

ARTICLE

Galileo's Three Repudiations of Copernicanism – Two Coerced and One Volunteered

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Abstract

Up to 1616, when the Copernican theory of heliocentrism was prohibited, Galileo had never asserted its truth. But the pope and cardinals of the Roman Inquisition assumed that he had, and he was required to repudiate it. In contrast, Copernicus's book was only lightly corrected and allowed to be read. Galileo continued his practice of not asserting the reality of heliocentrism in his *Dialogue* on the two world systems, but he was put on trial nevertheless, in 1633. However, instead of being charged with a crime to be proved, as required by canon law, he was subjected to pre-trial interrogation and intimidation, and he confessed to a made-up crime. His conviction entailed another repudiation of the static sun, on pain of harsh punishment. In subsequent years, even though he was reckless in expressing preference for the condemned theory, he still did not advocate it. In fact, in writing to the Tuscan ambassador to Venice in 1641, he insisted that the Copernican system was false, because theologians said so. However, he went on to say that the opposing Ptolemaic view was actually erroneous, while the other was merely insufficient – because stellar parallax (which would prove the earth's orbit) could not yet be measured.

Galileo has always had a reputation for being a strong advocate of Copernicus's view that the earth moved around a stationary sun. The story that he defiantly muttered 'Eppur si muove'¹ at his trial has long been recognized apocryphal. But the notion that he was an outspoken supporter of Copernicus is an overstatement that needs to be rectified. We will see that he never showed full approval for the heliocentric system at any time during his life, and he finally even repudiated it without being required to do so. Specifically, in 1616, when the cardinal members of the Congregations of the Roman Inquisition (the Holy Office) and the Index of Prohibited Books condemned the ideas that the sun stood still in the centre of the universe and that the earth circled around it, they were so sure that Galileo advocated precisely these theories that they called them 'Galilean Propositions' and warned him 'to hold them no longer'. But it turned out that he had always been so cautious in expressing himself in these matters that the cardinals were unable to find any work of his to put on the Index. In fact, he never insisted on the earth's movement or the sun's centrality, whether before these doctrines were prohibited, or before his conviction

¹'But it still moves!'

in 1633. He was, however, first forced to repudiate them as if he had held them, and next constrained to swear that he had never held them and then to abjure them. And, later on, in 1641, he made another repudiation of the Copernican system on his own, insisting that it was undoubtedly false. But then he qualified: it was merely defective and could not yet be proved.

In recounting these events in the pages that follow, I will attempt to summarize Galileo's dealings with the Inquisition. Much has been written on this subject by various historians, but many of them have been led astray because of a lack of knowledge of the Inquisition's operations. We now have the advantage of the facts and insights provided by the late Thomas Mayer in his monumental study of its personnel and general functions,² and by his additional large study of its specific connections with Galileo, in accord – and disaccord – with the rules of canon law.³ I have added further details from the field of inquisitorial criminal procedure, including the fact that his actual trial took place on a single day.⁴

The upshot is that, when it came to the Copernican system, church politics was always a factor, and Galileo never said he thought it was true, though everyone thought he did; and sometimes he insisted that it was wrong.

I

Galileo was impressed with the explanatory strengths of the Copernican system from early on. This was already manifest in his letter to Kepler in 1597, and his favourable view was clear in his *Sidereus nuncius*, published in 1610, as well as in his *Letters on sunspots*, which came out in 1613. However, as noted, he never went on record as championing Copernicus over Ptolemy's geocentric system, in spite of his public reputation of doing so.⁵ This fact may come as a surprise to some modern students of Galileo who are convinced that they can find explicit endorsements of Copernicus in these early works.⁶

²Thomas F. Mayer, *The Roman Inquisition: a papal bureaucracy and its laws in the age of Galileo* (Philadelphia, PA, 2013).

³Thomas F. Mayer, *The Roman Inquisition: trying Galileo* (Philadelphia, PA, 2015). A recent attempt to analyse Galileo's prosecution in terms of the formal judicial procedure of the Inquisition can be found in Jules Speller, *Galileo's Inquisition trial revisited* (Oxford, 2003). Mayer critiques Speller on pp. 301–3 of *Trying Galileo*. For general information about Galileo and his career, see J. L. Heilbron, *Galileo* (Oxford, 2010).

⁴H. A. Kelly, 'Galileo's non-trial (1616), pre-trial (1632–1633), and trial (May 10, 1633): a procedural review, featuring routine violations of the forum of conscience', *Church History*, 85 (2016), pp. 724–61. For some of my differences with Mayer, see pp. 758–9. The canon law of inquisitorial procedure forbade forced self-incrimination, which was ignored by some heresy prosecutors, including the Roman Inquisition, and, eventually, the Spanish Inquisition, but it was followed in other tribunals, notably in England. See H. A. Kelly, *Criminal-inquisitorial trials in English church courts: from the middle ages to the Reformation* (Washington, DC, 2023).

⁵*Sidereus nuncius* (Venice, 1610) can be found in vol. III of *Le opere di Galileo Galilei* (OG), ed. Antonio Favaro et al. (20 vols., Florence 1890–1909). The *Letters on sunspots* was originally published as: *Istoria e dimostrazioni intorno alle macchie solari: tre lettere* (Rome, 1613); it is in OG V:73–239. OG is available online with HathiTrust.

⁶See, for instance, Franco Giudice, 'Galileo's cosmological view from the *Sidereus nuncius* to *Letters on sunspots*', *Galilaiana*, 11 (2014), pp. 49–63, at p. 53: 'We can say that...in the *Sidereus* we have the first declaration, public and explicit, of Galileo's cosmological belief in favour of the Copernican system.' He is

A favourite example of such an alleged endorsement is the passage in the *Sidereus* where Galileo addresses the difficulties that some Copernican believers have with Copernicus's idea of the moon circling the earth which in turn circles the sun. He has now found the same thing happening with Jupiter and its four 'stars'. Let us look at Stillman Drake's translation:

Here we have a fine and elegant argument for quieting the doubts of those who, while accepting with tranquil mind the revolutions of the planets about the sun in the Copernican system, are mightily disturbed to have the moon alone revolve about the earth and accompany it in an annual rotation about the sun. Some have believed that this structure of the universe should be rejected as impossible. But now we have not just one planet rotating about another while both run through a great orbit around the sun; our own eyes show us four stars which wander around Jupiter as does the moon around the earth, while all together trace out a grand revolution about the sun in the space of twelve years.⁷

One of the early reviewers of Drake, Edward Rosen, asserts that Galileo here 'unequivocally endorses the Copernican thesis that the earth revolves around the sun'.⁸ Drake himself, however, assumes that Galileo at this stage was simply explaining Copernicus and not advocating his system.

The fact of the matter is that Galileo did originally intend to endorse the Copernican system in this passage – not as certainly true, however, but as being, in his judgement, closest to the truth.⁹ At the last minute, he must have decided against it, and the statement was omitted from the printed version. We can only conjecture why he removed it, whether because of scientific caution, or by reason of political prudence, or for some other motive.

II

Our account begins on 19 February 1616: on that day in Rome, the Holy Office called a meeting of its theologians for Tuesday, 23 February 1616, to censure two 'Galilean

arguing against Mario Biagioli, *Galileo courtier: the practice of science in the culture of absolutism* (Chicago, IL, 1994), who judges that in the *Sidereus* Galileo did not yet explicitly commit himself to Copernicanism (p. 92).

