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GALILEO'S *LETTER TO THE GRAND DUCHESS CHRISTINA*:  
GENRE, COHERENCE, AND THE STRUCTURE OF DISPUTE

SUMMARY

This paper proposes a reading of Galileo's *Letter to the Grand Duchess Christina* as analogous to a legal brief submitted to a court *en banc*. The *Letter* develops a theory of the general issues underlying the case at hand, but it is organized around advocacy for a particular judgment. I have drawn two architectonic implications from this framework, each of which helps to resolve an issue still standing in the literature. First, the *Letter* anticipates varying degrees of acquiescence to its general account, and provides 'hooks' for different readers to interpret variously while still converging on the particular judgment. This reading allows for a coherent Galilean interpretation of passages that notoriously concede priority to Scripture, while also explaining their dialectical function. Galileo is neither self-contradictory nor dissimulating here, but strategically leaves the specification of key distinctions for the reader. Second, the *Letter*, and particularly its apparent shifting of the burden of proof, must be understood in light of the tripartite 'adversarial-judicial' framework that Galileo sets up. The burden of proof is shifted to anti-Copernicans within the Church, not as a rhetorical trick, but because of the benefits of adversarial procedure that will accrue to the Church as the responsible judge.

*Keywords:* Galileo's trial, Science and the Catholic Church, Scriptural hermeneutics, Rhetoric of Science.

## 1. INTRODUCTION

Galileo was a reluctant theologian; as he wrote to Pietro Dini, he would for his part rather have left «any discussion of Sacred Scripture»

to «lay dormant forever».<sup>1</sup> From 1610 to 1615, however, he came under increasing pressure to defend the theological and Scriptural admissibility of the Copernicanism he espoused.<sup>2</sup> One line of defense was a revision and expansion of the *Letter to Castelli*, a brief treatment of the issue that had attracted some unwelcome attention from the Holy Office. The result, suitably and strategically readdressed, was Galileo's most thorough and masterful treatment of the relationship between Scripture and the study of nature, the *Letter to the Grand Duchess Christina*. Partly due to its participation in the complex set of events between Galileo and the Church, with all the complications of context that entails, and partly due to its own rhetorical and argumentative subtlety, the *Letter to Christina* (as I shall hereafter refer to it) continues to generate interpretive disagreement. Though much light has been shed on it by recent commentators, among whose readings there is significant convergence, there remain interpretive differences as to certain connected issues. These include: how to understand the genre of the text (a letter? An *apologia*? A treatise?);<sup>3</sup> what the connections between its different hermeneutical principles are;<sup>4</sup> and whether, in certain apparently 'concordist' passages, Galileo is

<sup>1</sup> OG, XII, pp. 183-184. Translation of this passage is from WILLIAM R. SHEA – MANUEL ARTIGAS, *Galileo in Rome: The Rise and Fall of a Troublesome Genius*, Oxford, Oxford University Press, 2003, p. 71.

<sup>2</sup> For the fullest account of these developments see ALFREDO DAMANTI, *Libertas Philosophandi: Teologia e filosofia nella Lettera alla granduchessa Cristina di Lorena di Galileo Galilei*, Rome, Edizioni di Storia e Letteratura, 2010, Chapters I-IV. See also MAURO PESCE, *L'ermeneutica biblica di Galileo e le due strade della teologia cristiana*, Rome, Edizioni di Storia e Letteratura, 2005, pp. 21-27.

<sup>3</sup> For a reading of the text as a «treatise», see MAURO PESCE, *Introduzione: La Lettera a Cristina: una proposta per definire ambiti autonomi di sapere e nuovi assetti di potere intellettuale nei paesi cattolici*, in GALILEO GALILEI, *Lettera a Cristina di Lorena sull'uso della Bibbia nelle argomentazioni scientifiche*, ed. by Franco Motta, Genova, Marietti, 2000, p. 29. For a reading in terms of the conventions of the 17<sup>th</sup>-century letter, but as «nearly a treatise», see JEAN DIETZ MOSS, *Novelties in the Heavens: Rhetoric and Science in the Copernican Controversy*, Chicago, University of Chicago Press, 1993, p. 190. Compare MAURICE FINOCCHIARO, *Defending Copernicus and Galileo: Critical Reasoning in the Two Affairs*, Dordrecht, Springer, 2010, p. 79 n. 55.

<sup>4</sup> ERNAN MCMULLIN, *Galileo on Science and Scripture*, in PETER MACHAMER (ed.), *The Cambridge Companion to Galileo*, Cambridge, Cambridge University Press, 1998, pp. 271-347. See also ERNAN MCMULLIN, *Galileo's Theological Venture*, in ID. (ed.), *The Church and Galileo*, Notre Dame, IN., University of Notre Dame Press, 2005, pp. 88-116. ANNIBALE FANTOLI, *For Copernicanism and for the Church*, George Coyne (trans.), revised 3<sup>rd</sup> edition, Vatican City, Vatican Observatory Foundation, 2003. MAURICE FINOCCHIARO, *The Methodological Background to Galileo's Trial*, in W.A. WALLACE (ed.), *Reinterpreting Galileo*, Washington, Catholic University of America Press, 1986, p. 261. JOHN MCCARTHY, *The Letter to the Grand Duchess Christina: Justice, Reinterpretation, and Piety*, in JOHN MCCARTHY – EDMONDO LUPIERI (eds.), *Where Have All the Heavens Gone? Galileo's Letter to the Grand Duchess Christina*, Eugene, OR., Cascade Books, 2017, pp. 22-41. DAMANTI, *Libertas Philosophandi* (cit. note 2), pp. 313-341.

merely being rhetorically opportunistic or is developing a coherent view on Scriptural interpretation and natural inquiry.<sup>5</sup>

Here I present a reading of the letter as analogous to a legal brief, one submitted to a panel of judges and opposed to multiple adversaries arguing to the contrary. The framework provided by this analogy yields interpretive insights in two overarching areas, in each of which I propose a solution to a difficulty still present in the literature. First, the framework addresses the sort of coherence to be found in the text: like a brief addressing a case with jurisprudential implications, the *Letter to Christina* both advances a theory of the case and the issues raised by it, and argues for a particular course of authoritative action or decision – namely, that the Church authorities refrain from proscribing Copernicanism before hearing the arguments pro and con. A brief may be addressed to a panel of judges, or a court *en banc*, whose members have differing jurisprudential assumptions and approaches. In such a case a good brief, even if it advances a theory of the case and its underlying issues, will also not depend upon a majority of judges agreeing with the whole of that theory. Rather, it will provide ‘hooks’ for the different judges, anticipating how they will interpret its arguments and aiming to secure a majority who agree as to the decision, not necessarily as to the theory in all of its elements.

Galileo offers, as I will argue, pathways for those who do not share all of his own assumptions to nonetheless be rationally persuaded to decide against condemning and prohibiting the discussion of Copernicanism. This is particularly important in interpreting some of the passages not present in the *Letter to Castelli*, in which Galileo has seemed to many readers to concede too much to Scripture’s authority by granting its literal meaning priority over certain claims about nature. In this respect, reading the *Letter* as a brief addresses an *aporia* in the literature, even in the most complete treatment to date, Alfredo Damanti’s. Though his painstaking historical reconstruction of Galileo’s own positions reveals the coherence of the *Letter*’s argumentation, his reading makes it all the more difficult to make sense of these ‘priority of Scripture’ passages in a dialectical or persuasive context: Galileo was surely aware that controversial and revolutionary background assumptions would not be shared by his intended audience. My reading distinguishes between the interpretation of such passages that Galileo himself would endorse, on

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<sup>5</sup> On Galileo’s supposed ‘concordism’ see PESCE, *L’ermeneutica biblica* (cit. note 2), pp. 113-115. For contrasting views see DAMANTI, *Libertas Philosophandi* (cit. note 2), pp. 343-355, and FANTOLI, *For Copernicanism* (cit. note 4), pp. 166-167.

the one hand, from those which he would have known his interlocutors would supply. As a skillful author of a brief must, Galileo constructs his arguments so that rational acceptance of the proposed judgment can be reached even by readers who will interpret key passages in ways predictably different from the author.

Further, like a brief addressed against different opposing arguments, the *Letter to Christina* offers internal criticisms of various different positions, taking up different assumptions *arguendo*, in addition to articulating its author's own coherent position. In this respect I affirm the reading of the apparently 'concordist' element in the *Letter to Christina* that is approaching, but has not yet reached, the status of a consensus view in the literature.<sup>6</sup> Galileo also uses *ad hominem* reasoning in other portions of the *Letter to Christina* (and generally it is frequent in his writing). On my reading the passages conceding a certain priority to Scripture function in a way analogous to *ad hominem* reasoning: Galileo would have anticipated that his readers would understand the key distinctions in those passages differently than he did, and yet even on their own interpretations the result would still follow. My interpretation thus has the merit of fitting with Galileo's tendency to exploit opportunities for internal critique.

The second architectonic implication of reading the text as a sort of brief is that the *Letter to Christina* sets up a triangular structure of dispute: Galileo is presenting a case to an idealized juridical authority, as over and against opposing parties. (I will refer to this framing as 'adversarial-judicial'.) This rhetorical and disputational framing bears on a particular interpretive question: whether, and in what sense, Galileo tries to shift the burden of proof onto his adversaries.<sup>7</sup> Considerations about burdens of proof that are not available or relevant in a two-sided argumentative scenario might be so in a three-sided scenario. I maintain that this is the case here. Galileo is not arguing simply on the basis of general norms of disputation between two parties. Rather, he argues that the Church's task of keeping and defending the faith will be best served if the opponents of Copernicanism are given the subsidiary task of testing it by their criticism, and thus they ought to try to prove it false. Making this three-sided framing explicit also allows for a fuller understanding

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<sup>6</sup> DAMANTI, *Libertas Philosophandi* (cit. note 2), pp. 343-355. FANTOLI, *For Copernicanism* (cit. note 4), pp. 166-167. FINOCCHIARO, *Defending Copernicus* (cit. note 3), pp. 80-81 n. 60. For a partially dissenting view see PESCE, *L'ermeneutica biblica* (cit. note 2), pp. 113-115.

