European Journal of Science and Theology, February 2024, Vol.20, No.1, 93-114

MACULANI, GALILEO AND MILITARY ENGINEERING IN SEVENTEENTH-CENTURY MALTA

Lino Bianco*

University of Malta, Faculty for the Built Environment, Department of Architecture and Urban Design, Msida, MSD 2080, Malta

(Received 4 September 2023, revised 6 November 2023)

Abstract

It was a common practice in the seventeen century to engage reputed military engineers for the design of fortifications. Malta, at the time ruled by the Hospitaller Order of Saint John, is a case in point. Besides having its engineer in residence, the Order requested and secured the services of the best in Europe to consult notably on planned and ongoing military engineering works. One such personality was Vincenzo Maculani da Firenzuola, a member of the Order of Preachers, military engineer and Commissary-General of the Inquisition at Galileo's 1633 trial. Based on historical literature, this article addresses Maculani's engagement in Malta and challenges references to him, and to Galileo, in the literature on the military engineering history of Malta. The paper concludes by exposing the bias, which existed until recently in such literature, the outstanding piece being published by a member of the same order of Maculani in the 1950s.

Keywords: Maculani, Galileo, Firenzuola, Santa Margherita Lines, Malta

1. Introduction

In the sixteenth and seventeenth century, it was a common practice throughout Europe to engage particularly outstanding Italian military engineers for the design of fortifications, and Malta was no exception. These engineers were leading exponents of the discipline and many prominent ones were members either of the Society of Jesus (the Jesuits) or the Order of Preachers (the Dominicans). There is a far broader corpus of literature on the Jesuits than the Dominicans. Denis De Lucca wrote a comprehensive book on the Jesuits and the design of fortifications, a work based on his PhD at the University of Liverpool [1]. De Lucca also edited, with a critical study, a treatise by the Dominican friar Tomaso Maria Napoli (1659-1725) [2]. He acknowledged the limited knowledge on the contribution of the Dominicans, compared to the Jesuits, to the art and ethics of war on land and at sea [3], "an area of research still untapped" [4, p. 291].

*E-mail: lino.bianco@um.edu.mt; as from 1 October 2023, also at Pontifical Gregorian University, Faculty of Social Sciences, Piazza della Pilotta, 4, 00187 Roma RM, Italy