⁷Stillman Drake, *The starry messenger*, in *Discoveries and opinions of Galileo* (Garden City, NY, 1957), p. 57. For the Latin text, see OG III:95, also provided by Wade L. Robison, 'Galileo on the moons of Jupiter', *Annals of Science*, 31 (1974), pp. 165–9, at p. 165.

⁸Edward Rosen, 'Stillman Drake's *Discoveries and opinions of Galileo*', *Journal of the History of Ideas*, 18 (1951), pp. 439–48, at p. 444. Others who find that Galileo presents himself as a confirmed Copernican here are Bernard Cohen, Thomas Kuhn, and Gerald Holton (Robison, 'Galileo on the moons', pp. 165–6).

⁹Galileo, *Sidereus nuncius*, manuscript version, OG III:46: 'qui in Sistemate Copernicano (quod apprime veritati consonum existimo) conversionem circa Solem', etc. The parenthetical remark can be translated, 'which I judge above all to be consonant with the truth'. It is missing in the printed version: 'qui in Sistemate Copernicano conversionem circa Solem', etc. (OG III:95). This editorial change has only recently been discovered; see Giudice, 'Galileo's cosmological view', p. 55, and Maurice A. Finocchiaro, *On trial for reason: science, religion, and culture in the Galileo affair* (Oxford, 2019), pp. 81, 268.

Propositions', namely, the stability of the sun and the movement of the earth.¹⁰ On the next day, Wednesday the 24th, the theologians declared the first proposition 'formally heretical' and the second 'at least erroneous in faith'.¹¹ It is noteworthy that one of the theologians was the Dominican friar Michelangelo Seghizzi, who was also the new commissary or deputy inquisitor of the Holy Office, who acted on behalf of the cardinal inquisitors.¹²

These 'propositions of the mathematician Galileo' were relayed to Pope Paul V, either on that same day or the next. Consequently, the pope ordered that Cardinal Inquisitor Robert Bellarmine should summon Galileo and 'warn him to abandon (*ad deserendas*) the said opinions'. If he refused to obey, Commissary Seghizzi was to intervene: in the presence of a notary and witnesses, he was to give Galileo a formal precept or command 'to abstain altogether from teaching such a doctrine and opinion, or defending it, or treating of it (*tractare de ea* [in writing])'. If he did not acquiesce, he was to be imprisoned (that is, proceeded against). The order was conveyed to Seghizzi on 25 February.¹³

On the very next day, Friday, 26 February, Cardinal Bellarmine had Galileo appear before him in his own residence, in front of Seghizzi with his notary and witnesses. Bellarmine 'warned Galileo about the error of the above opinion, and that he should abandon it' (*Galileum monuit de errore supradictae opinionis, et ut illam deserat*). Immediately thereafter (that is, without waiting for any recalcitrance on Galileo's part), Seghizzi gave him a precept in the pope's name 'to relinquish the above opinion entirely, and thenceforth in no way hold, teach, or defend it, in word or in writing', or else the Holy Office would proceed against him. Galileo acquiesced to the precept and promised to obey.¹⁴ Surprisingly, Seghizzi failed to give him a copy of this carefully recorded undertaking. It is not evident from this record whether Galileo was told of the recent actions by the Inquisition theologians and the pope in condemning the heliostatic/geocyclic theory of Copernicus. In any case, it still remained to proclaim the condemnation to the world at large. At some point, it was decided to promulgate the prohibition through a decree of the Congregation of the Index of Prohibited Books, of which Bellarmine was also a member (another member was Cardinal Maffeo Barberini, who would become Pope Urban VIII in 1623).

In giving his warning, Bellarmine used the same term of abandoning or 'deserting' the condemned conclusions as did the pope, indicating that he thought Galileo actually held them. And when Bellarmine reported to the pope and the cardinal

¹⁰The Vatican documents concerning Galileo (DV) are edited by Sergio Pagano, *I documenti Vaticani del processo di Galileo Galilei (1611-1741)* (Vatican City, 2009); a chronological listing is given on pp. 247-57. Many of these documents are presented in English in *The trial of Galileo, 1612-1633* (TG), ed. and trans. Thomas F. Mayer (Toronto, 2012). A somewhat different selection of texts appears in *The Galileo affair: a documentary history* (GA), ed. and trans. Maurice A. Finocchiaro (Berkeley, CA, 1989). The document spoken of here is DV 42.

¹¹DV 42-4.

¹²For the fullest account of Seghizzi, see Mayer, *Roman Inquisition: bureaucracy*, pp. 112-18. The cardinal inquisitor who was secretary of the Congregation at this time was Gian Garzia Millini (*ibid.*, pp. 43-50).

¹³DV 45.

¹⁴DV 45-6.

inquisitors on 3 March, he said that he had warned Galileo to abandon this opinion, 'which he held up to now' (*quam hactenus tenuit*).¹⁵

But there was a problem. It was one thing for Pope Paul in a closed session of the Congregation of the Inquisition to announce that he was condemning 'the propositions of Galileo'; but it was another thing to attribute them to Galileo in public. For the awkward fact of the matter was that Galileo had stated no such propositions, at least not in any way that could be verified.

Many members of the Holy Office may have taken it on faith that Galileo had made such positive statements, because their prize denouncer, the Dominican friar Tommaso Caccini, had told them so a year before. In his deposition on 20 March 1615, taken by Seghizzi himself before he became commissary, he had testified, in effect, that everybody in Florence knew that it was so: for there was 'extremely public fame' (*publichissima fama*) that Galileo held and taught that the sun was immobile.¹⁶ By using this language, Caccini clearly intended to provoke a trial against Galileo, since by law the sufficient 'probable cause' for initiating an inquisitorial trial was that solid public opinion held that some particular person was guilty of a crime.

When Seghizzi asked him how he knew that Galileo taught the immovable sun and moving earth, Caccini responded he had heard it not only by public fame but also from two persons, namely, Bishop Bardi of Cortona, and a follower of Galileo's named Attavanti; and, furthermore, he had read this doctrine in Galileo's book on sunspots.¹⁷

Caccini's testimony went into Galileo's permanent dossier: according to the official summary of his case after his trial on 10 May 1633.¹⁸ The cardinal inquisitors repeated this testimony in their sentence on 22 June 1633: Galileo explained the doctrine as true in that book.¹⁹

After Caccini's denunciation early in 1615, it took the better part of a year before the Holy Office in Florence interrogated Attavanti and sent his deposition to Rome.²⁰ It was only then that a follow-up was advised on Galileo's book. A notation was entered on his deposition on 25 November 1615: 'Some letters of Galileo published in Rome under title of *On sunspots* should be looked at.'²¹

We cannot be sure whether the Holy Office in Rome got around to examining Galileo's 1613 book *Letters on sunspots* before the 'propositions of Galileo' were censured three months later, in the flurry of activity in February of 1616 detailed above, or not until after Galileo was warned off the propositions. Whenever they read his book, however, the most they could have found would be a rather flowery expression of Galileo's high hopes for the validity of the Copernican system.²²

¹⁵DV 177.

¹⁶DV 22–9 (23).

¹⁷DV 26.

¹⁸DV 5–14 (6–7).

¹⁹DV 159–65 (161).

²⁰Attavanti said only that Galileo spoke of Copernicus's theory, and he referred the questioner to Galileo's book, *Delle macchie solari*, DV 39–42 (40).

²¹DV 30.

²²Galileo, *Istoria: tre lettere (Letters on sunspots)*, OG V:238.