<sup>7</sup> MOSS, *Novelties in the Heavens* (cit. note 3), pp. 205-207. DAMANTI, *Libertas Philosophandi* (cit. note 2), pp. 298-300. FINOCCHIARO, *Methodological Background* (cit. note 4), p. 262 n. 47.

of certain rhetorical features of the *Letter to Christina* that have puzzled some analysts of its rhetoric and led them to divergent characterizations thereof.<sup>8</sup> As Damanti puts it, «Ci sono due descrizioni del tono retorico della *Lettera* talmente diverse da essere quasi opposte».<sup>9</sup> Each of these opposed descriptions has a textual basis, and my interpretation helps to explain the two-faced character of the *Letter's* rhetorical tone. Within the adversarial-judicial framework, Galileo can be maximally polemical against some of his adversaries but also maximally respectful to the idealized juridical authority.<sup>10</sup>

## 2. THE ORIGIN, PURPOSE, AND FRAMING OF THE *LETTER TO CHRISTINA*

Though the analogy to a legal brief may seem anachronistic, the origins of the *Letter to Christina* and framing elements in the text itself support the value of the analogy for understanding the text's genre. This is the case both in the multiplicity of adversaries that Galileo names and engages with, and in his framing of his argument in a triangular structure, i.e., as advocacy to a judicial authority against his adversaries. The titular addressee, the Grand Duchess Christina of Lorraine, was the mother of Galileo's patron, the Grand Duke Cosimo II. The *Letter to Castelli* was prompted by a discussion at the ducal table, at which Galileo's friend and disciple, Benedetto Castelli, was present.<sup>11</sup> Christina posed some questions to Castelli about Galileo's telescopic discoveries. A professor of philosophy, Cosimo Boscaglia, conceded the discoveries but demurred on the motion of the earth, characterizing it as contrary to Scripture. Christina then followed up with her own line of questioning, challenging Castelli about the motion of the earth on Scriptural grounds. Galileo's response to this particular incident, though, was written directly afterwards. The addressing of the expanded *Letter* to the Grand Duchess, some one and a half years later, was mainly symbolic. As Mauro Pesce aptly notes, «La sua destinataria è in qualche modo fittizia perché non giuoca alcun ruolo dialogico reale in essa».<sup>12</sup> Still this choice

<sup>8</sup> E.g., Moss, *Novelties in the Heavens* (cit. note 3), pp. 193-194.

<sup>9</sup> DAMANTI, *Libertas Philosophandi* (cit. note 2), p. 150: «There are two descriptions of the rhetorical tone of the *Letter*, so different as to be almost opposite».

<sup>10</sup> MCCARTHY, in *Justice, Reinterpretation, and Piety* (cit. note 4), argues that this pertains to the purpose of the *Letter*, to redress injustice against right order.

<sup>11</sup> Castelli wrote an account of the conversation to Galileo on 14 December 1613. OG, XI, pp. 605-606.

<sup>12</sup> PESCE, *L'ermeneutica biblica* (cit. note 2), p. 98. «Its addressee is in a way fictitious,

of addressee had several quite real advantages for Galileo: her position as patroness made it relevant for him to defend his own public character against detractors (and hence gave him an opportunity to cast a certain class of adversaries as precisely that – detractors); her well-known identity as a pious laywoman helps Galileo to soften the appearance that he was teaching experts their own business;<sup>13</sup> most importantly, this address sets up a structure of disputation and authority, one evident in the original conversation that occasioned the *Letter to Castelli*.

At the ducal table in 1613, Christina oversaw and took part in a dispute between Castelli and Boscaglia. In the *Letter to Christina*, although it bears her name as addressee, the real authoritative audience Galileo hoped to reach was «influential prelates and scholars», who were in a position to shape or determine the institutional Church's response to Copernicanism.<sup>14</sup> By addressing the letter to the Grand Duchess, and by taking up the defense of his own character against adversaries in the opening sections of the letter, Galileo sets up a parallel structure, with the Church authorities as the real authoritative audience of the disputation. John McCarthy, in his perceptive reading of the letter as concerned with piety and justice, notes that «Galileo interpreted the Castelli-Boscaglia-Christina supper interchange as a proxy discussion of his own views as court philosopher and mathematician».<sup>15</sup> The triad is then really Galileo-adversaries-Christina, at least in the initial address of the *Letter*.

I propose to extend McCarthy's point here by relating it to Galileo's key audience: prelates and theologians in positions of authority in the Church, along with those who might influence them. Galileo uses the Galileo-adversaries-Christina structure as a template for the 'Galileo-adversaries-Church authorities' triad that befits his real concerns. The connection is made in the *Letter* by the transition between the *narratio*, which begins by addressing Christina as patroness, and the body of the *Letter*, where Galileo's concern has clearly shifted to persuading authoritative and influential persons in the Church. Folded inside of the address to Christina is a recommendation offered to the authorities of the Church. Galileo defends his «pious zeal», nominally to clear his name in the sight of his pious patroness, but does so by arguing that his position, as to the

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because she does not play any real dialogical role in it». See also DAMANTI, *Libertas Philosophandi* (cit. note 2), pp. 141-143.

<sup>13</sup> MOSS, *Novelties in the Heavens* (cit. note 3), pp. 191-192.

<sup>14</sup> *Ibid.*, p. 192; DAMANTI, *Libertas Philosophandi* (cit. note 2), p. 144.

<sup>15</sup> MCCARTHY, *Justice, Reinterpretation, and Piety* (cit. note 4), p. 25.

condemnation or toleration of the discussion of Copernicanism, is the correct and truly pious one. As McCarthy puts it,

[The *Letter*] attempts to redress perceived injustice through reinterpreting a distorted piety, a false zealousness, by demonstrating, in practice, the complexity of a greater "pious and religious zeal." Understanding this greater "pious and religious zeal" then means clarifying how the respect for nature, logic, and for the proper understanding of the Bible work together to form, in Galileo's thinking, the way to respect God's revelation.<sup>16</sup>

Thus, the position of authority in the triangular structure of dispute is first occupied by Christina, but she is quickly replaced by the authority of immediate interest to him, those who will condemn or tolerate Copernicanism. In this way, then, the format of that table conversation in December 1613 carries over into the *Letter to Christina*, but is transmuted into a more properly judicial framework: Christina was a respected patron and *granduchessa*, but she was of course not in a position to condemn or proscribe a view as heretical or anti-Scriptural. Galileo addresses, through the titular addressee, the institutional Church as the relevant authority, while defining other groups as adversaries in the disputation over which that authority presides.<sup>17</sup>

What is in dispute in this three-sided argument? The central controversial point of the *Letter to Christina*, as Maurice Finocchiaro has pointed out with admirable precision, is that «the literal interpretation of the Bible is not binding when we are dealing with physical propositions that are capable of being conclusively proved».<sup>18</sup> The word «capable» is important here: Galileo wanted to secure this result not just for proposi-

<sup>16</sup> *Ibid.*, p. 32.

<sup>17</sup> This proposal has affinities with Mario Biagioli's reading of the Castelli-Christina-Boscaglia situation. He proposes that this 'table talk' was an established courtly form, in which a neutral, dispassionate person of authority or status heard both sides of a question disputed. See MARIO BIAGIOLI, *Galileo, Courtier: The Practice of Science in the Culture of Absolutism*, Chicago, University of Chicago Press, 1993, p. 185. It is not clear that Christina was a 'dispassionate' neutral party in the conversation with Castelli: as Robert Westman has shown, it is not even clear that there was any such pattern of 'dispassionate' overseeing of natural-philosophical disputes in early modern courtly culture. See ROBERT WESTMAN, *The Copernican Question: Prognostication, Skepticism, and Celestial Order*, Berkeley, University of California Press, 2011, pp. 438-439. Biagioli's strong claims (and much-criticized historiographical practice) aside, it is quite clear that the origin of the *Letter to Castelli*, and by extension the *Letter to Christina*, was a three-sided conversation, involving two opposing interlocutors and a third party in a position of some authority. Castelli himself thought that when Christina opposed his arguments, she was doing so to draw out his ideas more clearly, so there is perhaps a hint of neutrality in her role.

<sup>18</sup> FINOCCHIARO, *Methodological Background* (cit. note 4), p. 265.

tions actually proved – their status was not controversial, in principle – but for any that might be proved at some point in the future. Galileo did not maintain that he was in possession of a necessary demonstration, and signaled instead that he regarded Copernicanism as *capable* of such demonstration.<sup>19</sup> Galileo is here seeking to carve out the space, vis-à-vis the Church's authority, to pursue the demonstration. His opponents, for all their variety, share not only the view that Copernicanism is untrue, but that it can and should be rejected as contrary to Scripture without a full hearing of the astronomical and natural-philosophical arguments pro and con. «Here I hope to demonstrate that I proceed with much more pious and religious zeal than they when I propose not that this book [i.e., Copernicus'] should not be condemned, but that it should not be condemned without understanding, examining, or even seeing it, as they would like».<sup>20</sup> In this, the most explicit formulation of the persuasive goal of the *Letter*, we can clearly see that beyond the demonstration of piety to Christina, it is intended as counsel to an authority that has the power to condemn – counsel that is opposed by others, who are urging the authority to the contrary. So we have, quite clearly, a triangular structure: the prudent and impartial judging authority, Galileo as virtuous counsel, and his opponents as malicious or mistaken counsel.

In the *Letter to Christina* Galileo's adversaries – those occupying one vertex of the triangle, so to speak – are further subdivided. Indeed in his *narratio*, Galileo begins with a veritable taxonomy, defining one type of opponent after another. The first type is exemplified by a past example: philosophical opponents of his telescopic discoveries and their consequences. These people «showed greater affection for their own opinions than for the true ones»; happily, «the passage of time disclosed to everyone the truths I had first pointed out, and, along with the truth of the matter, the difference in attitude between those who sincerely and with-

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<sup>19</sup> *Ibid.* pp. 269-270; FANTOLI, *For Copernicanism* (cit. note 4), p. 441; PESCE, *L'ermeneutica biblica* (cit. note 2), pp. 99 n. 18.

<sup>20</sup> OG, V, p. 313. «Dove spero di mostrare, con quanto più pio e religioso zelo procedo io, che non fanno essi, mentre propongo non che non si danni questo libro, ma che non si danni, come vorrebbon essi, senza intenderlo, ascoltarlo, né pur vederlo». Quotations from the *Letter to Christina* are from the critical edition of Ottavio Besomi: GALILEO GALILEI, *Lettera a Cristina di Lorena*, Edizione critica a cura di Ottavio Besomi, collaborazione di Daniele Besomi, Versione latina di Elia Diodati a cura di Giancarlo Reggi, Roma-Padova, Antenore, 2012. Significant differences from OG, V are noted in brackets. The English translation of this and all following passages from the *Letter to Christina* are from MAURICE FINOCCHIARO, *The Essential Galileo*, Indianapolis, Hackett Publishing, 2008, pp. 109-145. This is a slightly emended version of the translation in ID., *The Galileo Affair: A Documentary History*, Berkeley, University of California Press, 1989, pp. 87-118.

out envy did not accept these discoveries as true and those who added emotional agitation to disbelief».<sup>21</sup> But in addition to all these more or less emotional and recalcitrant objectors, who eventually saw the light, there remains a more sinister type: malicious agitators who, out of animus towards Galileo and rash, ignorant presumption, want to persuade the Church authorities to exert ecclesial powers without due consideration. Presumably this group includes Tomasso Caccini, Niccolò Lorini, Ludovico delle Colombe, and the rest of the so-called 'pigeon league'. In the rhetorical approach of the *Letter*, though, adversaries are not named, but characterized as types.