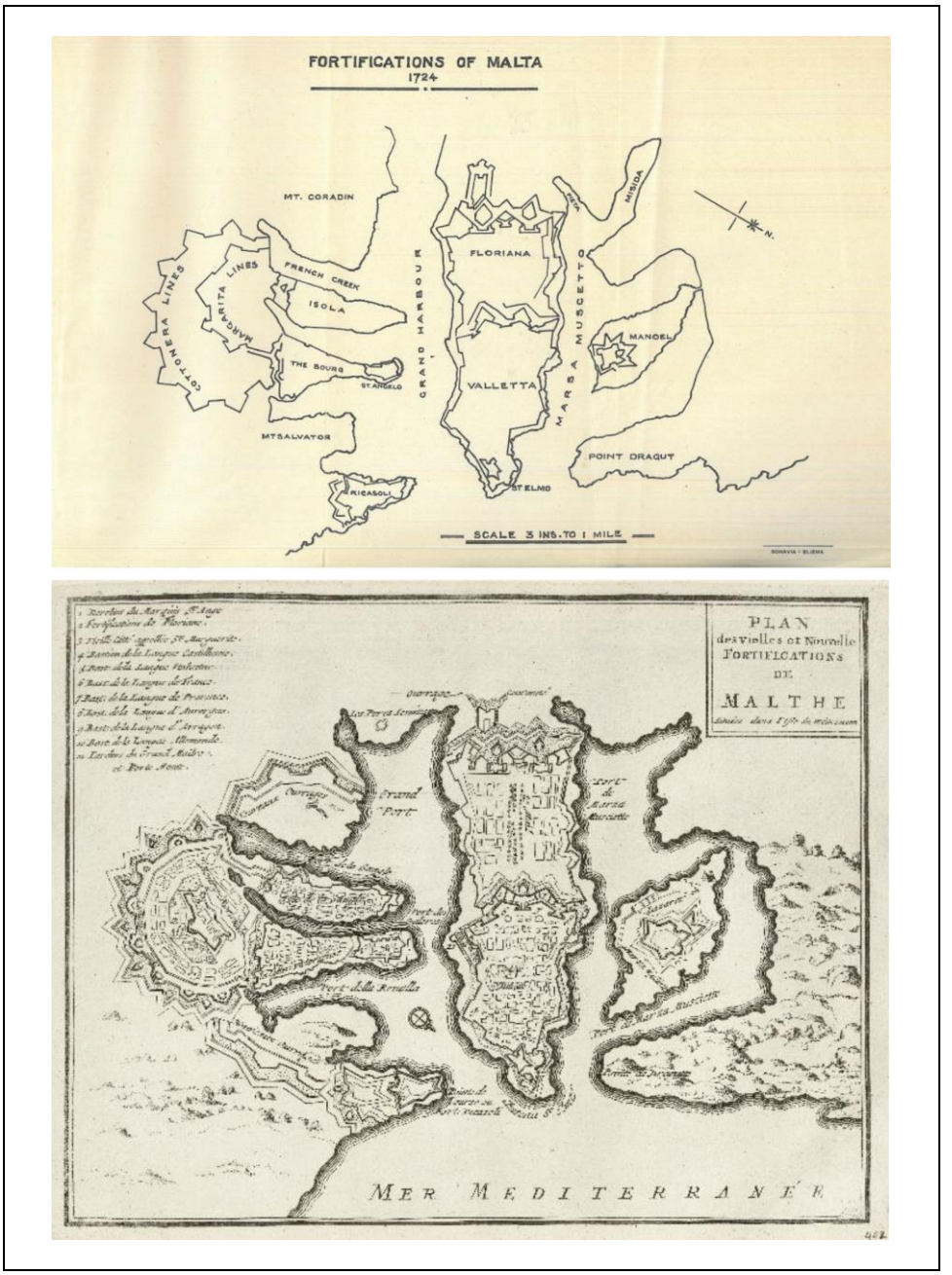


Figure 1. The defences of the Grand Harbour: (top) plan of the fortifications of Malta as in 1724 [5], and (bottom) map by Nicolas de Fer, c. 1702 [https://commons.wikimedia.org].

The string of fortifications in Bormla, Malta, known as Santa Margherita Lines was erected in two phases - in the seventeenth (1638 to 1645) and in the eighteenth centuries (1715 to 1736) - the latter as part of the substantial Cottonera

Lines designed to shield the land front ramparts of Birgu and Isla. The planimetric profile of the maritime fortifications of central Malta produced by Crocker in 1920 [5] illustrate the approximate correctness of the map produced by Nicolas de Fer (1646-1720) in circa 1702 [https://commons.wikimedia.org/wiki/Category:Maps_of_fortifications_in_Malta#/media/File:Plattegrond_van_Valletta,_1726_Plan_des_vieilles_et_Nouvelle_Fortifications_de_Malthe_(titel_op_object)_Les_Forces_de_l'Europe,_Asie,_Afrique_et_Amerique_Comme_aussi_les_Cartes_des_C%C3%B4tes_de_France_e,_RP-P-OB-83.036-164.jpg, accessed on 12.12.2022] (Figure 1).

It has long been acknowledged in the literature that the Santa Margherita Lines were designed by the Dominican friar and reputed military engineer Vincenzo Maculani (or Maculano) da Firenzuola (1578-1667), at the service of Pope Urban VIII (1568-1644) whose reign (1623-1644) was characterized by widespread nepotism and corruption [6]. The link between Maculani and Galileo Galilei (1564-1642) - two scholars with different allegiances, the former to the ecclesiastical establishment and the latter to Science - is not given importance in the literature on the fortifications of Malta. Based on historical sources and scholarly publications, this article addresses Maculani's engagement in Malta, namely with respect to the Floriana and Santa Margherita Lines. It critically reviews and discusses Maculani and Galileo in the literature on the military engineering designs of Malta and examines the rapport between the two men, as supported by evidence from the 1633 trial and subsequent condemnation of the latter.