The learned and saintly Cardinal Bellarmine deserves our special attention. Back around the time of Caccini's denunciation, after seeing Galileo's 'Letter to Castelli', which was rather favourable to Copernicus,²³ Bellarmine wrote that he believed that both Copernicus and Galileo were speaking only hypothetically.²⁴ How did he come to believe that Galileo actually advocated the theory?

One possibility is that he saw a copy of Galileo's new treatise, 'Letter to the Grand Duchess Christina', finished around the end of 1615, in which he says that his enemies know that he holds the Copernican propositions.²⁵ Bellarmine had heard that Galileo was working on such a treatise, and said that he would willingly read it when it was finished.²⁶

As for the Congregation of the Index, there was no question of including Galileo in their pronouncement; his book on sunspots would not now (and never would be) placed on the Index of Prohibited Books. The cardinals' discussion took place in their meeting on 1 March,²⁷ and Bellarmine reported their decision to the pope and the Congregation of the Inquisition on 3 March, and the pope ordered the decision published.²⁸ The resulting decree, concluded on 5 March 1616, condemned and prohibited all books that taught, contrary to Scripture, the Pythagorean doctrine of the moving earth and unmoving sun, which had been taken up by Nicholas Copernicus's *Revolutions of the heavenly spheres* (1543) and Diego de Zúñiga's biblical commentary *On Job* (1584, reprinted 1591). Only the *Letter on the opinion of Pythagoras and Copernicus* of the Carmelite friar Paolo Antonio Foscarini (Naples 1615) was named as an example of such condemned publications. As for the books of Copernicus and Zúñiga, they were only suspended until corrected.²⁹

Like all Index decrees, it was published as a broadside by the printer of the Apostolic Camera,³⁰ to be posted in appropriate places. In the weeks that followed, the report began to circulate that Galileo had been tried and convicted by the Holy Office, made to abjure before Bellarmine, and sentenced to punishment. Galileo returned to Cardinal Bellarmine and asked him to quell the rumour. Bellarmine produced an affidavit on 26 May, explaining that Galileo had only been informed of the declaration made by the pope and publicized by the Congregation of the Index, that the doctrine attributed to Copernicus that the earth moved around the sun (and so on) was contrary to Holy Scripture, and therefore could not be defended nor held.³¹

This, of course, was quite different from what Bellarmine had told Galileo on 26 February. There, he assumed that Galileo had actively embraced the theory, and he warned him to stop doing so; and Seghizzi reinforced the message. Now, however, he certified that it had merely been an impersonal warning that the theory was off

²³Galileo to Benedetto Castelli, 21 Dec. 1613, DV 15–20.

²⁴OG XII:171.

²⁵Galileo, *Lettera a Madama Cristina* (not printed until 1636), OG V:309–48 (at pp. 310–11).

²⁶OG XII:151.

²⁷TG 94–5, from Pierre-Noël Mayaud, *La condamnation des livres coperniciens et sa révocation* (Rome, 1997), pp. 37–8.

²⁸DV 177.

²⁹DV 46–7. Bellarmine expected this to happen with Copernicus's book (OG XII:151).

³⁰DV, Plate 18 (after p. 242).

³¹DV 76.

limits.³² And since nothing in writing had been given to Galileo on the earlier date, as noted above, no matter how he remembered what was said then, Bellarmine's certification was the only document he had or knew about, apart from the printed Index decree.

The practical upshot at this point would seem to be the same. Galileo had agreed not to publicly hold or defend the Copernican theory from then onwards. What he held in his own mind was, of course, between him and God, and his confessor.

III

On 15 May 1620, four years after Galileo's first 'abandonment' of Copernican theory, the Congregation of the Index issued an *Admonition to the reader of Nicholas Copernicus, and his correction*. Although the original intention was to ban Copernicus's *Revolutions of the world* altogether, it would be allowed because it contained much that was useful. The non-hypothetical passages about the earth's movement were to be corrected in existing copies, as detailed below. Any new editions were to attach the corrections to Copernicus's preface. Thus could Copernicus be read again!³³

One might think that this would be an important event; but little seems to have been made of it. After this edict, it should have been possible to use Copernicus's book without further ado, whether in the original edition of 1543 or the second edition of 1566 or the Dutch printing of 1617 (itself reprinted in 1640), by simply calling attention to the required emendations. In practice, however, as Hannah Marcus shows, a licence would still be sought for such corrected books, and, if granted, it would be with the proviso that the reader himself 'expurgate' the book with the stipulated corrections.³⁴ In fact, Marcus has found thirty-two requests for licences to read Copernicus between 1616 and 1632.³⁵ The decree emending Copernicus's book appeared in its chronological place in the listing of forbidden books published in Rome in 1624, and in supplemented editions.³⁶ In later editions of the Index, the

³²For the specifics and implications of the pope's instructions and the way they were interpreted by Bellarmine and Seghizzi on 26 February (and 26 May), see Maurice A. Finocchiaro, 'Galileo's first confrontation with the Inquisition (1616): four orders and three issues', *Galilaeana*, 13 (2016), pp. 29–60.

³³OG XIX:400–1. The corrections are itemized by Maurice A. Finocchiaro, *Retrying Galileo, 1633–1992* (Berkeley, CA, 2005), pp. 20–4. Zúñiga's huge book (some 850 pages), which touched upon the moving earth on only two pages, was never corrected (*ibid.*, pp. 18–19). For an account of the making of the corrections and insight into Bellarmine's reasoning, see Stefania Tutino, *Empire of souls: Robert Bellarmine and the Christian commonwealth* (New York, NY, 2020), pp. 275–80.

³⁴Hannah Marcus, *Forbidden knowledge: medicine, science, and censorship in early modern Italy* (Chicago, IL, 2020), pp. 134–5. She gives the example of the Holy Office renewing a physician's licence to read the works of Paracelsus 'on condition that he expurgate the things whose correction is found in the *Index expurgatorius* printed in Rome in 1607' (*ut expurget ea quorum extat correctio in Indice expurgatorio*, etc.). *Expurgare* here means 'clear something of unwanted matter' (rather than 'clear unwanted matter from something').

³⁵Hannah Marcus, 'Le licenze di leggere Copernico dopo la proibizione di 1616', *Nuove ricerche e nuove prospettive sull'Inquisizione Romana*, Conference in Rome, 22–4 Nov. 2023. Some requests are in Marcus, *Forbidden knowledge*: 1618 (p. 147), renewed 1621 (p. 289 n. 55); 1623 (p. 144); 1625 (pp. 231–2); 1627, for two readers (p. 163).

³⁶*Librorum post indicem Clementis VIII prohibitorum decreta omnia hactenus edita* (Rome, 1624). I use the edition in the Biblioteca Nazionale Centrale of Florence which is combined with the 1596 *Index librorum prohibitorum*, with further edicts through 1636 added at the end; see: <https://opac.bncf.firenze.sbn.it/Record/BVEE022343>; available at <https://books.google.it/books?id=RqWB0uSgCW4C>.

book would simply be listed as prohibited, ‘unless corrected according to the 1620 decree’.³⁷

As far as we know, Galileo did not react to that decree. He claimed to have started writing again on Copernicus after he came to Rome in 1624 to congratulate his former ally Cardinal Maffeo Barberini on becoming pope.³⁸ He eventually produced a large treatise, published in 1632 under the simple title of *Dialogue*, with an expansive subtitle describing it as a discussion of the Ptolemaic and Copernican systems ‘with no decision as to which is correct’.³⁹

The subject of his *Dialogue* is introduced in the preface (‘To the Discerning Reader’), but whatever Galileo originally wrote, it was revised by the Roman censor, a Dominican friar named Niccolò Riccardi, master of the sacred palace.⁴⁰ Here, Galileo is presented as a defender of the Index decree of 1616. He calls it a ‘salutary edict’ that imposed an opportune silence on the Copernican theory of the earth’s movement. However, Galileo continues in the preface, because there have been criticisms that this edict was ill-informed, he has decided to come forward now and prove those criticisms to be unjust. He shows that there was full knowledge of Copernican heliocentrism in Rome at the time when the edict was issued. He therefore takes the Copernican side and establishes its theoretical superiority to the faulty arguments of the Ptolemaic side.