The other important group of adversaries that Galileo identifies is made of up «theologians whom I regard as men of profound learning and of the holiest lifestyle, and whom I therefore hold in high esteem and reverence».<sup>22</sup> This characterization is often, and quite appropriately, taken as an oblique reference to Cardinal Bellarmine, but again the *Letter* presents this group rather as instances of a type. In this case the adversaries are morally blameless but intellectually mistaken: they interpret theology's queenship over the other sciences incorrectly, as Galileo goes on to argue. The *Letter*, then, is framed as a three-sided adversarial-judicial dispute, and Galileo opposes himself to multiple adversarial points of view. That this three-sided framework is important for the *Letter's* interpretation, and that Galileo engages his adversaries in ways intelligible through the analogy of a legal brief, will appear from what follows.

### 3. STRUCTURAL OVERVIEW OF THE TEXT

In order to situate the passages I will focus on below, I here present a brief sketch of the structure of the *Letter to Christina*, a sketch highly indebted to Maurice Finocchiaro's account.<sup>23</sup> Galileo opens with an in-

<sup>21</sup> OG, V, pp. 309-310. «e dimostrandosi nell'istesso tempo più affezionati alle proprie opinioni che alle vere»; «È accaduto poi che il tempo è andato successivamente scuoprendo a tutti le verità prima da me additate; e con la verità del fatto si è fatta palese la diversità degli animi tra quelli che schiettamente e senza altro livore non ammettevano per veri tali scuoprimenti, e quegli che all'incredulità aggiugnevano qualche affetto alterato».

<sup>22</sup> *Ibid.*, p. 323. «teologi, riputati da me per uomini di profonda dottrina e di santissimi costumi, e per ciò tenuti in grande stima e venerazione».

<sup>23</sup> FINOCCHIARO, *Methodological Background* (cit. note 4), pp. 262-265. There is, it seems to me, wide agreement among recent commentators on the general organization of the text – though with some exceptions – and the structural sketch I offer is, I take it, not controversial. I follow Finocchiaro most closely, but his reading of the structure of the letter accords for the most part with those of Pesce and Damanti [PESCE, *L'ermeneutica biblica*

roduction explaining the occasion for writing; this contains a *narratio* recounting the criticisms of his telescopic discoveries, which he connects to the more recent Scriptural criticisms against his Copernicanism. He presents himself as one subjected to «false aspersions» who thus finds it necessary to defend himself as to «matters of religion and reputation». As seen in the passage quoted at the end of the previous section, his stated thesis is that Copernicanism should not be condemned without allowing the arguments pro and con to be examined. The *logos* is couched within the *ethos*, though: Galileo means also to demonstrate that his position is the truly pious one.

The main body of the letter is taken up with a response to the view that Copernicanism can be judged false and inadmissible out of hand, without refuting the arguments offered for it. Galileo takes up in turn the authorities that are claimed as justifying this judgment:<sup>24</sup> Scripture itself in its literal meaning;<sup>25</sup> theology as «queen of the sciences»;<sup>26</sup> the consensus of the Fathers of the Church, which had been defined as authoritative in «matters of faith and morals» by the Council of Trent;<sup>27</sup> «wise theologians» of Galileo's own day.<sup>28</sup> To the objection from the literal sense of Scripture he replies that Scripture is often accommodated to common understanding, since its aim is salvation, not informing us about nature. Further, in a celebrated formulation, he characterizes nature and Scripture as the two books of God, one proceeding from his Word as the creation, the other revealed to us in order that we might worship God, believe in the Gospel, and attain salvation. Both proceed from the one Truth, and so cannot contradict each other. Since Scripture is not intended to teach us the specific of the world's nature and arrangement, and since its words often have to be taken in non-literal senses, it should not have the first place when it comes to questions about nature. Rather, once we have a truth demonstrated by the sciences, we can interpret related passages of Scripture accordingly, showing how they do not contradict each other.

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(cit. note 2), pp. 100-102; DAMANTI, *Libertas Philosophandi* (cit. note 2), pp. 182-186] and in some respects with those of Moss and Kenneth Howell [Moss, *Novelties in the Heavens* (cit. note 3), pp. 192-211; KENNETH HOWELL, *God's Two Books: Copernican Cosmology and Biblical Interpretation in Early Modern Science*, Notre Dame, IN, University of Notre Dame Press, pp. 192-193].

<sup>24</sup> FINOCCHIARO, *Defending Copernicus* (cit. note 3), p. 80.

<sup>25</sup> OG, V, pp. 315-323.

<sup>26</sup> *Ibid.*, pp. 323-330.

<sup>27</sup> *Ibid.*, pp. 330-338.

<sup>28</sup> *Ibid.*, pp. 338-343.

Galileo then turns to the claim that theology, as queen of the sciences, can determine from on high, as it were, that something arrived at in a subordinate science must be false. He defends a counter-thesis: that theology's queenship over other sciences is to be understood in terms of the nobility of subject, not in terms of certainty. Even where it is legitimate for theologians to reject something as false, they must know whether it is the kind of thing that is demonstrated as true, or might at some point be demonstrated. Hence they must at least hear what kind of arguments are offered for it. In this section and the ones immediately preceding and following, Galileo acknowledges that Scripture does have priority over certain human claims. He also, in this section, seems to shift the burden of proof to his opposition. The interpretation of these passages is controversial, and will be discussed in what follows.

The Church Fathers, Galileo says, may have all taken heliocentrism for granted, but this is not a «matter of faith and morals», so it doesn't fall under the Council of Trent's prohibition. Moreover, there is no real sense in which there is a «consensus of the Fathers» here, since they did not concern themselves with the question of heliocentrism, which was not germane for their purposes or Scripture's. Galileo then conducts a sort of thought experiment, in which the wise theologians of the present day are substituted for the Church Fathers, since the latter did not consider the question: in that case such theologians would surely want to carefully consider the arguments on both sides. Interestingly, in this section the adversarial class of ignorant and presumptuous agitators (likely the 'pigeon league') returns briefly for evisceration. The tone shifts back to that of the *narratio*, and Christina is explicitly addressed again; this lends a sort of symmetry and closure to the main argumentative sections of the text. Here, as in the previous section, Galileo seems to shift the burden of proof on his adversaries: I will discuss this in some detail below.

Finally, there is a sort of epilogue in which Galileo takes up one of the most notably problematic Scriptural passages for Copernicanism, the story in Joshua 10:12-14 of the sun miraculously standing still. Here he argues that the text makes more sense, taking it at face value, on the Copernican view than on the Ptolemaic. This section has surprised and troubled some readers, who see it inconsistent with the thrust of Galileo's earlier arguments, namely that Scripture should not be read as having specific scientific implications. I will discuss this further in what follows; there is, I think, near consensus among recent interpreters that Galileo is arguing *ad hominem*, that is, he is assuming *arguendo* a premise he does not himself hold. At this point it is also appropriate to note that

Galileo, in the main body of the letter, cites a number of theological and Patristic authorities in support of his arguments, and repeatedly stresses the need for caution in declaring a natural proposition to be contradictory to Scripture, lest it should turn out to be demonstrably true – which might be taken by some to imply that Scripture is not credible.

#### 4. THE PRIORITY OF SCRIPTURE: AN INCOHERENT CONCESSION?

The *Letter to Christina* contains passages in which Galileo concedes a sort of priority to Scripture as a superior source of knowledge on account of its divine authorship. He makes such a concession, in similar language, in three consecutive sections: those on Scripture's own literal authority, theology as queen of the sciences, and the consensus of the Fathers. These concessive passages, which did not appear in the *Letter to Castelli*, have occasioned much interpretive comment. Here is the first:

(A) Moreover, even in regard to those propositions that are not articles of faith, the authority of the same Holy Writ should have priority over the authority of any human works composed not with the demonstrative method but with either pure narration or even probable reasons; this principle should be considered appropriate and necessary inasmuch as divine wisdom surpasses all human judgment and speculation.<sup>29</sup>

In the second passage we find Galileo concerned to reject an understanding of theology's queenship that would give it the power to determine, as it were from above, the content of other sciences. He contrasts the subordination possible for matters of commerce and law – areas partially constituted by convention – with the status of the demonstrative sciences, where refuting what one has found is actually impossible (*vide* the passage quoted just above). He then cites Augustine as evidence that the Church Fathers made this very distinction, i.e., between «debatable and demonstrative doctrines». Here is the passage from Augustine as Galileo renders it:

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<sup>29</sup> OG, V, p. 317. «di più, che ancora in quelle proposizioni che non sono *de Fide* l'autorità delle medesime Sacre Lettere deva esser anteposta all'autorità di tutte le scienze [OG scritte] umane, scritte non con metodo dimostrativo, ma o con pura narrazione o anco con probabili ragioni, direi doversi reputar tanto convenevole e necessario, quanto l'istessa divina sapienza supera ogni uman giudizio e coniettura». BESOMI (cit. note 20) discusses the group of variants under which he places this passage's *scienze/scritture* on pp. 189-190.

(B1) There should be no doubt about the following: whenever the experts of this world can truly demonstrate something about natural phenomena, we should show it not to be contrary to our Scriptures; but, whenever in their books they teach something contrary to the Holy Writ, we should without any doubt hold it to be most false, and also show this by any means we can; and in this way we should keep the faith of our Lord, in whom are hidden all the treasures of knowledge, in order not to be seduced by the verbosity of false philosophy or frightened by the superstition of fake religion.<sup>30</sup>

The passage is clearly well-chosen to combat one facet of the adversarial view addressed in this portion of the letter, namely, that

it is not proper to the dignity of theology to stoop to the investigation of the fallacies in the subordinate sciences, but it is sufficient for it to determine the truth of a conclusion with absolute authority and with the certainty that it cannot err.<sup>31</sup>

Yet the passage is apparently an uncomfortable fit for Galileo's purposes in other respects, since it seems either to imply that anything *not yet demonstrated* that is contrary to Scripture should be rejected as false, or simply to ignore the category of demonstrable but *not yet demonstrated* claims, which is precisely the one applicable to Copernicanism. The blitheness with which Galileo reads the passage as favorable to his view is, then, surprising to many readers:

(B2) These words imply, I think, the following doctrine: in the learned books of worldly authors are contained some propositions about nature which are truly demonstrated and others which are simply taught; in regard to the former, the task of wise theologians is to show that they are not contrary to Holy Scripture; *as for the latter (which are taught but not demonstrated with necessity), if they contain anything contrary to Holy Writ, then they must be considered indubitably false and must be demonstrated such by every possible means.* So physical

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<sup>30</sup> OG, V, p. 327. «Hoc indubitanter tenendum est, ut quicquid sapientes huius mundi de natura rerum varaciter demonstrare potuerint ostendamus nostris libris non esse contrarium; quicquid autem illi in suis voluminibus contrarium Sacris Litteris docent sine ulla dubitatione credamus, id falsissimum esse; et quoquo modo possumus, etiam ostendamus; atque ita teneamus fidem Domini nostri, in quo sunt absconditi omnes thesauri sapientiae, ut neque falsae philosophiae loquacitate seducamur, neque simulatae religionis superstitione terreamur». For detailed discussion of the textual source for this quotation, and the difference between the version Galileo (and Foscarini) took from Pereyra and that in various editions of Augustine's *De Genesi ad litteram*, see FANTOLI, *For Copernicanism* (cit. note 4), pp. 153-257; and DAMANTI, *Libertas Philosophandi* (cit. note 2), p. 444.