2. Background

2.1. The context of the figure of Maculani

Although much less has been written on Maculani than Galileo, a number of primary sources about him and a concise bibliography are listed by Beretta [7]. Further to be being a Dominican and a military architect, Maculani was an inquisitor (1627) and later a cardinal (1641) and a candidate for the papacy (1644). He was appointed an inquisitor of the Roman Inquisition headed by Cardinal Francesco Barberini (1597-1679), a nephew of Urban VIII. Barberini held this post from 1633 until his death. Literature on Maculani indicates that he was already a reputed military engineer. Alongside his duties as an inquisitor in Genoa (1627-1629), he was assigned the task - together with Giovanni Battista Baliani (1582-1666) - to rebuild the walls of Genoa, at the time a republic incorporating Corsica and other colonies and territories. Trained as a lawyer, Baliani was a mathematician, physicist and astronomer who corresponded intermittently with Galileo from 1614 onwards [8]. Maculani was assigned also the task to oversee the military-centric building program of Urban VIII: he added the moats and ramparts to Castel Sant'Angelo, the defences around the Cortile del Belvedere and the Porta Cavalleggeri, and a number of fortified walls including the Porta Portese [6].

Maculani was the Commissary-General of the Inquisition who interrogated Galileo Galilei during the 1633 trail with respect to his publication of the *Dialogue concerning the two chief world systems*, a dialogue written in the Platonic tradition, published in 1632 [9]. He is depicted in *Galileo before the Inquisition*, the 1857 oil-on-canvas painting by Cristiano Banti (1824-1904) (Figure 2) [The private collection, De Agostini Picture Library, U. Marzani, Bridgeman Images; https://upload.wikimedia.org/wikipedia/commons/8/88/Galileo_facing_the_Roman_Inquisition.jpg, accessed on 17.01.2023]. This painting seems to recollect likely a session, which took place in April 1633, which is documented, in translation, by Santillana [10]. In the painting, Galileo is facing the Roman Inquisition whilst Maculani, in his Dominican robe, is standing and pointing at a document on the desk in front of him with two assistants, also in Dominican robes, sitting by his side.

Figure 2. Cristiano Bantia, Galileo facing the Roman Inquisition, 1857 respectively [https://commons.wikimedia.org].

In the first paragraph of the chapter entitled ‘The Trial’, Santillana offers insight into who Maculani was: “On the twelfth of April, 1633, the first hearing took place before the Commissary-General of the Inquisition and his assistants. The Commissary’s name was Father Vincenzo Maculano, or Maculani, da Firenzuola, which caused him to be currently called ‘Father Firenzuola’ from the name of his town. We know very little of this man, whose career was to lead him

later to the purple. He was, like all Inquisitors, a Dominican friar, but he had been singled out by the Pope (at least according to the talk of the town) not so much for his theological zeal as for the technical and administrative capacities he had shown in supervising the fortifications of Castel Sant'Angelo. Urban VIII was no fanatic, and he liked to have humanists and executives in his entourage." [10, p. 237]

John Bargrave (1610-1680), who was privy to the papal court, including the Roman Inquisition, wrote an account - which was not meant for publication - while in Rome in 1660, entitled 'Pope Alexander the Seventh and the College of Cardinals' [11]. He described Maculani as "a severe man … [who] bought his red hat with the price of human blood, being cruel when he was Commissary. … He is an arrogant man, and pretends to the papacy. … He [is] always going in black, in his Dominican habit, never putting on his purple or his scarlet." [11]

2.2. The condemnation of Galileo

The 1633 trial took place over three sessions: 12 April, 30 April and 10 May. Kelly argues that in the sessions held in April, Galileo "was interrogated without being charged. His formal trial took place on May 10." [12] Karl von Gebler (1850-1878), who authored an early publication on Galileo, noted that during the first sitting, "Galileo appeared in great distress of mind, for his first hearing in the Palace of the Inquisition, before the Commissary-General of the Holy Office, Father Vincenzo Maccolani da Firenzuola, and the fiscal attorney of the Holy Tribunal, Father Carlo Sincero. In all his answers to the Inquisitor, he is actuated by one idea - that of shortening the proceedings and averting a severe sentence by submissive acquiescence. This resigned attitude must be borne in mind in order to form a correct judgment of his depositions before the dread tribunal." [13]