Master Riccardi said that Pope Urban himself wanted it reiterated that the Index decree was issued with full knowledge of the science involved.⁴¹ We remember that Urban was one of the Index cardinals who issued the decree, and he was still a member when Copernicus’s book was corrected in 1620.⁴²

However, when Galileo’s book appeared, it immediately raised questions. It first came out in Florence in February of 1632, and when Riccardi saw the first copies in Rome in July, he judged that Galileo had not followed his directions, and, on command of the pope, he ordered all copies seized.⁴³ A disorganized report appeared, probably by a Holy Office official, who criticized Galileo’s perceived deceptions in getting the book approved, including his silence about the private precept that he was given in 1616 (which they had recently discovered). It had only vague objections about its substance, saying, for instance, that ‘many times in the work there is a lack of, or deviation from, hypothesis’ (*mancarsi nell’opera molte volte e recedere*

The 1616 edict suspending Copernicus is on pp. 85–6, and the 1620 decree correcting him is on pp. 93–4.

³⁷For instance, in the editions of Madrid, 1667 (at the end, in the 1665 *Index* of Alexander VII, p. 93); Rome, 1819, p. 77; and Naples, 1821, pp. 80–1.

³⁸Galileo, unpublished *Letter to Ingoli* (1624), OG VI:510; GA 155.

³⁹Galileo, *Dialogo* (Florence, 1632), repr. OG VII:24–489; trans. Stillman Drake, *Dialogue concerning the two chief world systems* (New York, NY, 2001); abridged, trans. Maurice A. Finocchiaro, *Galileo on the world systems* (Berkeley, CA, 1997).

⁴⁰For Riccardi, see Mayer, *Roman Inquisition: trying Galileo*, pp. 121–3. He was admirably called ‘Father Monster’ for his huge size and great learning. See Ambrogio Eszer, ‘Niccolò Riccardi, O.P. – “padre Mostro” (1585–1639)’, *Angelicum*, 60 (1983), pp. 428–57. According to Eszer, he and Galileo were on friendly terms both before and after the trial.

⁴¹DV 53. Galileo first used this approach in his *Letter to Ingoli*, GA 155–6; see Heilbron, *Galileo*, pp. 261–2, 297–9, 302.

⁴²Mayaud, *Condemnation*, pp. 69–70.

⁴³DV 52 (no. 5).

dall'ipotesi), without giving specific examples. But it does admit at the end that all such matters could be emended, if the book were judged to have some utility.⁴⁴ Instead, however, the pope decreed that Galileo was to be summoned to Rome to appear before the commissary general of the Holy Office.⁴⁵

In keeping with the Holy Office's distortions of inquisitorial procedure and violations of due process,⁴⁶ Galileo was not to be told why the Inquisition wanted to see him. Instead, he would be interrogated, with the object of getting incriminating admissions from him to use against him at trial. When the Tuscan ambassador challenged the pope on these matters and asked for a list of charges and other means of defence, Urban replied testily that this was not the custom of the Holy Office.⁴⁷

The commissary who was to try Galileo was the current successor to Seghizzi, another Dominican, named Vincenzo Maculano. The real judge, of course, was the pope, in consultation with ten cardinal inquisitors, who would deliberate upon a summary of the proceedings when the trial was completed. The official prosecutor (fiscal procurator), who interviewed Galileo along with Maculano, was Carlo Sincero; his task was to formulate and present charges at trial.

The interrogation was held on 12 April 1633. After taking an oath to tell the truth, Galileo was asked if he could guess why he had been summoned. He supposed it was to give an account of his book, sales of which had recently been prohibited. 'What kind of a book is it?' He said it was a discussion of the two theories of the heavens and earth. The questions led to his encounter with Cardinal Bellarmine and his warning. He granted that a precept may also have been given. Whatever precept there was, he did not violate it, because his book did not defend Copernicus but rather showed his reasoning to be invalid and inconclusive.⁴⁸ He must have been well prepared for their tactics, because he did not come close to admitting any wrong-doing.

At their meeting on 21 April, the cardinal inquisitors decided that Galileo's book defended and taught the condemned theory, which rendered him suspect, and so the matter could be expedited – meaning that he could be charged at trial.⁴⁹

Then they had second thoughts. Since he would not admit that he held the theory, they foresaw 'difficulties' if it came to a trial. Maculano suggested a ploy for obtaining the desired confession: telling Galileo that if he did not plead guilty to the not-yet-stated charges against him and he were convicted, the Holy Office would deal very harshly with him; but, alternatively, if he pleaded guilty to whatever they charged him with, its treatment of him would be lenient. Maculano's proposition, offered privately (extra-judicially), was accepted by Galileo.⁵⁰

In a formal session on 30 April, which Galileo himself requested, he made this admission: that a reader who was uninformed (*non consapolevole*) could have reason to think the arguments for heliocentrism to be convincing – though that was

⁴⁴DV 49–53; for the quotation, see p. 52, no. 6 point 3 (GA 221).

⁴⁵DV 57.

⁴⁶See Kelly, 'Galileo's non-trial', pp. 735–7.

⁴⁷OG XIV:383–5.

⁴⁸DV 66–72.

⁴⁹DV 191–2.

⁵⁰OG XV:106–7. See Kelly, 'Galileo's non-trial', p. 740. It is sometimes thought that the plea-deal consisted, not of a reduced penalty, but of pleading to a lesser charge than heresy – e.g. disobeying Seghizzi's precept. But disobedience was not a 'crime of faith'. Furthermore, no charges were as yet named.

not Galileo's intention.⁵¹ This admission should have thrown Galileo into a terrible ordeal: namely, a 'rigorous examination' subjecting him to torture, to see if he really did intend it.⁵² But that did not happen to him – yet.