<sup>31</sup> OG, V, p. 324. «non convenendo ... alla dignità della teologia abbassarsi all'investigazione delle fallacie delle scienze soggette, ma solo bastando a lei il determinargli la verità della conclusione, con l'assoluta autorità e con la sicurezza del non poter errare».

conclusions which have been truly demonstrated should not be given a lower place than scriptural passages, but rather one should clarify how such passages do not contradict those conclusions; therefore, before condemning a physical proposition, one must show that it is not conclusively demonstrated.<sup>32</sup>

Galileo returns to this distinction, this time formulated between what is *opinabile* and what is *dimostrabile*, slightly further into the *Letter*, when he raises the objection taken from the consensus of the Fathers.

(C) Some physical propositions are of a type such that by any human speculation and reasoning one can only attain a probable opinion and a verisimilar conjecture about them, rather than a certain and demonstrated science; an example is whether the stars are animate. Others are of a type such that either one has *or one may firmly believe that it is possible to have*, complete certainty on the basis of experiments, long observations, and necessary demonstrations; examples are whether or not the earth and sun move, and whether or not the earth is spherical. As for the first type, I have no doubt at all that, where human reason cannot reach, and where consequently one cannot have a science, but only opinion and faith, it is appropriate piously to conform absolutely to the literal meaning of Scripture.<sup>33</sup>

By contrast, he goes on, when it comes to the second type one ought rather to use natural inquiry to illumine the Scripture, rather than the latter to restrict the former. It is noteworthy here that he explicitly expands the second type's characterization, so that it includes not just claims actually demonstrated, but those capable of being so.

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<sup>32</sup> OG, V, pp. 327-328. My italics. «dalle quali parole mi par che si cavi questa dottrina, cioè che ne i libri de' sapienti di questo mondo si contenghino alcune cose della natura dimostrate veracemente, ed altre semplicissimamente insegnate; e che, quanto alle prime, sia officio de' saggi teologi mostrare che le non son contrarie alle Sacre Scritture; quanto all'altre, insegnate ma non necessariamente dimostrate, se vi sarà cosa contraria alle Sacre Lettere, si deve stimare per indubitatamente falsa, e tale in ogni possibil modo si deve dimostrare. Se, dunque, le conclusioni naturali dimostrate veracemente non s'hanno a posporre a i luoghi della Scrittura, ma si ben dichiarare come tali luoghi non contrariano ad esse conclusioni, adunque bisogna, prima che condannare una proposizione naturale, mostrar che ella non sia dimostrata necessariamente».

<sup>33</sup> *Ibid.*, p. 330. My italics. «delle proposizioni naturali alcune sono delle quali, con ogni umana specolazione e discorso, solo se ne può conseguire più presto qualche probabile opinione e verisimile congettura, che una sicura e dimostrata scienza, come, per esempio, se le stelle sieno animate; altre sono, delle quali o si ha, o si può credere fermamente che aver si possa, con esperienze e con lunghe osservazioni e con necessarie dimostrazioni, indubitata certezza: quale è, se la Terra e 'l cielo [OG la Terra e 'l ☼] si muovino o no, se 'l cielo [OG la Terra] sia sferica o no. Quanto alle prime, io non dubito punto che dove gli umani discorsi non possono arrivare, e che di esse per conseguenza non si può avere scienza, ma solamente opinione e fede, pienamente [OG piamente] convenga conformarsi assolutamente col puro senso verbale della Scrittura».

These concessions to the superior authority of Scripture are not found in the *Letter to Castelli*. Ernan McMullin reads the letter as embodying, indeed heightening, an Augustinian conflict between two ideas: first, that demonstrated truths about the natural world cannot be contrary to Scripture, and that Scripture's proper interpretation must hence not be contradictory to those demonstrated truths; second, that claims not demonstrated, when in conflict with Scripture, must be rejected on the grounds of Scripture's superiority authority, as the word of God.<sup>34</sup> Though McMullin's interpretation is, to my mind, superseded by more textually detailed and historically contextualized studies of the *Letter*,<sup>35</sup> nonetheless he brings into focus a real question here. The two ideas he finds in Augustine and Galileo *are* potentially in conflict, and this is apparent precisely for claims about the natural world that are not demonstrated, but which may be demonstrable. Even those who see no real incoherence in the *Letter* concede the 'priority of Scripture' passages have at least the appearance of backtracking: Damanti, for example, speaks of «le formule attenuate, le apparenti esitazioni, la cautela espressiva di alcuni passi».<sup>36</sup>

Finocchiaro and Fantoli, albeit in slightly different ways, defend Galileo's consistency. In Fantoli's view, when Galileo says that a non-demonstrated claim about nature should be rejected as false, he is only posing the hypothetical case in which a not-yet-demonstrated claim about nature is *determined* to be contrary to the true sense of Scripture, and so his concession of priority here is not damaging to the *Letter's* fundamental thesis – namely, that research into nature is autonomous from questions of Scriptural interpretation.<sup>37</sup> In order to move responsibly towards such a (merely hypothetical) determination, theologians would have to consider the possibility of a future demonstration for the claim, and the possibilities of the relevant Scriptural passages being adapted to the understanding of the faithful, expressed in figurative language, etc. Fan-

<sup>34</sup> MCMULLIN, *Galileo's Theological Venture* (cit. note 4), p. 89. Michael Sharratt voices a similar reading, common in treatments not focusing specifically on the *Letter*, when he says that Galileo «undermines his own carefully constructed case», and made this disastrous self-undermining concession because he was overly confident that he actually had a necessary demonstration for Copernicanism. Sharratt, *Galileo: Decisive Innovator*, Cambridge, Cambridge University Press, 2006, p. 123.

<sup>35</sup> On the continuity and discontinuity between Augustine and Galileo's hermeneutics see PESCE, *L'ermeneutica biblica* (cit. note 2), pp. 110-116; FANTOLI, *For Copernicanism* (cit. note 4), pp. 152-159; FINOCCHIARO, *Defending Copernicus* (cit. note 3), p. 86 n. 23; HOWELL, *God's Two Books* (cit. note 23), pp. 186-196.

<sup>36</sup> DAMANTI, *Libertas Philosophandi* (cit. note 2), p. 355.

<sup>37</sup> FANTOLI, *For Copernicanism* (cit. note 4), pp. 158-159.

toli concludes that «Galileo does not, therefore, give to theologians the authority to condemn outright a proposition about nature which does not turn out at the moment to be demonstrated». By the implications of Fantoli's reading, though, the situation is more drastically in favor of scientific autonomy than his pacific language here would indicate, and the passage must be rather deceptive on Galileo's part: the priority of Scripture must be inapplicable, in principle, unless and until science has already shown something to be false or forever indemonstrable. Hence this turns out to be a purely counterfactual 'priority': it can never be asserted.

Finocchiaro, like Fantoli, takes Galileo mainly to be distinguishing claims on the basis of the method that generates them. Those put forward in a science that proceeds with a demonstrative method are distinguished from claims that are not: the priority of Scripture is only conceded for the latter category. Moreover, in passage (B2), arguably the most problematic in its formulation, Finocchiaro sees Galileo simply as recommending a kind of «interdisciplinary communication», wherein theologians would regard a claim as false in order to apply the proper scrutiny to claims advanced by natural philosophers.<sup>38</sup> On this reading, when theologians are to regard such a claim as false, this is more of a stance taken for pragmatic reasons than a claim about Scripture's epistemological priority. (As McMullin points out, though, Galileo's language seems rather inappropriate for an 'as if' procedure: «they must be considered indubitably false».)<sup>39</sup> Finocchiaro and Fantoli also share the view that part of the consistent message of the *Letter to Christina* is the proposal of a principle of autonomy, «according to which physical investigation can and should proceed independently of the Bible».<sup>40</sup>

On these interpretations, however, it is not really clear how Scripture's priority could ever be actionable, according to Galileo's own approach. On Fantoli's reading the applicability must be counterfactual: one could never be appropriately sure that the interpretation of Scripture was the correct one in the first place. On Finocchiaro's the same problem applies, though he proposes that theologians are supposed to take up the pragmatic stance of regarding the claim as false in order to find ways to refute it or expose the fallacious character of the proofs offered for it. There is also a notorious ambiguity here. The applicability of Scripture's priority is restricted, according to Galileo, to claims not

<sup>38</sup> FINOCCHIARO, *Methodological Background* (cit. note 4), p. 266.

<sup>39</sup> MCMULLIN, *Galileo on Science and Scripture* (cit. note 4), p. 311.

<sup>40</sup> FINOCCHIARO, *Methodological Background* (cit. note 4), p. 268.

demonstrated or to works not «composed with the demonstrative method», but instead merely «taught» or proposed with «probable reasoning». But as Richard Blackwell points out, «Galileo gives us no clues as to what criteria he would suggest» in order to apply this distinction in practice.<sup>41</sup>

Alfredo Damanti has proposed a typically erudite interpretive solution. Like Finocchiaro and Fantoli, he argues that Galileo does not intend this concession to have any implications for scientific matters at all. Damanti finds a Galilean interpretation of the *opinabile/dimostrabile* dichotomy by looking to Galileo's distinction, in the *Letters on Sunspots*, between the search for knowledge of essences (which he regarded as futile) and that of properties or *affezioni* (which he regards as the proper work of the natural philosopher).<sup>42</sup> Damanti concludes that this removes both the problem of how one can apply the priority of Scripture, on the one hand, and the problem of vagueness as to what is «demonstrable», given the incomplete and still nascent character of natural science. Thus Damanti:

In quest'ottica, tali regole stabiliscono infatti che la Bibbia può essere interpretata letteralmente senza pericolo ogniqualvolta si discuta di questioni che Galileo reputa irresolubili – quelle cioè riguardanti le essenze; ma in tutti gli altri casi deve prevalere il motivo prudenziale e lasciare aperta la libertà ad una possibile dimostrazione futura.<sup>43</sup>

Two points are relevant in response. First, *Sidereus Nuncius* shows that a previously undecidable question about essence (e.g., What is the nature of the Milky Way?) can be resolved by the development of science. Mauro Pesce emphasizes the far-reaching implications of Galileo's conception of natural science as surpassing common experience through specialized instrumentation.<sup>44</sup> Who could say what further enhancement of human sense experience might arise? One era's undecidable question about essences might be another era's empirical question. It seems to me this consideration challenges any static taxonomy of the

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<sup>41</sup> RICHARD J. BLACKWELL, *Galileo, Bellarmine, and the Bible*, Notre Dame, IN., University of Notre Dame Press, 1991, p. 82. See also DAMANTI, *Libertas Philosophandi* (cit. note 2), p. 331.