The decision was delivered on 22 June 1633. The Inquisition found Galileo "vehemently suspect of heresy (that is, convict him of supporting heresy), in two ways: (1) suspect of having held and believed (*d'haver tenuto e creduto*) the false doctrine, contrary to scripture, of the sun as unmoving centre and the Earth as moving; and (2) suspect of holding it allowable to defend as probable an opinion defined as contrary to scripture" [12, p. 755-756]. Kelly argues that "it is true that the cardinal inquisitors concluded that he had violated the precept he had been given in 1616 [by Cardinal Robert Bellarmine (1542-1621) to whom Galileo promised to comply] not to promote heliocentrism, but they did not convict him of this disobedience. Rather, they convicted him of the offense of strong suspicion of heresy, for giving the appearance of favouring the heresy of heliocentrism, and for arguing that a condemned theory was probably true." [12, p. 727] This reinforces the case that Galileo's 1633 sentence was not about Science but about breaching the 1616 order which prohibited him not to hold, publicise and/or defend Copernican theory as a scientific fact but only as an unproven hypothesis, which indeed it was at the time. The works of the Copernicus were placed on the *Index Librorum Prohibitorum* by a decree of the Congregation of the Index in

1616 - "This Holy Congregation has also learned about the spreading and acceptance by many of the false Pythagorean doctrine, altogether contrary to the Holy Scripture, that the Earth moves and the Sun is motionless, which is also taught by Nicolaus Copernicus '*On the Revolution of the Heavenly Spheres*" [https://inters.org/decree-against-copernicanism-1616#:~:text=This%20Holy%20Congregation%20has%20also,and%20by%20Diego%20de%20Z%C3%BA%C3%B1iga's] - but the works of Galileo were not included. Stephen Greenblatt claims that "protected by powerful friends and hence spared torture and execution, the convicted scientist was sentenced to life imprisonment, under house arrest" [14]. Giordano Bruno (1548-1600), a contemporary of Galileo who, amongst other theories, had endorsed the Copernican model, was found guilty for heresy by the Roman Inquisition and burned alive at the stake in Campo de' Fiori, Rome. Thus, in such a context, the verdict - read by Maculani, or one of the cardinals [12] - was indeed a lenient one. Maculani likely edited the text of Galileo's condemnation and abjuration for two reasons: (i) it was his responsibility ex officio, and (ii) the text reflected the direction given to the trial, namely that the doctrinal decisions with respect to Galileo's 1616 case were sufficient grounds to convict and place the blame on him as he had "'artificial and warmly extorted' the licence to print the *Dialogue*" [7].

3. Methodology

To address the theme of this article, we will refer to the following scholars on the fortifications of Malta erected during the period when the Hospitaller Order of Saint John of Jerusalem ruled over the Maltese Islands (1530-1798): James Quentin Hughes [15, 16], Alison Hoppen [17] and Stephen Spiteri [18-21]. Hughes was Professor of Architecture at the Royal University of Malta and the first editor of *Fort*, the peer reviewed journal of the Fortress Study Group, set up at Pembroke College, Oxford, in June 1975, of which he was a founding member. Hoppen, formerly a lecturer in History at the University of Strathclyde, authored a thorough analytical study on the theme of fortifications in Malta. Spiteri is the research coordinator at the Restoration Directorate, an institution of the Central Government of Malta and a Senior Lecturer in military architecture at International Institute for Baroque Studies, University of Malta. He is the intellectual heir of Hughes, who was his mentor. Further to the primary sources on which the publications were based, all consulted by the author during the course of the research, other documentary evidence and seminal works were used.

4. Santa Margherita Lines

4.1. The protagonists

The Grand Masters of the Order of Saint John relevant to this study, together with their nationality and, more importantly, their term in office, are

listed in Table 1, together with the reigning popes and the significant military engineers engaged at the time.

Table 1. List of Grand Masters (including the langue) [15], popes and military engineers (including their city of origin/country) [21] and their term in office, relevant to this study.