The actual trial took place on 10 May 1633. We have to reconstruct what the precise charges were that were brought against Galileo by Prosecutor Sincero, since, as usual, they were not recorded. They would have been revealed to Galileo himself only at that point, but he was given a week to respond. According to usual Holy Office procedure, he could have accepted the help of a lawyer. Instead, he entered an immediate plea, effectively ending the trial within an hour or so. As arranged, he pleaded guilty to the expected charge of favouring heresy by giving the appearance of advocating heliocentrism in his *Dialogue*. He then submitted a statement in which he addressed other expected charges: in effect he pleaded not guilty to the likely charge of violating the 1616 precept (submitting the evidence of the affidavit from Bellarmine), and not guilty to any charge of malfeasance for failing to mention the precept to the censor of his book. As for whatever else might be levelled against him, he left himself to the 'customary pity and clemency of this tribunal'.⁵³

He may have expected prompt sentencing, but it was only on 16 June that Pope Urban and the cardinal inquisitors in private session reviewed a summary of the proceedings of his case⁵⁴ and came to a verdict. The pope declared that Galileo would first have to submit to the very mysterious and misunderstood business of the 'rigorous examination of determining intention', which included torture, or, in his case, the threat of torture, and, if he sustained it (that is, did not confess to actual heresy) he would be convicted only of the crime of aiding and abetting heresy (technically, 'vehement suspicion of heresy'). He would be required to abjure the condemned belief under penalty of relapse into heresy, swearing 'never to treat of it again' by word or in writing; and his book was to be prohibited.⁵⁵

The penalty of relapse into heresy meant that another conviction would bring an automatic sentence of death by burning at the stake. The question arises, how could one be convicted of relapsing into heresy if one did not lapse into it in the first place, but only into 'suspicion of heresy'? The answer is provided in canon law, in the decretal *Accusatus* of Alexander IV (*Liber sextus* 5.2.8): the first offence would be construed as actual heresy 'by a certain fiction of law'.⁵⁶

The rigorous examination was scheduled for 21 June. Galileo was put under oath and told that, from the way that arguments were presented in his book, the presumption was that he believed that the sun was the centre of the world. He stoutly denied it, and maintained that, although before the decree of the Congregation of

⁵¹DV 72–4.

⁵²On the automatically required rigorous examination, a relatively recent innovation, see H. A. Kelly, 'Judicial torture in canon law and church tribunals: from Gratian to Galileo', *Catholic Historical Review*, 101 (2015), pp. 754–93, at pp. 788–90.

⁵³Galileo's trial, 10 May 1633, DV 75. The cryptic record of the whole trial comes to a mere 350 words or so. Galileo's written defence follows, DV 76–8.

⁵⁴DV 5–11.

⁵⁵DV 192–3. Francesco Beretta, 'Le Siège apostolique et l'affaire Galilée', *Roma moderna e contemporanea*, 7 (1999), pp. 421–61, rightly points out that it was the pope's verdict and not the sentence of the cardinals that was definitive (p. 430).

⁵⁶Emil Friedberg, ed., *Corpus iuris canonici* (2 vols., Leipzig, 1879–81), II, pp. 1071–2.

the Index he considered the Ptolemaic and Copernican opinions equally possible, afterwards he held the Ptolemaic to be most true (*verissima*) and undoubted. Even after being shown the instruments of torture, he said the same. Then, suddenly, the process ended, without his being actually tortured, since the pope had stipulated only that the threat of torture should be imposed.⁵⁷

Did Galileo perjure himself in making these sworn statements? The practice of forcing out admissions of secret sins was absolutely contrary to the canonical principle that church tribunals do not judge secret matters, which are to be left to private sacramental penance. If Galileo knew about this principle, it may have assuaged any pangs of guilt he felt over his technical untruths. It could very well be, however, that he rationalized his responses in another way: he recognized that the Ptolemaic system was generally held to be 'mostly true and undoubted', while acknowledging to himself that the Copernican alternative might eventually be proved true.

On the very next day, 22 June, the sentence designed for Galileo's ears and for public consumption was pronounced by the cardinal inquisitors. After a long summary of his history with the authorities, he was convicted of the vehement-suspicion crime, in effect, 'misprision of heresy' – that is, of deliberately giving the impression that he believed in the false doctrines of the stable sun and moving earth.⁵⁸ Thereupon, he was given a statement of abjuration to recite aloud: he swore that he had always believed what the church held and would continue to do so. He then abjured 'the above heresies and errors' and swore never to say or write anything in the future that would give rise to suspicion that he held them. Lastly, it was announced that his book was to be publicly proclaimed as prohibited, as an example to others to abstain from similar crimes.⁵⁹ Nevertheless, no such public proclamation was made about Galileo's *Dialogue* (apart from public repetitions of the sentence). When the announcement of the book's prohibition was finally made, it was done in the most discreet possible way, as we shall see below.

Galileo spent only one night in the prison of the Holy Office (the pope himself ordered his release).⁶⁰ The rest of his life he remained not only under house arrest, but also under constant threat of re-imprisonment – or worse. If Galileo had been prosecuted fairly, according to the still-mandatory rules set forth at the Fourth Lateran Council, he would have been flanked by his attorneys when summoned to the Holy Office tribunal. It would doubtless have been a lost cause to appeal against the pre-trial interrogation as illegal, since it would be justified as established by centuries of custom. But if, after holding his own against Maculano and Sincero in the interrogation, he had turned down the plea-bargain, Sincero would have been hard-pressed to prove any heretical favouritism in the *Dialogue*, since Galileo would have been able to mount a defence against any such allegations, complete with witnesses for his side.

However, if Galileo had stood firm and not pleaded guilty, it might have resulted in no trial at all. Perhaps they would have accepted Galileo's counter-bargain, his

⁵⁷DV 101–2.

⁵⁸DV 159–65.

⁵⁹DV 165–6.

⁶⁰DV 194–5.

offer to correct his *Dialogue* to reinforce the argument against the heliocentric system,⁶¹ which the 1632 anonymous report had also suggested. If that had happened, then the only repudiation of Copernicus to be made at this point would be to give reassurances that he did not take his system to be reflective of the real world, but only of a possible one, precisely what Copernicus's book was now taken to be saying, after the corrections of 1620 were made.

IV

In the long narrative leading up to their sentence against Galileo, the cardinal inquisitors wrongly stated that the Congregation of the Index in 1616 prohibited *all books treating of heliocentrism*.⁶² Rather, as we saw, it condemned and prohibited all books *teaching it, except for two*, including Copernicus's, which it only suspended until corrected. Perhaps the cardinals did not know or remember that Copernicus's book had been corrected. Furthermore, the cardinals did not follow through on Urban VIII's decree of 16 June that Galileo was to be prohibited from treating heliocentrism in any way. Instead, he was made to swear to be careful about seeming to approve of heliocentrism in speech or in writing. In the event, he proved inconsistent in keeping this oath. He seems to have succeeded in public communications that he might have made, but not always in his private correspondence, where he at times clearly supported the sun-centred universe.

However, in one letter, addressed to the Tuscan ambassador to Venice, Francesco Rinuccini, dated 29 March 1641, only nine months before his death, he repudiated heliocentrism once again.⁶³ Antonio Favaro, the editor of Galileo's works at the turn of the twentieth century, said that Galileo was being ironic in making this statement.⁶⁴ But Francesco Beretta in a 2003 article presented it, at least on its face, as a straightforward rejection, a second abjuration as he called it,⁶⁵ and I myself, in the article cited at the beginning ('Galileo's non-trial', 2016), accepted it as such without further ado.⁶⁶ I now see it as something other than that.

First, it should be noted that, in spite of an occasional letter going astray (see below), Galileo seems to have had no fear that his regular mail was in danger of interception.⁶⁷ He saw no reason to write in code,⁶⁸ but felt free to speak his mind. One

⁶¹DV 74.

⁶²DV 162.

⁶³Galileo to Rinuccini, 29 Mar. 1641, OG XVIII:314–16.

⁶⁴OG XX:305. Giorgio de Santillana, *The crime of Galileo* (Chicago, IL, 1955), p. 328, says that he is writing with 'thinly disguised irony'. Heilbron, *Galileo*, p. 354, says that Galileo was writing 'as if Urban were at his elbow', that is, as if he were under surveillance.

⁶⁵Francesco Beretta, 'Une deuxième abjuration de Galilée, ou l'inaltérable hiérarchie des disciplines', *Bruniana & Campanelliana*, 9 (2003), pp. 9–43.

⁶⁶Kelly, 'Galileo's non-trial', pp. 760–1.