<sup>42</sup> OG, V, pp. 187-188.

<sup>43</sup> DAMANTI, *Libertas Philosophandi* (cit. note 2), p. 332. «From this point of view, these rules establish that the Bible can be interpreted literally without danger each time one discusses issues that Galileo considers irresoluble – those concerning essences. In all other cases, however, the prudential consideration must win out, and leave open the freedom to seek a possible future demonstration».

<sup>44</sup> PESCE, *Introduzione* (cit. note 3), pp. 38-40.

opinionable vs. the demonstrable – therefore this is a point relevant not only for Damanti, but any interpretation that harmonizes the ‘priority of Scripture’ passages with a consistent Galilean hermeneutic by formulating, once and for all, a criterion for the demonstrable/indemonstrable distinction.

Second, and I think of more immediate importance for the interpretation of the *Letter*, Damanti defends coherence and clarity for Galileo at a high cost. He makes it unclear, in fact, how anybody not already in agreement with innovative and controversial views, not adverted to in the *Letter*, would have been able to accept the arguments as coherent. Damanti, I think, gives a plausible answer to the question how Galileo himself would have glossed and explicated the distinction between «demonstrated» and «merely taught», namely by aligning this pair of concepts with the *essenze/affezioni* duality. This helps to support a reading of the texts on the priority of Scripture as having a genuinely Galilean sense, coherent with the whole *Letter*. (With the caveat of the previous paragraph, I would add.) But since there is no hint of such a gloss and explication in the *Letter to Christina*, it is not clear what this has to do with a reader’s understanding of the text. Galileo presumably was not expecting his target audience of influential theologians to accept, as an *unexpressed assumption*, the claim that natural philosophy based on knowledge of essences was incapable, in principle, of furnishing demonstrations! Damanti’s analysis does not even address, therefore, how Galileo would have expected his readers to interpret the passages on the priority of Scripture. If we think instead about what a reader would have to accept to be rationally moved by this part of the text, it becomes clear that the argument is theoretically ecumenical, not dependent on the assumption of controversial and unexpressed theses about methodology and the category of the demonstrable. This is the first particular interpretive benefit to reading the *Letter* under the analogy of a legal brief: it permits one to distinguish clearly between the Galilean sense of key concepts in the *Letter* and the sense (or senses) he would have reasonably expected his readers to supply.

Instead, what is crucial – and can, I think, be most clearly seen in passage (B) – is the drastic difference between how theologians must respond in the two cases: that is, how they should treat a non-demonstrable claim that clashes with the nakedly literal sense of Scripture, on the one hand, and a demonstrated claim that does so. One might demarcate the demonstrable and the indemonstrable in various ways, and one might think in various ways about the actionability of Scripture’s priority to «all human judgment and speculation». Galileo, very

reasonably, does not expect or require his readers to accept the same criteria of demarcation, nor to share a view as to how widely Scripture's priority is actionable. Instead, the argument can proceed, and can be rationally persuasive, without such specification. As long as one accepts that some things are demonstrated and some are not even capable of being demonstrated, then given that the items on one side or another should be treated radically differently (and given that the stakes of getting it right are high for the credibility of Scripture), one should agree that the Church needs to know which category something is in. That is, the Church needs to be informed before condemning. And Galileo can, without assuming anything philosophically innovative, make the case that the demonstrated and the indemonstrable – when they come into conflict with the nakedly literal sense of Scripture – should be treated radically differently.

As noted earlier, it was not controversial, in principle, to affirm that demonstrative knowledge about nature is possible and cannot be contradictory to Scripture, and that passages apparently conflicting with demonstrated truths must be read in another sense. Even Bellarmine, in the famous passage from his letter to Foscarini of 12 April 1615, confirmed that if Copernicanism were demonstrated, «one would have to proceed with great care in explaining the Scriptures that appear contrary, and say rather that we do not understand them than that what is demonstrated is false».<sup>45</sup> Further, as Galileo underlines with a flurry of Patristic quotations, it is detrimental to the credibility of Scripture and the Church to tie biblical texts to human judgments that may turn out to be contradicted by demonstrated truth. In other words, the stakes are high when categorizing a proposition about nature as indemonstrable or possibly-to-be-demonstrated-in-future.

The existence of the distinction between *opinabile* and *dimostrabile* is therefore crucial for Galileo's argument here, but a precise specification of the distinction is not. Blackwell writes, «At least all can agree that it is quite unfortunate that there is such textual ambiguity [...] at the critical point of the argument in Galileo's most mature statement on the relations of science and the Bible».<sup>46</sup> As I read the *Letter to Christina*, this ambiguity is «unfortunate» if we consider the text as a systematic treatise. I have proposed instead that it should be read it as something analogous to a brief, which *develops* a systematic view but is *organized*

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<sup>45</sup> OG, XII, 172; FINOCCHIARO, *The Galileo Affair: A Documentary History* (cit. note 20), p. 68.

<sup>46</sup> BLACKWELL, *Galileo, Bellarmine, and the Bible* (cit. note 41), p. 82.

around advocacy for a certain practical judgment or action. Galileo's lack of specification of the *opinabile/dimostrabile* distinction makes excellent sense in light of his persuasive project. Full specification as to the scope of the 'possibly-but-not-yet-demonstrated' category, for example, would mean taking a definite stand on how much of Scripture must be regarded as subject to reinterpretation in the future – needlessly controversial in Galileo's context. Indeed, it is one of Blackwell's central points about the whole incident that «the basic issue was not the interpretation of Scripture [...] but its reinterpretation».<sup>47</sup>

The concession to the priority of Scripture is not merely explicable in merely political terms, as a savvy *captatio benevolentiae*, however. It is meant to be rationally persuasive even to readers who do not share all of Galileo's background views about what kind of claims are demonstrable and what are not, or about the place of mathematics in natural philosophy and the certainty achievable in the mathematical study of nature, or the precise interpretation of theology's «queenship».<sup>48</sup> It is crucial to distinguish what the reader would have to accept to be rationally moved, on the one hand, from a properly Galilean interpretation of the key concepts that renders the passages coherent with the rest of the text, on the other. So long as the reader accepts: (1) the established view that a demonstrated natural proposition cannot contradict Scripture; (2) the prudential implication that undemonstrated natural propositions, which might later be demonstrated, should not be condemned as contrary to Scripture; (3) the relatively weak claim that there are some claims about nature about which it is not possible ever to have *scientia*, and to which the nakedly literal sense of Scripture has priority; then it follows that to declare a natural proposition contrary to Scripture one must know which category it falls into. Thus for newly advanced claims about nature, the prudent exercise of the authority of Scripture requires that its authorized defenders must *find out* which category it falls into.

Consider, as one prospective (and, it seems, actual) reader of the *Letter to Christina*, Cardinal Bellarmine himself.<sup>49</sup> In his famous letter to

<sup>47</sup> *Ibid.*

<sup>48</sup> Contrast DAMANTI, *Libertas Philosophandi* (cit. note 2), p. 328, where he is concerned to downplay the continuity between Galileo's view and Pereyra's when it comes to the implications of demonstrated natural truths for Scriptural interpretation. It is one thing to assert that Galileo's views on demonstration were revolutionary and anti-Aristotelian; it is another altogether to assert that Galileo's arguments in the *Letter to Christina* are grounded on the revolutionary aspects of his view on demonstration. Damanti substantiates the former but merely assumes the latter.

<sup>49</sup> DAMANTI, *Libertas Philosophandi* (cit. note 2), pp. 365-366. Damanti argues from

Foscarini, a text Galileo was certainly aware of when composing the *Letter*, Bellarmine argues that one notable heliokinetic passage was authored by Solomon, «a man above all others wise and learned in the human sciences and in the knowledge of created things».<sup>50</sup> Hence, he concludes, it is unlikely that the passage is contrary to a claim capable of demonstration. Indeed, Bellarmine notes that though Foscarini explains «many ways of interpreting Holy Scripture», he does not show that all the relevant passages can be interpreted in a Copernicanism-friendly way, and «undoubtedly [he] would have encountered great difficulty» if he had tried.<sup>51</sup> For Bellarmine, then, each passage presents its own blend of considerations, and it is clear that he would not accept as general principles the key points of Galileo's overall hermeneutic. Nonetheless, even a position close to Bellarmine's is potentially reachable by Galileo's argument here: Bellarmine concedes the principle that demonstrated truths take precedence over apparently contrary passages of Scripture about nature; he believes that some claims about nature cannot ever be truly demonstrated; he is potentially alert (though alas, not sensitive enough) to the damage done by yoking Scripture's credibility to natural propositions that might turn out to be false. To be sure, Bellarmine also infamously suggests that Copernicanism could only be a 'hypothesis' in the weak, merely instrumental sense of the term; his sense of the prudential considerations at play, moreover, is tilted dramatically in favor of tradition and stability. The point, however, is that there is a wide range of possible positions between Galileo's and Bellarmine's respective views about the *dimostrabile/opinabile* categorization and the actionability of Scripture's priority. It is a mark of the theoretical ecumenism of the argument in this part of the text that it could be rationally persuasive for a reader nearly as unsympathetic as Bellarmine.

Since the argument follows even on a range of views about the categorization of natural propositions and the actionability of Scripture's priority, it functions as a sort of variable *ad hominem*. I mean this term, of course, in the sense of an internal critique of a position, where the one arguing assumes the interlocutor's position *arguendo* to refute some

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new evidence from the Roman archive of the Jesuits that Bellarmine read the *Letter to Christina*.

<sup>50</sup> OG, XII, p. 172. [Translations from FINOCCHIARO, *The Galileo Affair* (cit. note 20), pp. 67-69.] «ma fu huomo sopra tutti gli altri sapientissimo e dottissimo nelle scienze humane e nella cognitione delle cose create».