Protagonists		**In Office**
Grand Masters	Antoine de Paule (French)	1623-1636
	Jean-Paul Lascaris Castellar (French)	1636-1657
	Nicolàs Cotoner (Spanish)	1663-1680
	Ramon Perellos y Roccafull (Spanish)	1697-1720
	Marc'Antonio Zondadari (Italian)	1720-1722
	Antonio Manoel de Vilhena (Portuguese)	1722-1736
Popes	Gregory XV	1621-1623
	Urban VIII	1623-1644
	Innocent X	1644-1655
	Alexander VII	1655-1667
Military Engineers	Pietro Paolo Floriani (Macerta/Italy)	1635-1636
	Francesco Buonamici (Lucca/Italy)	1635-1659
	Jardin (?/France)	1636-1638
	Vincenzo Maculani (Firenzuola/Italy)	1638-1639
	Giovanni de' Medici (Florence/Italy)	1640
	Antonio Maurizio Valperga (Turin/Italy)	1670

4.2. A chronological backdrop

Towards the end of 1634, after receiving intelligence of a forthcoming attack by the Ottomans, Grand Master Antoine de Paule (1551-1636) made a request to Urban VIII for the services of a military engineer to design improvements to the fortifications of the island of Malta. Pietro Paul Floriani (1585-1638), who had been made Castellan of the Castle of Saint Angelo in Rome in 1627, was appointed. He promptly travelled to Malta, assessed the defences of Valletta - the island's capital city founded in 1566, a year after the Great Siege when the Ottoman Empire attempted to conquer Malta - and proposed building up the outer defences around the city's land front. In spite of opposition by members of the Order and military engineers initially stemming from the costs of the fortifications and time needed to complete them, works on his design commenced in 1636. Floriani, a patron of Cardinal Barberini, together with Inquisitor Fabio Chigi (1599-1667) - the apostolic delegate in Malta and later Pope Alexander VII - ensured that the cardinal was kept advised of all developments. In his communication with Barberini dated 10 December 1635, Floriani enclosed reports and plans outlining the approved scheme. The cardinal forwarded them on to Maculani for his appraisal and advice [17]; in turn, he dispatched Maculani's report, likely dated 15 March 1636 [17] - which was overall favourable - to Floriani. On receiving it, Floriani was offended. Hoppen summarises the evolving events thus: "Firenzuola suggested modifications which, he believed, would make the scheme more compatible with the time and money

available, but Floriani insisted that as the engineer on the site he could judge what was most suitable for Malta. Floriani undoubtedly took immense pride in his work and was reluctant to admit that any improvement to his scheme might be possible. Indeed, from the moment of his arrival in Malta his haughty manner had given offence, and, although Chigi in particular had deplored this, he had been unable to persuade Floriani to modify his attitude. … In any case, Chigi, quite apart from wishing to avoid trouble with the prima donna-like engineer, had by April 1636 judged that the work had progressed so far that an alteration in design was no longer possible." [17, p. 48]

Figure 3. The defences of the Grand Harbour as per Georg Braun (1541-1622) and Frans Hogenberg (1539-1590), c. 1572: the indicative locations of Floriani's proposed outer defences and the Maculani lines at Santa Margherita are indicated by the author with red and yellow circles, respectively [https://commons.wikimedia.org].

Prior to his departure, Floriani's entrusted the execution of his proposal to the resident engineer of the Order Francesco Bonamici (1596-1677) who accompanied him during his stay in Malta; he returned to Italy "disgusted with the turn of events" [15, p. 211]. In response to the Order's request for another engineer, Urban VIII appointed Maculani, "an engineer in whom they [the knights] had confidence" [17, p. 51]. At the request of the Grand Master, he travelled to Malta in winter of 1638 to draft a report, which converged with the technical opinion of the military engineers who opposed Floriani's second line of defence around the Valletta land front. In early spring 1638, Barberini contemplated sending him to balance the influence of the French engineer, Jardin,

made available by Landgraviate of Hesse Darmstadt, who assumed the supervision of the fortifications in 1636 and had his proposal - to disregard Floriani's scheme and instead improve Valletta's fortifications - approved by the Council on 29 May 1638 [17]. Barberini and Chigi "resented his [Jardin's] intrusion into what they regarded as a papal sphere of influence" [17, p. 50]. In his assessment of the existing fortifications, Maculani concluded the following [15]: (Figure 3 [https://commons.wikimedia.org/wiki/File:Braun_Malta_UBHD.jpg, accessed on 7.02.2023])

1. the Valletta enceinte as at present was useful;
2. Floriani's proposed line was not of much value - too strong at the front and too weak on the flanks - and the bastions were too sharp in plan;
3. the Grand Harbour and the Three Cities - Birgu, Bormla and Isla - were vulnerable if an enemy took hold of the hilltop east of Birgu known as Santa Margherita.