⁶⁷It was different, of course, when Galileo was 'in the hands of the Inquisition'. While he was awaiting his pre-trial interrogation in 1633, he was allowed to stay at the Tuscan embassy in Rome, but not to socialize; and he was warned by his disciple Mario Guiducci in Florence not to write for now (*per ora*), because there was little security to keep his letters from 'arriving badly'. Guiducci to Galileo, 19 Mar. 1633, OG XV:71–2; TG 153–4.

⁶⁸He had written in cipher back in 1610–11, in connection with his astronomical discoveries; see Hannah Marcus and Paula Findlen, 'Deciphering Galileo: communication and society before and after the

example can suffice, a letter sent to his old acquaintance, the Protestant Elie Diodati in Paris, written a year into his confinement, on 25 July 1634.⁶⁹ He tells him of his past and present troubles, and speaks of 'the rage of my persecutors', and of their vigilance. He has finally been allowed to stay in his little villa in Arcetri, a mile or so from Florence; but, as he tells Diodati, he was recently informed by the local vice-inquisitor of an order from the new secretary of the Holy Office, Cardinal Francesco Barberini, that if he continued to write for permission to visit Florence, he would be put back into the real prison of the Holy Office.⁷⁰

He then relates a letter from the transalpine regions mistakenly addressed to him in Rome, praising his *Dialogue*, which was intercepted and shown to Secretary Barberini and others. He goes on to recount some writings against him, including one by Libert Froidmont, 'who was reduced to submerging the moving earth into heresy, all the way up to the mouth'. He addresses the *Tractatus syllepticus* of the Jesuit Melchior Inchofer,⁷¹ who finds the opinion of the earth's mobility 'so horrible, pernicious, and scandalous that it would threaten the great dogmas of the faith, such as the immortality of the soul, creation, and the incarnation, if it were allowed to be debated'. He examines the treatise published against him by Antonio Rocco, 'whose stupid brain understands nothing' about his writings. Galileo ponders responding to all of his many opponents but realizes that to examine everything would be a very long enterprise, and of little use. Instead, he considers producing a book of comments, like notes on the margins of their works, pointing out their most egregious errors, and attributing it to someone else.

If it was rash for Galileo to say such things in a letter, it was even more rash for him to send batches of his marginalia against Rocco to his ally Fulgenzio Micanzio, the official theologian of the doge of Venice, all during 1634; for Micanzio distributed them among his friends, and they even reached Rocco himself, and Rocco prepared a reply.⁷² They could easily have come to the attention of the inquisitor of Venice.

As I noted above, there had been no follow-through on the order of the cardinal inquisitors at the end of Galileo's sentence in 1633 that there be a public proclamation prohibiting his book. It was not until over a year later, on 23 August 1634, that a notice appeared, in the next official announcement of prohibited books. The *Dialogue* is simply listed here in its alphabetical place.⁷³ One reaction to this announcement came to Galileo in the following October from Roberto Galilei in Lyons: 'The newly

trial', *Renaissance Quarterly*, 72 (2019), pp. 953–95, at pp. 963–72. Just after his conviction, he received a letter in *gergo* (gibberish-looking code) from Geri Bocchineri, but its key went missing (pp. 975–84). Finally, Galileo sent a letter in *gergo* to Benedetto Castelli in 1640, which Castelli said he could not understand, OG XVIII:197 (pp. 984–5).

⁶⁹Galileo to Diodati, 25 July 1634, OG XV:115–19.

⁷⁰The threat of re-imprisonment originated with the pope himself, 23 Mar. 1634: DV 201. Galileo's excuse for wanting to return to his home in Florence was his ill-health. The pope allowed it in 1638: DV 206–8.

⁷¹Inchofer was one of three 'expert witnesses' who had found Galileo guilty of favouring heliocentrism in the *Dialogue*, writing probably in April of 1633, DV 80–92; cf. TG 164–5; GA 262–70. Another of the three, Agostino Oreggi, signed off on 17 Apr., DV 79; GA 262; TG 163–4. Inchofer produced his *Tractatus* before the end of 1633. See Richard J. Blackwell, *Behind the scenes at Galileo's trial: including the first English translation of Melchior Inchofer's Tractatus syllepticus* (Notre Dame, 2006).

⁷²OG XVII:17–18.

⁷³*Librorum post indicem Clementis VIII*, pp. 116–17.

arrived prohibition of your book by the Index is truly ridiculous, and a joy to the book's printer, since it now puts a lot of good farthings into his purse, and the same is true of many booksellers here.⁷⁴ He goes on at length to say that people there care nothing about such prohibitions.

This approbation must have been gratifying for Galileo, but worrying as well, because he was in the process of violating the prohibition himself: he was consulting with Diodati on a Latin translation of the *Dialogue*, which was published the next year in Strasbourg.⁷⁵ This effort on his part has been called 'Galileo's last Copernican battle'.⁷⁶ But in view of what we will see below, that verdict seems premature.

The following year, 1636, Micanzio wrote to tell Galileo that, ever since the book of the *Dialogues*⁷⁷ came out, everyone doing mathematics was 'jumping into Lake Copernicus', so to speak, such was the profit that the prohibitions had made.⁷⁸ Galileo answered immediately to say that this news much displeases him: it could cause trouble among the authorities, and cause the pope to limit the granting of licences to himself alone – and then he can reasonably fear that even the memory of the *Dialogues* will in the end be reduced to nothing.⁷⁹ Seemingly, he expresses no fear that further punitive action will be taken against him.

Various persons and entities other than the pope customarily gave licences to read prohibited books at this time, namely, the master of the sacred palace, the Holy Office, the Congregation of the Index, local inquisitors and bishops, and even parish priests.⁸⁰ Galileo assumed that this had been the case so far for his book. Whether it was so or not, we know only that all petitions to the Holy Office were turned down. Beginning in March and October of 1635, the cardinal inquisitors refused to give licences to two residents of Mantua to read Galileo's *Dialogues*.⁸¹ At the turn of the next year, the local inquisitor of Reggio Emilia referred to the Roman inquisitors the request of an eminent Jesuit, Domenico Grini, Doctor of Both Laws, to read the *Dialogues*.⁸² The fate of this request is not given, but a year and a half later, in October of 1637, a request came from the inquisitor of Malta for a knight of Malta to read the *Dialogue*, and it was refused by the pope, who was at the meeting with the cardinal inquisitors.⁸³ In 1640, the Holy Office refused a licence to Fortunio Liceti of the

⁷⁴OG XVI:142.

⁷⁵*Systema cosmicum, autore Galilaeo Galilaei, ... in quo Quatuor Dialogis de Duobus Maximis Mundi Systematibus*, etc. (Strasbourg, 1635). The title page is followed by a list of the undated imprimaturs of Rome and Florence that appeared in the original edition.

⁷⁶Stéphane Garcia, 'L'édition strasbourgeoise du *Systema cosmicum* (1635–6), dernier combat copernicien de Galilée', *Bulletin de la Société de l'histoire du protestantisme français*, 146 (2000), pp. 307–4. This alleged battle included, Garcia argues, Galileo's collaboration on the publication of his hitherto unpublished *Lettera a Cristina di Lorena*, along with a Latin translation, in 1636.

⁷⁷Referring to the *Dialogue* in the plural, which frequently happens at this time, even in Galileo's own letters, may have been influenced by the reference to four dialogues in the title of the Latin edition.

⁷⁸OG XVI:443.