<sup>51</sup> OG, XII, p. 171. «perchè la P.V. ha bene dimostrato molti modi di esporre le Sante Scritture, ma non li ha applicati in particolare, chè senza dubbio havria trovate grandissime difficoltà se havesse voluto esporre tutti quei luoghi che lei stessa ha citati».

other position the interlocutor holds, or to show the incoherence of the interlocutor's view. A *reductio ad absurdum* is one variety. By «variable *ad hominem*» I mean an argument that predictably will be interpreted in accord with various readers' various background assumptions – which in effect means that it will proceed from a premise supplied by the reader – but will nonetheless derive the same result that follows when it is read with Galileo's own assumptions. One might wonder why it is justified or helpful to describe this as a «variable *ad hominem*», rather than simply an argument that proceeds from widely acceptable premises. I think the former characterization helps to show how Galileo is both developing a systematic view and also arguing with an eye towards his readers' predictable interpretations of strategically unspecified distinctions. Without taking account of Galileo's anticipations of readers' interpretations, it is hard to give an account, except in purely pragmatic and political terms, for why he would speak about Scripture's priority at all. In this case, Galileo provides the argument (with its underspecified distinction between the *opinabile* and the *dimostrabile*) to show readers who endorse a more robustly actionable priority for Scripture than he does, that their position, too, yields the conclusion anyway: Copernicanism, and newly proposed natural claims like it, should be investigated fully before being condemned.

This reading coheres with the general tenor of Galileo's argumentation in the *Letter*, where the language marking internal critique and assumptions taken up *arguendo* is unmistakable at key junctures. This is most obvious, perhaps, in the closing section where Galileo analyzes the miracle of the sun's standing still in Joshua: he assumes for the sake of argument a view that he does not hold, namely that Scripture's plainly literal sense should carry weight in discussing the world systems of astronomy. Then by looking to the details of the biblical text he concludes that Copernicanism comes out better than Ptolemaism in this passage. Recent commentators generally agree, at least in broad outline, that this is offered as an internal critique of an opposing view, namely that on which the plainly literal sense of a Scriptural passage about nature has natural-philosophical implications.<sup>52</sup> But this mode of arguing is present in subsidiary parts of the text as well. For example, in discussing the

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<sup>52</sup> DAMANTI, *Libertas Philosophandi* (cit. note 2), pp. 343-355. FANTOLI, *For Copernicanism* (cit. note 4), pp. 166-167. FINOCCHIARO, *Defending Copernicus* (cit. note 3), pp. 80-81 n. 60. HOWELL, *God's Two Books* (cit. note 23), p. 191; I leave aside the creative but I think rather strained reading that Howell appends in the following pages. For a contrasting view that nonetheless has much in common with the other treatments cited here, see PESCE, *L'ermeneutica biblica* (cit. note 2), pp. 113-115.

«consensus of the Fathers», Galileo concludes by making a concession *arguendo* and noting that even so, Copernicanism should not be condemned on this ground:

However, suppose one were to decide that, even in the case of propositions about natural phenomena, they should be condemned or accepted on the basis of scriptural passages which are unanimously interpreted in the same way by all the Fathers; even then I do not see that this rule would apply in our case, given that one can read in the Fathers different interpretations of the same passages.<sup>53</sup>

Immediately following this, Galileo turns to another argumentative concession:

Finally, let us grant these gentlemen more than they ask – namely, let us submit entirely to the opinion of wise theologians. Since this particular determination was not made by the ancient Fathers, it could be made by the wise ones of our age.<sup>54</sup>

He has just argued that the Tridentine «consensus of the Fathers» standard doesn't apply anyway, since this is not a matter of faith and morals, but also since they did not take up the question of heliocentrism at all, and had no need to do so. Moreover, they are not even in complete consensus on how to interpret the motion of the sun and the rest of the earth in various passages. Nonetheless he allows his interlocutors here a generous, even gratuitous assumption: that the consensus of contemporary wise theologians could take the place of the missing consensus of the Fathers. This section of the text is meant to show that even on such a concession, wise theologians would of course consider all the relevant arguments before coming to a decision, so the adversaries who are so busy advocating for Copernicanism's suppression should instead busy themselves with trying to disprove it with the tools of natural philosophy.

The ingenious deployment of *ad hominem* reasoning is, arguably, a Galilean hallmark. Finocchiaro judges that «*ad hominem* (in the seventeenth-century sense of internal criticism), [...] is a characteristic trait

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<sup>53</sup> OG, V, p. 337. «Ma quando pure anco nelle proposizioni naturali, da luoghi della Scrittura esposti concordemente nel medesimo senso da tutti i Padri si avesse a prendere la risoluzione di condannarle o ammetterle, non però veggo che questa regola avesse luogo nel nostro caso, avvenga che sopra i medesimi luoghi si leggono de i Padri diverse esposizioni».

<sup>54</sup> *Ibid.*, p. 338. «Ma finalmente, concedendo a questi signori più di quello che ei comandano, cioè di sottoscrivere interamente al parere de' sapienti teologi, già che tal particolar disquisizione non si trova essere stata fatta da i Padri antichi, potrà esser fatta da i sapienti della nostra età».

of his manner of thinking». <sup>55</sup> He makes this remark in the course of discussing Galileo's letter of 23 March 1615 to Monsignor Dini, because recent scholarship has made a plausible case that this letter's treatment of Psalm 18 can be read as containing or implying an internal critique: Galileo paraphrases Bellarmine's own commentary on the psalm and draws out a Copernican reading. So even when Galileo has not explicitly signaled that he is doing so, he sometimes may in fact intend his argument to have the force of an internal critique. <sup>56</sup> My reading of the 'priority of Scripture' passages in the *Letter to Christina* is related: there is, if Damanti is correct, a way to interpret the *opinabile/dimostrabile* distinction in genuinely Galilean terms, corresponding to *essenze/affezioni*. But the latter pair is nowhere introduced in the *Letter*, and Galileo could not have assumed that his audience would accept them. Instead he anticipated, I propose, that his readers would interpret Scripture's priority in a more generous and actionable fashion than he himself would credit, and would nonetheless be rationally pressured to the same conclusion. If a reader wants the Church to make a judgment on a natural proposition based on the priority of Scripture, then it is all the more important to determine which category a given natural proposition belongs to: the categories get radically different treatment, and the prudential consequences are serious. One need not agree with Galileo on the precise location of the categorical boundaries, nor on the hierarchy of the sciences, to be rationally moved by the argument. <sup>57</sup> And since Galileo would surely have anticipated that his readers would not, generally, so agree, the argument would function as a sort of 'fill-in-your-own-assumptions' *ad hominem*: it would have the force of internal critique insofar as readers would incorporate their respective interpretations of *opinabile/dimostrabile* and the scope of Scripture's priority.

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<sup>55</sup> FINOCCHIARO, *Review of Alfredo Damanti, Libertas Philosophandi* (cit. note 2) and MASSIMO BUCCIANINI – MICHELE CAMEROTA (eds.), *Scienza e religione: Scritti copernicani*, Rome, Donzelli Editore, 2009, «Isis», 103, 2012, pp. 400-401.

<sup>56</sup> An anonymous reviewer offers the intriguing suggestion that there may be an illuminating parallel to Galileo's anonymously-published *Difesa di Galileo Galilei* against Baldassare Capra: there too, there is a more or less explicit three-sided structure of dispute; the text «offers pathways for its audience to be persuaded to decide against Capra without having to commit themselves to the assumption that Galileo was the inventor of the instrument»; and there is an attempt to put the burden of proof on Capra.

<sup>57</sup> Of course, readers with *some* epistemological views would be unmoved by the application of this argument to the case of Copernicanism. For example, if one thought, as Bellarmine apparently did, that astronomy could do no better than to provide hypotheses, in a purely instrumental sense of the term, then one would regard astronomical arguments for Copernicanism as mere *opinioni*.

Indeed, this interpretation coheres as well with the overall argumentative structure of the *Letter*, which itself indicates Galileo's anticipation that not all readers would agree with all of the arguments. Pesce describes the epilogue-like commentary on the Joshua passage as a kind of last-ditch effort to persuade those who would predictably not accept the main thrust of the *Letter's* argumentation.<sup>58</sup> Finocchiaro describes the overall structure as follows:

It amounts to a threefold criticism of the argument that Copernicanism is wrong because the Bible says so: first, the Bible saying so would not make it so; second, to know what the Bible really says about the physical universe one normally has to know what is physically true; and third, it is questionable whether the Bible does in fact say so.<sup>59</sup>

This nicely encapsulates the layered approach Galileo takes in the *Letter*, and exhibits its suitability for a persuasive text addressed to readers who would likely respond variously to different parts of the argument.

It may seem that this reading abandons consistency altogether: Galileo throws a variety of arguments, not all compatible with each other, in order to persuade the widest possible audience. This is, speaking roughly, McMullin's view:

[The letter is] an opportunistic collection of rhetorical strategies, not an axiomatic system. ... Galileo was searching for arguments that would *work* with his readers. Whether the arguments would fit together as a single integrated whole was probably not of immediate concern to him.<sup>60</sup>

While certainly the letter is not organized around the presentation of an axiomatic system, I think McMullin goes too far in the other direction here. I have argued that Galileo does not abandon consistency, but that he does decline to specify for the reader the *opinabile/dimostrabile* distinction and thus leaves the scope of Scripture's priority open to the reader's construal in the passages about that priority.

Galileo seems genuinely to have endorsed a principle of scientific autonomy in some form, as Fantoli, Finocchiaro, Pesce, and Damanti argue. One who agreed with Galileo on that point might well take the priority of Scripture to be, practically speaking, moot when it comes to questions about nature – might even go so far as to take Scripture

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<sup>58</sup> PESCE, *L'ermeneutica biblica* (cit. note 2), p. 114.

<sup>59</sup> FINOCCHIARO *Methodological Background* (cit. note 4), p. 265.

<sup>60</sup> MCMULLIN, *Galileo's Theological Venture* (cit. note 4), p. 111.

to be largely irrelevant to natural philosophy. But one who disagreed with the more expansive conception of natural philosophy's autonomy could still have been persuaded that Copernicanism ought not to be rejected prior to a thorough hearing of the arguments pro and con. Galileo's deliberate lack of specification allows him to craft a maximally open prudential case: across a wide range of ways to understand the scope of the demonstrable and the actionability of Scripture's priority, the resulting judgment should still be the same. Even if one thought that scriptural statements about nature were to be given a strong presumption not only of relevance to, but of authority over mere human proposals; even if one thought that Scripture was a valuable repository of truths about the structure of the universe; even if one thought the sacred authors knew more than we did about that structure, one could still admit that a prudent Augustinian concern would support a full hearing of any putative demonstrations. Galileo at one and the same time advances the autonomy of natural inquiry while leaving a path for those who disagreed to nonetheless agree as to the particular judgment: Copernicanism should not be condemned without allowing the arguments to be aired.

