this is the second limitation of Paschini's work.

It was fortunate for Galilei that his opponents had focused on the Copernican theory. Much more dangerous would have been if they had taken the trouble to subject mechanistic and materialist philosophy to the judgement of theological orthodoxy. The themes of the *Discourses* taken up by Newton separated theological and scientific knowledge into two distinct fields. Paschini did not realise this and Lamalle followed suit.

We conclude with a reflection on the "corrupt" passages, highlighted in the manuscript-print comparison (Tab. 1, 2, 3, 4, 5). In all passages, no technical remarks are made on the scientific content. But this was also known to Paschini, who learned of this after the revision entrusted to the competent academician Giuseppe Armellini, astronomer of the Pontifical Academy of Sciences.

From the examples given, it is clear that Lamalle's interventions of substance are almost all aimed at ticking off the polemical weapons that

Paschini reports from the documents he examined. Lamalle attributes Paschini's conspiratorial approach to the only source he referred to. Paschini was also aware of this but, given the character of the man, we do not believe that other sources would have led him down another path. He had the documents, the experimental data in hand. Why did he have to consult other sources? Grant the author this supposition. There are no parallels in history that provide evidence of the judgments on... "what if it happened that"?

But in the year in which Lamalle wrote his preface, had the Church fully emerged to confront the secular world of science? If we read the list of historians Lamalle lists who were ignored by Paschini, one absence shines out. We refer to Alexandre Koyré and his *Etudes Galiléenne* where Koyré emphasises that the great Galilean intuition was rather a rational deduction and not the result of a measurement. In Galilean thought, we are faced with an interpenetration of theory and practice that characterises the scientific and technological revolution through the creation of ever more perfect measuring instruments and the construction of ever more precise machines. An illuminating reflection.

Returning to the preface, we can certainly recognise that Lamalle's merit was at least that of having clarified the point of rejection that twenty years earlier had not been scientifically justified, i.e. having retracing Paschini's footsteps and

highlighting already known positions. Paschini's book is encyclopaedic in nature (undoubtedly a rich source of chronologically listed literary references that at the time, in the absence of the internet, could certainly render a considerable service to scholars); it is not an original reworking of historiographical thought.

Had the two volumes been published at the end of the Second World War, they would have been useful to scholars. Today, they stand as testimony to the strenuous search for a common path for scientists and theologians as far more complex problems loom than those faced more than four centuries ago.

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