⁷⁹OG XVI:444–5. Galileo has been interpreted as saying that the pope has already reserved permission to himself; see, for example, Heilbron, *Galileo*, p. 345; but the following examples show that it was not the case.

⁸⁰Marcus, *Forbidden knowledge*, p. 133.

⁸¹DV 201–3.

⁸²DV 203.

⁸³DV 205.

University of Bologna.⁸⁴ Finally, in 1641, the cardinals rejected the two Mantuans again.⁸⁵

In 1638, Galileo's long-time disciple Benedetto Castelli had written for permission to visit Galileo more often, to discuss various subjects like the moons of Jupiter, promising to avoid topics prohibited by the church.⁸⁶ Pope Urban instructed the inquisitor of Florence to permit it, but to warn Castelli specifically not to speak with Galileo about the condemned (*damnata*) opinion of the movement of the earth, under pain of automatic excommunication reserved to the pope himself.⁸⁷ The pope undoubtedly remembered the letter that Galileo had written to Castelli in 1613, which came to the fore in 1615 or 1616. Suspect propositions were extracted from it at that time,⁸⁸ which made it into the summary after the trial in 1633.⁸⁹ That summary, of course, was the basis upon which Urban arrived at his verdict.

Interestingly, Castelli had brought up the forbidden subject, at least indirectly, in a letter he wrote to Galileo two years earlier, in 1636. He recounted his pleasure (*gran gusto*) in hearing a Bolognese doctor frequently lecturing against Copernicus at the University of Rome. One of his 'convincing arguments' was that the sun was in the midst of the fixed stars like the hub of a wagon wheel.⁹⁰ Castelli was referring sarcastically to Giacomo Accarisi, who soon produced a *Disputatio* against the Copernican thesis. In May of 1637, Galileo's disciple Vincenzo Renieri offered to send it to him, if he had not seen it.⁹¹ In the following year, Micanzio informed Galileo that Frans van Weert (who had recently translated the *Dialogue* into Flemish)⁹² had written a good response to Accarisi's treatise, in French, drawing almost entirely on the *Dialogue*.⁹³

V

To return to Francesco Rinuccini, Galileo's correspondent, he was a member of the prominent family of that name in Florence. He was born in 1603 and received a law degree in Pisa. He served as the grand duke of Tuscany's ambassador to Venice from 1637 to 1642.⁹⁴ His first connection with Galileo that we know of occurred on 12 July 1633. He was among those invited by the inquisitor of Florence to hear a special reading in Florence of the sentence passed against Galileo in Rome on the previous 22 June. The abjuration that he was required to make was also read.

In light of what Rinuccini would write to Galileo in 1641 in favour of Copernicus, we must conclude that he did not take in the implications of the formulas recited that day in 1633. One part of the abjuration read by Galileo that I did not mention

⁸⁴Marcus, *Forbidden knowledge*, pp. 158, 234.

⁸⁵DV 212.

⁸⁶DV 149–50.

⁸⁷DV 209 (no. 161).

⁸⁸DV 12.

⁸⁹DV 6.

⁹⁰OG XVI:417–18.

⁹¹OG XVII:73.

⁹²Lodowijk Elzevier to Galileo, 4 Jan. 1638, OG XVII:251. For Elzevier (1604–70), see OG XX:436.

⁹³OG XVII:286–7.

⁹⁴On his return to Florence, Rinuccini entered the priesthood, and in due course he was appointed urban archpriest of Florence, with correctional jurisdiction over the city. He eventually became bishop of Pistoia and Prato, dying in 1678 (OG XX:521–2).

above was that, if he should come to know of any heretic, or anyone suspect of heresy, he pledged to turn him in.⁹⁵ The formula seemed to refer to *any heresy* or any kind of heretic that Galileo might happen to encounter. In Mario Guiducci's report of the Florence event to Galileo a few weeks later, in a letter of 27 August, the abjuration was more definite: he was to denounce 'anyone who held the detested opinion'. And if he himself ever held it again, he would be subjected to the penalty of perpetual imprisonment.⁹⁶

After Rinuccini took over his position as ambassador in Venice, he began to act as expeditor of correspondence between Galileo in Arcetri and Micanzio in Venice.⁹⁷ On 23 March 1641, Rinuccini wrote of his delight in hearing from Captain Pieroni⁹⁸ that he had observed through a telescope a definite movement of the fixed stars, as clear as with the naked eye – a gratifying proof of the validity of the Copernican system. But Rinuccini was disturbed to read in a new book just now that, if it were true that the earth made a great orbit around the sun during the year, as Copernicus held, we would not be able to see the full half of the sky during the night. He asked Galileo to resolve the problem.⁹⁹

Galileo replied within a week, on 29 March.¹⁰⁰ By this time, he was blind, and he dictated his letters to his disciple, Vincenzo Viviani. He also knew, as Beretta reminds us, that he was under surveillance.¹⁰¹ He begins by reminding Rinuccini of the official condemned position of geocentrism, saying that the falsity of the Copernican system must not be doubted, 'especially by us Catholics', since the irrefutable authority of Scripture is against it, as interpreted by the greatest theologians: they agree in saying that the stable earth is at the centre and the sun moves around it. Here are his words:

La falsità del systema Copernicano non deve essere in conto alcuno messa in dubbio, e massime da noi Cattolici, havendo la inrefragabile autorità delle Scritture Sacre, interpretate da i maestri sommi in teologia, il concorde assenso de' quali ci rende certi dalla stabilità della terra, posta nel centro, e della mobilità del sole intorno ad essa.

[The falsity of the Copernican system must not be questioned in any way, especially by us Catholics, who have the irrefutable authority of Holy Scripture as interpreted by the greatest masters in theology. Their unanimous consent makes us certain of the stability of the earth, located in the centre, and of the mobility of the sun around it.]

⁹⁵DV 166.

⁹⁶Guiducci to Galileo (who was now under house arrest in Siena), 27 Aug. 1633, OG XV:240–2. For a translation of the letter, see Finocchiaro, *Retrying Galileo*, pp. 28–9.

⁹⁷See OG XX:305 for a summary of their correspondence. He also discussed topics with Galileo himself, including the poetry of Ariosto and Tasso, and the tides of Venice.

⁹⁸Giovanni Pieroni was a military engineer, a former student of Galileo's, who had tried in the mid-1630s to get Galileo's *Two new sciences* printed in Vienna, Prague, and elsewhere, and had secured imprimaturs for it. See Finocchiaro, *Retrying Galileo*, pp. 67–9.

⁹⁹OG XVIII:311.

¹⁰⁰Galileo to Rinuccini, 29 Mar. 1641, OG XVIII:314–16

¹⁰¹Beretta, 'Une deuxième', p. 42.

After this resounding statement, Galileo adds (*poi*, ‘next’) that there is another way in which Copernicus can be disregarded:

Le congetture poi per le quali il Copernico et altri suoi seguaci hanno prof-
ferito il contrario si levono tutte con quel saldissimo argomento preso dalla
onnipotenza di Iddio, la quale, potendo fare in diversi, anzi in infiniti, modi
quello che alla nostra opinione e osservazione par fatto in un tal particolare,
non doviamo volere abbreviare la mano di Dio, e tenacemente sostenere quello
in che possiamo essere ingannati.

Here is Stillman Drake’s translation:

The conjectures of Copernicus and his followers offered to the contrary are
all removed by that most sound argument, taken from the omnipotence of
God. He being able to do in many, or rather in infinite ways, that which to
our view and observation seems to be done in one particular way, we must not
pretend to hamper God’s hand and tenaciously maintain that in which we may
be mistaken.¹⁰²

That is, the Copernican possibility finds its place along with other possibilities, and
it would be rash to insist upon it, which would be like constraining the hand of God.