##### 5. THE BURDEN OF PROOF AND THE ADVERSARIAL-JUDICIAL FRAMEWORK

The passages in which some commentators find Galileo shifting the burden of proof are two: one occurs in the passage discussed above, as he discusses the relationship between theology (as «queen of the sciences») and natural philosophy, and the other just before his coda, the discussion of the miracle of Joshua in which the sun stood still. Moss calls this putative shifting «the most remarkable rhetorical feat of the letter». <sup>61</sup> Others dispute this characterization: Finocchiaro argues that Galileo was simply «trying to be helpful»; <sup>62</sup> Drake insists that the *Letter* is «exclusively a plea against the possible prohibition of the Copernican theory, and [...] by no means a plea for active support of that theory by the Church». <sup>63</sup>

<sup>61</sup> Moss, *Novelties in the Heavens* (cit. note 3), p. 205. Of the first passage, Langford observes that it «looks like a switching of the burden of proof», and though he judges that this was not Galileo's intended meaning, nonetheless he faults him for clouding the issue. JEROME LANGFORD, *Galileo, Science, and the Church*, Ann Arbor, MI., University of Michigan Press, 1966, p. 77.

<sup>62</sup> FINOCCHIARO, *Methodological Background* (cit. note 4), p. 263 n. 47.

<sup>63</sup> STILLMAN DRAKE, *Forward to LANGFORD, Galileo, Science, and the Church* (cit. note 61), p. xi.

In Damanti's recent magisterial monograph, he relates Galileo's argument here to a point of philosophical psychology going back to Aristotle. Since a higher power of the soul cannot be commanded by a lower, it would be impossible for a natural philosopher really to refute what he believes that he has demonstrated to be true.<sup>64</sup> A mere act of will in obedience to a superior's command could not really command the intellect. As Galileo puts it,

To require astronomers to endeavor to protect themselves against their own observations and demonstrations, namely, to show that these are nothing but fallacies and sophisms, is to demand they do the impossible; for that would be to require not only that they should not see what they see and not understand what they understand, but also that in their research they should find the contrary of what they find. That is, before they can do this, they should be shown how to manage having the lower faculties of the soul direct the higher ones, so that the imagination and the will could and would believe the contrary of what the intellect thinks...<sup>65</sup>

Damanti is quite correct to highlight this part of Galileo's argument and its philosophical pedigree, but by itself it is not sufficient to explain the «inversion of the burden of proof», as I will show. Even here one can see, however, that Galileo invokes this point of faculty psychology in cases where the knowledge in question is *demonstrated*: in such a case it would be simply impossible for a scientist or natural philosopher to show that it is fallacious. But as will become clear, when Galileo goes on to invert the burden of proof (to use Damanti's phrase), he is not presuming that the knowledge claims are actually demonstrated, and he gives a different reason why the opponents, rather than the proponents, should try to refute it.

I turn to the texts in question. The first passage is the continuation of one discussed in the previous section, where Galileo acknowledges that when something about nature that is merely taught or proposed with probable reasons contradicts Scripture, it should be regarded as indubitably false and proved to be so.

<sup>64</sup> DAMANTI, *Libertas Philosophandi* (cit. note 2), pp. 298-299.

<sup>65</sup> OG, V, pp. 325-326. «Il comandar poi a gli stessi professori d'astronomia, che procurino per lor medesimi di cautelarsi contro alle proprie osservazioni e dimostrazioni, come quelle che non possono esser altro che fallacie e sofismi, è un comandargli cosa più che impossibile a farsi; perché non solamente se gli comanda che non veggino quel che e' veggono e che non intendino quello che egli intendono; ma che, cercando, trovino il contrario di quel che gli vien per le mani. Però, prima che far questo, bisognerebbe che fusse lor mostrato il modo di far che le potenze dell'anima si comandassero l'una all'altra, e le inferiori alle superiori, sì che l'imaginativa e la volontà potessero e volessero credere il contrario di quel che l'intelletto intende».

(D) Furthermore, it is much more reasonable and natural that this be done not by those who hold it to be true, but by those who regard it as false; for the fallacies of an argument can be found much more easily by those who regard it as false than by those who think it is true and conclusive, and indeed here it will happen that the more the followers of a given opinion thumb through books, examine the arguments, repeat the observations, and check the experiments, the more they will be testing their belief.<sup>66</sup>

I think it is undeniable that Galileo is concerned with burden of proof in this passage, and is arguing that his adversaries carry a burden from which they claim to be exempt. The adversaries, however various, all think they can dismiss Copernicanism out of hand – as false because a higher authority says so – and here he argues that they ought to be the ones to bring their strongest arguments to show it *not* to be demonstrated. Crucially, though, Galileo is not putting the burden of proof on a group so widely defined as «the theologians» (*pace* Moss),<sup>67</sup> but specifically on those who think that Copernicanism is false, who are here marked out as a special class. This class is also distinguished, though less explicitly, from the Church's authoritative leaders, whom he characterizes in a highly idealized fashion just before marking out this more specified group of theologians:

The deliberating, deciding, and decreeing about such important issues can be left to the excellent wisdom and goodness of very prudent Fathers and to the supreme authority of those who, guided by the Holy Spirit, can only behave in a holy manner and will not permit the irresponsibility of those others to gain influence.<sup>68</sup>

Note the clear implication, again, of a triangular adversarial-judicial structure.

To see the importance of the three-sided structure for the issue at hand, consider this parallel example: two scholars, X and Y, disagree on

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<sup>66</sup> *Ibid.*, pp. 327-328. «E questo devon fare non quelli che la tengon per vera, ma quelli che la stiman falsa; e ciò par molto ragionevole e conforme alla natura; cioè che molto più facilmente sien per trovar le fallacie in un discorso quelli che lo stiman falso, che quelli che lo reputan vero e concludente; anzi in questo particolare accaderà che i seguaci di questa opinione, quanto più andran rivolgendo le carte, esaminando le ragioni, replicando le osservazioni e riscontrando le esperienze, tanto più si confermino in questa credenza».

<sup>67</sup> Moss, *Novelties in the Heavens* (cit. note 3), p. 194.

<sup>68</sup> OG, V, p. 323. «riponendo il consultare, risolvere e decretare sopra determinazioni tanto importanti nella somma sapienza e bontà di prudentissimi Padri e nella suprema autorità di quelli che, scorti dallo Spirito Santo, non possono se non santamente ordinare: permettendo che della leggerezza di quelli altri non sia fatto stima».

an interpretive question in their field of scholarship. It is one thing to argue about burden of proof in a simple two-sided dispute – e.g., for *X* to argue to *Y* that *Y* must disprove *X*'s position. It is quite another thing if the two sides are making their case to a third party, e.g., for *X* to argue to a funding body *Z* that it should ask *Y* to disprove *X* before deciding on which to fund. Considerations not available or relevant in the first argumentative scenario might be available and quite relevant in the second. For example, *X* might argue that *Z* would incur certain risks by not funding *X*, and therefore, as a prudent steward of its own interests and general goals, should apply a high standard of proof in *X*'s favor – indeed, should take advantage of the virtues of adversarial proceedings to invite *Y* to try to decisively disprove *X*.

Similarly, I propose that Galileo is not arguing simply on the basis of general norms of argument between two parties; rather he argues that the Church's task of keeping and defending the faith, as articulated by St. Augustine in this instance, will be best served if the opponents of Copernicanism are given the task of testing it by their criticism. In other words, Galileo is claiming a patristic basis for theology's engagement with the subordinate sciences, and noting that that engagement requires different treatment of demonstrated and non-demonstrated doctrines. Then, as the *coup de grace*, Galileo points out that the virtues of adversarial argumentation will obtain to the Church's benefit if the opponents of a controversial doctrine formulate their best arguments against it. Thus the sense in which this is a shift in the burden of proof involves the triangular, 'adversarial-judicial' framework that Galileo sets up in the letter. It is indeed a shift in the burden of proof, but not a shift onto the theologian audience generally, as Moss would have it, nor is it simply a necessary consequence of faculty psychology, as Damanti would have it. It is a recommendation to the Church as the authoritative keeper of the Faith, which recommendation involves putting that burden of proof on Copernicanism's adversaries, who are distinguished from the Church *qua* prudent authority.

Finocchiaro's characterization («Galileo is, in fact, trying to be helpful and constructive») is from this point of view not in opposition to Moss's (Galileo «turns the tables» and «ends by maintaining that they must offer proof that the astronomers are wrong»): each is addressing a different side of the triangle of dispute.<sup>69</sup> The first 'side' is Galileo to the Church *qua* authority; here he is making a recommendation as to

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<sup>69</sup> FINOCCHIARO, *Methodological Background* (cit. note 4), p. 263 n. 47. MOSS, *Novelties in the Heavens* (cit. note 3), pp. 205-206.

the fulfillment of an Augustinian charge, i.e., that the Church must be informed as to which claims are demonstrated and which are not. The second 'side' is Galileo to opposing theologians; here he is putting the burden of proof on them insofar as they are to be enlisted by the Church *qua* authority for the purpose of its being informed.

Damanti's reading, where the burden of proof is shifted because of a thesis from faculty psychology, does not fit the features of the text. It is clear that when Galileo argues that «this be done not by those who hold it to be true, but by those who regard it as false», he is not assuming that the claims in question are actually demonstrated. Indeed, elsewhere in Damanti's own interpretation, as noted in the previous section above, he clearly holds that in this passage Galileo is speaking only of «opinable» matters. But further, it is clearly possible for one to *think* that one has a demonstration, when in fact there is something wrong with it. This is explicit in passage (D) itself: «indeed here it will happen that the more the followers of a given opinion thumb through books, examine the arguments, repeat the observations, and check the experiments, the more they will be testing their belief». Galileo does not say that it is psychologically *impossible* for one to try to find a refutation for something one regards as true: he says rather that those who think it false will be *more effective* at it, and will prompt the adherents to «test their belief» more assiduously. In other words, he is appealing to the benefits of adversarial procedure. The passage must, then, be understood as framed by the triangular 'adversarial-judicial' structure.

I turn now to the other text that involves the burden of proof. The last sub-section of the main body of the letter begins by granting «these gentleman more than they ask»: Galileo proposes to «submit entirely to the opinion of wise theologians», and here is it very clear that this class is considered in a highly idealized fashion.<sup>70</sup> They will surely «first hear the experiments, observations, reasons, and demonstrations of philosophers and astronomers on both sides of the question». And then we get a fully explicit delineation of the dispute's triangular structure:

No one should hope or fear that they would reach such an important decision without inspecting and discussing very minutely all the reasons for one side and for the other, and without ascertaining the facts: this cannot be hoped for by those who would pay no attention to risking the majesty and dignity of the Holy Writ to support their self-righteous creations; nor is this to be feared by those who seek

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<sup>70</sup> OG, V, p. 338. «Ma finalmente, concedendo a questi signori più di quello che comandano, cioè di sottoscrivere interamente al parere di sapienti teologi, già che tal particolar disquisizione non si trova essere stata fatta da i Padri antichi, potrà esser fatta da i sapienti della nostra età».

nothing but the examination of the foundations of this doctrine with the greatest care, and who do this only out of zeal for the truth and for the majesty, dignity, and authority of the Holy Writ, which every Christian must strive to uphold.<sup>71</sup>

It could hardly be more clear how Galileo is framing the dispute: 1) wise theologians acting for the good of the Church; 2) reckless and self-righteous adversaries of Copernicanism; 3) zealous and truth-seeking sons of the Church – like Galileo! – who simply want to see the question examined with great care. This passage does not yet involve the burden of proof, but provides the context, the ‘adversarial-judicial’ framing, in which to understand the inversion thereof.