Although reluctant to dispatch Maculani, Urban VIII granted him leave for a three-month stay, which commenced on 10 November 1638. Following site inspections, he submitted to the Council of the Order a report within a fortnight which commended the design of an enceinte enclosing this hilltop and Bormla, the Santa Margherita Lines (Figure 4 [Archivum Ordinis Melitae 256, f. 185; 6554, f. 47, National Library of Malta, Valletta], cited in [17]), a course of action considered earlier by Floriani. Maculani "did not condemn the Floriana lines out of hand; indeed, he said that the fortifications were of good design and well built, but he thought them of little use since the old front occupied the best site, the highest, on the peninsula" [17, p. 51-52]. The scheme for the Santa Margherita Lines was approved by the Council, which concurrently appointed a commission to study his proposal in detail. As per Maculani's recommendations, the Council decreed: (i) to erect three ravelins to the Valletta front, (ii) to erect fortifications on Santa Margherita hill, and (iii) to halt works on Floriani's fortifications [17].

The foundation stone of the Santa Margherita Lines was ceremonially laid by Grand Master Jean-Paul Lascaris Castellar (1560-1657) on 30 December 1638 (Figure 5 [24]; cited in [17, p. 52, 189] and in [19, p. 402, 666]). The workforce was transferred from Floriani's project to the new site; "the decision to proceed with Santa Margherita and cease work on Floriana was, however, apparently controversial" [17, p. 75].

Maculani's proposal was criticised as being too expensive but his counter-argument was that the main cost was not from the fortifications' erection but their management [16], "echoing Floriani's earlier reply to similar criticism of his ambitious scheme in 1635" [21, p. 137]. Details of his scheme were sent to Christian rulers, including the king of Spain, Philip IV (1605-1665), who handed it to Claudio Riccardo (1589-1664) for his assessment. His criticism of Firenzuola's plans was similar to Firenzuola's criticisms of Floriani's scheme [17]. Following Maculani's departure, exactly three months after he left Rome, the Order did not manage to persuade Urban VIII to allow him a second visit. Instead, they secured the services of the Marquis of St. Angelo Giovanni de' Medici (?-1648) through the Grand Duke of Tuscany. Following de' Medici's

visit in 1640, amendments were made to Maculani's design and works resumed later on that year [15].