This was the argument that Pope Urban instructed Galileo to use in the preface
and conclusion of his *Dialogue*, as Riccardi reminded him.¹⁰³

But then Galileo goes on to contrast the Copernican and Ptolemaic theories: in
his view, he says, the observations and conjectures of Copernicus are merely insuf-
ficient; but those of Ptolemy and Aristotle and their followers are fallacious and
erroneous, and one can easily show how they are non-probative:

E come che io stimi insufficienti le osservazioni e congettture Copernicane,
altr’e tanto reputo più fallaci et erronee quelle di Tolomeo, di Aristotele, e de’
loro seguaci, mentre che, senza uscire de’ termini de’ discorsi humani, si può
assai chiaramente scoprire la non concludenza di quelle.

[And just as I consider the Copernican observations and conjectures insuffi-
cient, I also consider those of Ptolemy, Aristotle, and their followers to be more
fallacious and erroneous. Regarding these latter, one can quite easily uncover
their inconclusiveness, without going outside the limits of human reason.]

By saying that the Ptolemaic conclusions are *more* fallacious and erroneous,
Copernican conclusions by implication are also fallacious and erroneous, as well as
being insufficient. Perhaps this is a nod to his original statement that Copernicus’s
system is to be considered false.

¹⁰²Stillman Drake, *Galileo at work* (Chicago, IL, 1978), p. 417.

¹⁰³DV 56. As Riccardi relayed it, the considerations of God’s omnipotence ‘should set the mind at
rest, even though not able to escape the Pythagorean [=Copernican] arguments’ (*le quali devono quiettar
l’intelletto, anchorché da gl’argomenti Pittagorici non se ne potesse uscire*).

Next, Galileo refutes what the author Rinuccini is worrying about. He is arguing in a circle: he already has the centrality of the earth fixed in his mind, and that is what he concludes: the earth is at the centre.

As for Captain Pieroni's alleged results, Galileo points out that ordinary instruments are not precise enough to make such small measurements. He ends by saying that he could bring up more points, but what he said in his 'misfortuned' *Dialogue* can suffice.¹⁰⁴ Undoubtedly, the passage of the *Dialogue* that he had particularly in mind was towards the end of the third day, where Salviati describes an experiment that could discern the stellar parallax, if a much stronger telescope were available.¹⁰⁵

Galileo's words at the beginning of the letter, about the falsity of the Copernican system, are not the same kind of repudiation of heliocentrism that was forced on him in the abjuration in his trial. Rather, he has made it more sectarian. He states that the Copernican system must be seen as false by those who accept the decision of Catholic theologians on the point – as if to say that Protestants, like Diodati and others who had translated and published his *Dialogue* and other pro-Copernican works,¹⁰⁶ would not be so constrained. It is noteworthy that he does not refer to the judgement of the Inquisition against him, or to the decree of the Index banning all books teaching the Copernican system – except for Copernicus's own book, which was no longer off bounds, after it was corrected twenty years ago.

Of course, he does most certainly have the judgement against him in mind, and doubtless also the pledge in his abjuration to turn in any heretic who was holding the doctrine of heliocentrism. We can see him as warning Rinuccini, and at the same time covering his own back, as if to say: Rinuccini was not a true heretic who needed to be denounced to the Inquisition; rather, he was simply a mistaken soul who needed to be set straight, and that is what Galileo has just done.

To review the message of the letter: the Copernican system is judged as false by Catholic theologians; it is one of many possibilities under God; it is insufficient, but less defective than the Ptolemaic system; it is certainly not yet provable by current instrumentation; more light can be thrown upon it in the *Dialogue*. One can also see further implications, if one wishes.

VI

Let us summarize what we have seen. Galileo was well aware from the beginning that Copernicus's attractive deviation from the astronomical consensus that the earth was the centre of the universe was a delicate matter, because of its theological implications. He showed himself open to it without actually espousing it, but he gained a reputation for holding it, and it became known as 'Galileo's doctrine'. The Inquisition's theologians decided that it was against Scripture, even heretical, and privately admonished Galileo to give it up, to which he agreed. Meanwhile, Copernicus's book, once it was made clearly hypothetical, was allowed.

¹⁰⁴Continuation of Galileo's letter to Rinuccini, OG XVIII:315–16.

¹⁰⁵Galileo, *Dialogo*, OG VII:415; trans. Maurice A. Finocchiaro, *Galileo on the world systems: a new abridged translation and guide* (Berkeley, CA, 1997), pp. 279–80.

¹⁰⁶See Finocchiaro, *Retrying Galileo*, pp. 72–6.

When, years later, Galileo obtained imprimaturs for a large book discussing the theoretical pros and cons of the geocentric and heliocentric explanations, he thought he was on safe ground, but the Inquisition's readers believed that the heliocentric disputant veered away from hypothesis to reality, and Galileo was summoned for interrogation. He avoided the trap of incriminating himself, but accepted a plea-bargain and confessed to the crime of favouring heresy without believing it. He was forced to disavow the Copernican theory under pain of harsh prison or death.

Later, in defiance of this threat, he privately showed himself as favouring the theory in his correspondence, at least indirectly, but he did not actually address the subject until 1641, when hearing of a claim that the Copernican system had been proved. He knew it was not so, and he started his reply by saying that he and other Catholics are assured that the Copernican system is false, because theologians say the earth is central and unmovable. Unlike the Ptolemaic system, however, its defects are not insuperable, even though it is not yet possible to prove its veracity with ordinary instruments. In other words, Galileo was content to repudiate it as false until it was proved to be true.

Let me conclude by noting that Cardinal Bellarmine speculated on the possibility of the heliocentric system being proved true in a letter he wrote to Friar Foscarini. If that happened, he said, one would have to proceed with great care in explaining away the Scriptures that appear to be contrary to it.¹⁰⁷ Galileo expressed a similar opinion to himself in the notes that he added to a printed copy of the *Dialogue*. He warned theologians that, by making the earth's fixity a matter of faith, they might one day have to condemn those who hold it as heretics, if the earth's motion is proved.¹⁰⁸

It did not come to that. Rather, the earth's motion was simply accepted, and the geocentrists were left alone. Before the stellar parallax was definitely measured in the 1840s, we find the Inquisition's current commissary in 1820, Maurizio Olivieri, OP, writing thus:

Although there is no universal consensus among the experts in the field about the annual parallax of the fixed stars, the aberration of the fixed stars and of the planets has been verified for at least a century and is regarded by all astronomers as a true physical demonstration of the earth's annual motion.¹⁰⁹

In 1822, the Inquisition allowed Catholics to accept the earth's motion as a fact; and the 1835 edition of the *Index librorum prohibitorum* silently dropped Galileo's *Dialogue* and the works of Zúñiga and Foscarini named in the 1616 decree, and also, of course, the un-emended Copernicus.¹¹⁰ The theological and scriptural implications were no longer a concern.

¹⁰⁷Bellarmino to Foscarini, 12 Apr. 1615, GA 68.

¹⁰⁸Galileo, note added to the Padua Seminary copy of the *Dialogue*, OG VII:541 (cf. VII:14–15); trans. Drake, p. vii.

¹⁰⁹Finocchiaro, *Retrying Galileo*, p. 211.

¹¹⁰*Ibid.*, pp. 193, 198.