This becomes clear in what follows. After more citations from Augustine on the necessity for prudence and caution in declaring a physical opinion to be unscriptural, Galileo closes his main argument by again putting the burden on his opponents to make the philosophical case against Copernicanism. He begins the argument here by asserting that it is always an advantage, in an argumentative situation, to be defending the true side, «for whoever is supporting the truth can have many sense experiences and many necessary demonstrations on his side, whereas the opponent cannot use anything but deceptive presentations, paralogisms, and fallacies».<sup>72</sup> Hence, if Copernicanism’s irresponsible opponents really believe that they have the truth on their side, they should be able to make their argument «using only philosophical weapons».<sup>73</sup> That they do not, but instead try to use Scripture to preempt natural-philosophical argument, suggests that they are really afraid and unable to defend their position on that ground. Moreover, since the Church has not yet declared Copernicanism incompatible with Scripture, Galileo claims that the Scriptural objection in itself should carry no weight when it comes from those who do not have the right or responsibility to condemn anything. They should conduct the argument in a way that befits their position:

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<sup>71</sup> *Ibid.*, p. 338. «Ma che senza ventilare e discutere minutissimamente tutte le ragioni dell’una e dell’altra parte, e che senza venire in certezza del fatto si sia per prendere una tanta risoluzione, non è da sperarsi da quelli che non si curerebbono d’arrisicar la maestà e dignità delle Sacre Lettere per sostentamento della reputazione di loro vane immaginazioni, né da temersi da quelli che non ricercano altro, se non che si vadia con somma attenzione ponderando quali sieno i fondamenti di questa dottrina: e questo solo per zelo stantissimo del vero e delle Sacre Lettere, e della maestà, dignità ed autorità nella quale ogni cristiano deve procurar che esse sieno mantenute».

<sup>72</sup> *Ibid.*, pp. 341-342. «essendo che quello che sostiene il vero, può aver molte esperienze sensate e molte dimostrazioni necessarie per la parte sua, mentre che l’avversario non può valersi d’altro che d’ingannevoli apparenze, di paralogismi e di fallacie».

<sup>73</sup> *Ibid.*, p. 342. «non producendo altre armi che le filosofiche».

(E) Therefore, if they wanted to proceed with sincerity, they could remain silent and admit their inability to discuss similar [mathematical and scientific] subjects; or else they could first reflect that it is not in their power, nor within that of anyone but the Supreme Pontiff and the sacred Councils, to declare a proposition erroneous, but that they are free to discuss whether it is false; then, understanding that it is impossible for a proposition to be both true and heretical, they should focus on the issue which more concerns them, namely, on demonstrating its falsity; if they were to discover this falsity, then either it would no longer be necessary to prohibit it because no one would follow it, or its prohibition would be safe and without the risk of any scandal.

Thus let these people apply themselves to refuting the arguments of Copernicus and of the others, and let them leave its condemnation as erroneous and heretical to the proper authorities...<sup>74</sup>

Note how very explicit Galileo is in contrasting his adversaries with the authoritative offices of the Church. In the earlier ‘concessive’ passage (B), he put the burden of proof on his opponents insofar as it would be helpful to the Church to have an adversarial examination of the demonstrative force of Copernicanism. Here he both questions the *bona fides* of his opponents – in that they ought to have an advantage in making the case philosophically, but choose instead to take refuge in Scripture – and tries to put them in their place vis-à-vis the Church’s authority to prohibit a doctrine: they have no power to declare something heretical, so they should instead focus on trying to prove it false as a philosophical thesis.

It must be said that this has the look of a false dichotomy between the supreme authority of the Church and everyone else, who apparently should even *discuss* whether Scripture rules out a position unless the Church has already declared solemnly that it does. And as he did with the «wise theologians» earlier, Galileo here highly idealizes the Church’s highest authorities – if, as he tells his opponents, nobody could think that «the very cautious and very wise Fathers and the Infallible One with his absolute wisdom [were] about to make rash decisions» like preemptively condemning Copernicanism, then the letter would hardly be nec-

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<sup>74</sup> *Ibid.*, p. 342. «Però, quando volessero procedere con sincerità, doverebbero o, tacendo, confessarsi inabili a poter trattar di simili materie, o vero prima considerare che non è nella potestà loro, né d’altri che del Sommo Pontefice o de’ sacri Concilii il dichiarare una proposizione per erronea, ma che bene sta nell’arbitrio loro il disputar della sua falsità; di poi, intendendo come è impossibile che alcuna proposizione sia insieme vera ed eretica, dovrebbero, dico, occuparsi in quella parte che più aspetta a loro, cioè in dimostrar la falsità di quella; la quale come avessero scoperta, o non occorrerebbe più il proibirla, perché nessuno la seguirebbe, o il proibirla sarebbe sicuro e senza pericolo di scandalo alcuno. Però applichinsi prima questi tali a redarguire le ragioni del Copernico e di altri, e lascino il condannarla poi per erronea o eretica a chi ciò si appartiene».

essary!<sup>75</sup> But it is all the more clear that the shift in the burden of proof is onto his non-authoritative adversaries, not onto the Church's authoritative figures and bodies themselves. The latter, by contrast, are presented in a highly idealized fashion, as wise and impartial judges, who will certainly hear both sides of an important question before making a decision. Thus the shift in the burden of proof is directed against those in the adversarial rather than the judicial position, but is in part justified by the considerations germane to the judicial position. It has to be understood, in other words, in light of the triangular framing in which Galileo presents it.

Since the shift in burden of proof has been criticized as poor or misjudged rhetoric, it is worthwhile pointing out some of the persuasive virtues associated with the triangular framing of the dispute. It allows Galileo to be both sedulous and polemical: maximally concessive to the idealized Church authorities, while maximally aggressive towards his critics. Moss, though her focus is the rhetoric of the text, misunderstands the *ethos* of the letter precisely because she takes «the theologians» as the real audience; she remains in a bilateral framework and hence finds Galileo's repeated returns to invective rhetorically puzzling and in need of a psychological explanation.<sup>76</sup> Psychology aside, there is a deliberate rhetorical structure underlying these shifts in tone, ranging from the obsequiously pious to the harshly polemical: they are addressed to different (somewhat idealized) parties and help to establish rhetorically the divisions between those parties. A corollary benefit of Galileo's concessive approach to the Church's idealized authority is that it provides a rhetorical fulcrum, a point on which those skeptical of Copernicanism on theological grounds could recognize agreement, and from which they might be led to identify with his advocacy and against his adversaries.<sup>77</sup> Further, Galileo's distinctions between groups are made in qualitative, sometimes idealized or hyperbolic terms, and with vague boundaries. He mentions no names when characterizing his adversaries. The reader is thereby invited to consider where to place him – or herself – vis-à-vis the issue, and is always given the option of excluding him- or herself from the groups of adversaries criticized in the letter.

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<sup>75</sup> *Ibid.*, p. 342. «ma non sperino già d'esser per trovare nei circuspetti e sapientissimi Padri e nell'assoluta sapienza di Quel che non può errare, quelle repentine risoluzioni nelle quali essi talora si lascierebbono precipitare da qualche loro affetto o interesse particolare».

<sup>76</sup> Moss, *Novelties in the Heavens* (cit. note 3), p. 194.

<sup>77</sup> Again, this resonates with McCarthy's reading, which shows the overriding concern with justice and right order in the *Letter*. MCCARTHY, *Justice, Reinterpretation, and Piety* (cit. note 4).

## 6. CONCLUSION

Galileo's *Letter to the Grand Duchess Christina* is justly celebrated for its vigor and clarity as a plea for intellectual freedom, and for the prescience of its hermeneutical proposals. Its vitality is further attested to by the fact that it continues to generate interpretive discussion. If at times it has been caught up in the polemics and politics of the 'Galileo affair', with the result that inadequate or tendentious readings of the text have gained too much currency,<sup>78</sup> the scholarship of recent decades has greatly illuminated the context, structure, rhetoric, and argumentation of the *Letter*. The single most exhaustive and scholarly treatment is Damanti's 2010 monograph; that there is still room for substantive contributions to the literature is shown, for example, by McCarthy's 2017 paper.<sup>79</sup>

I have argued here that still more light is shed on the *Letter to Christina* if it is read as analogous to a legal brief, one developing a theory of the case's jurisprudential issues and addressed to a court *en banc*. The *Letter* develops a theory of the issues underlying the issue at hand, but it is organized around advocacy for a particular judgment on the part of the relevant authorities. I have drawn two architectonic implications from this framework, each of which helps to resolve an issue still standing in the literature. The first has to do with coherence and concessions: like a brief, the *Letter* anticipates varying degrees of acquiescence to its systematic view of the issues, and provides 'hooks' for different readers to interpret according to their own lights and thereby reach agreement as to the particular judgment. This reading allows for a coherent Galilean interpretation of the 'priority of Scripture' passages, while at the same time giving an account of their dialectical purpose. Galileo is neither self-contradictory nor dissimulating in these passages, but he is strategic in declining to specify too precisely how the reader must understand and apply the categories of *opinabile/dimostrabile*, and what scope of action the reader will infer for the priority of Scripture. The second architectonic implication concerns the framing of the dispute: the *Letter*, and particularly the 'burden of proof' passages, must be understood in light of the 'adversarial-judicial' framework that Galileo sets up, and which he borrows from the Castelli-Christina-Boscaglia discussion. Part of the 'right order' and justice that, *per McCarthy*, Galileo is concerned with in

<sup>78</sup> For an illuminating discussion of the inadequacies of «conventional interpretations» as of 1986, in FINOCCHIARO, *Methodological Background* (cit. note 4), pp. 260-262.

<sup>79</sup> DAMANTI, *Libertas Philosophandi* (cit. note 2); MCCARTHY, *Justice, Reinterpretation, and Piety* (cit. note 4).

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the *Letter*, is the proper role to be played by anti-Copernicans, in a proper understanding of the responsibilities of all parties. The burden of proof is shifted to them, not as a rhetorical trick or in light of general norms of argument, but because of the benefits of adversarial procedure, benefits that will accrue to the Church as the responsible deciding authority.