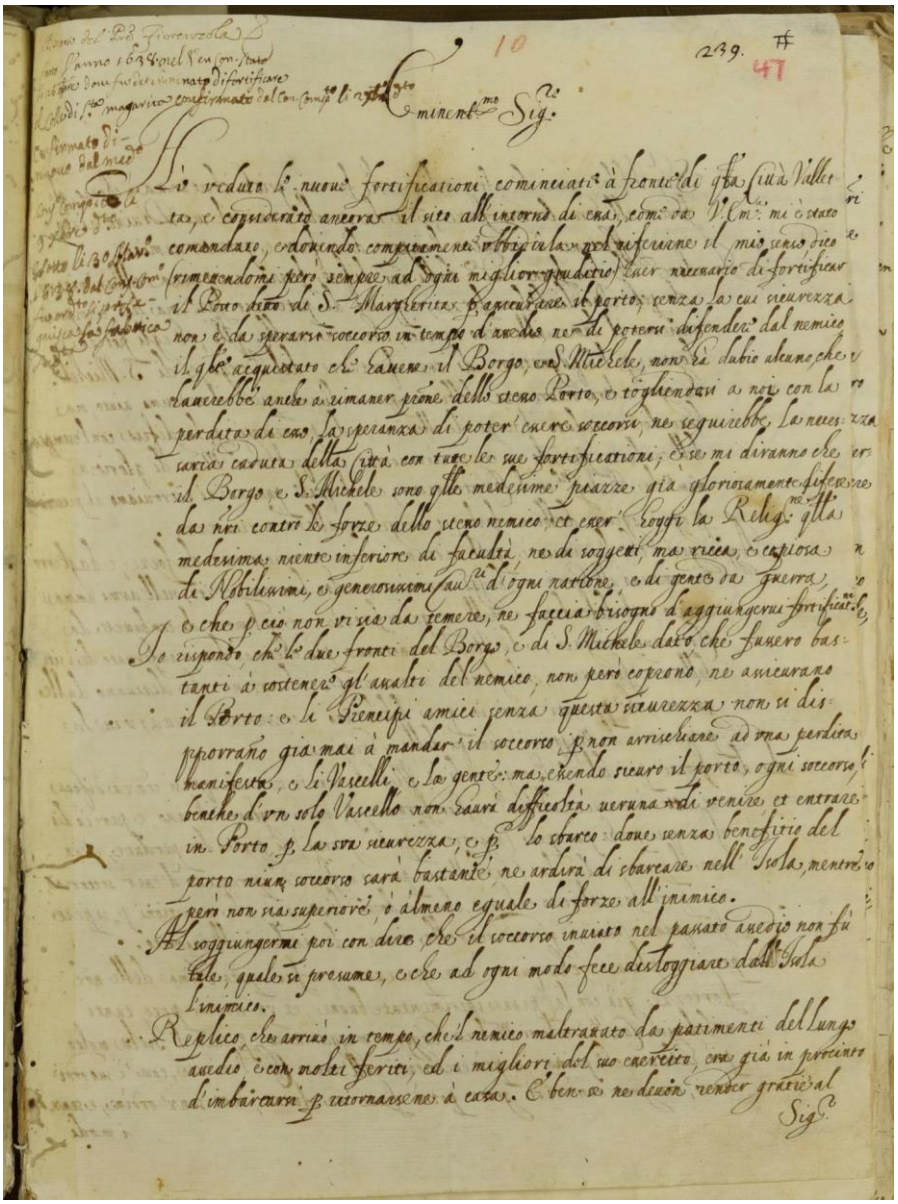
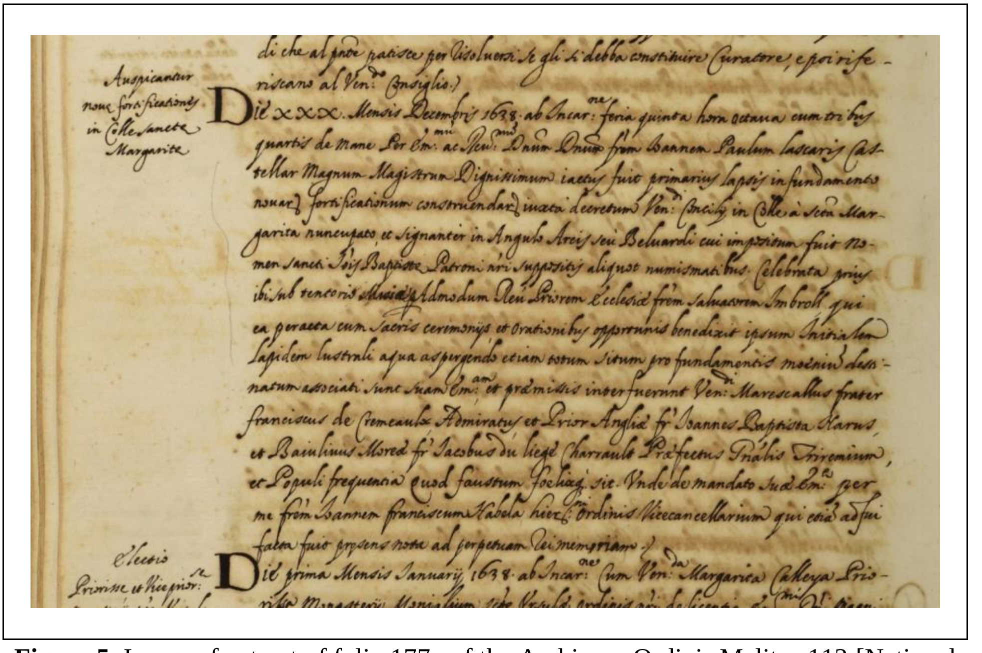


Figure 4. Image of folio 47 of the Archivum Ordinis Melitae 6554 [National Library of Malta, Valletta].



Auspicantur nouae fortificationes in Colle Sanctae Margaritae

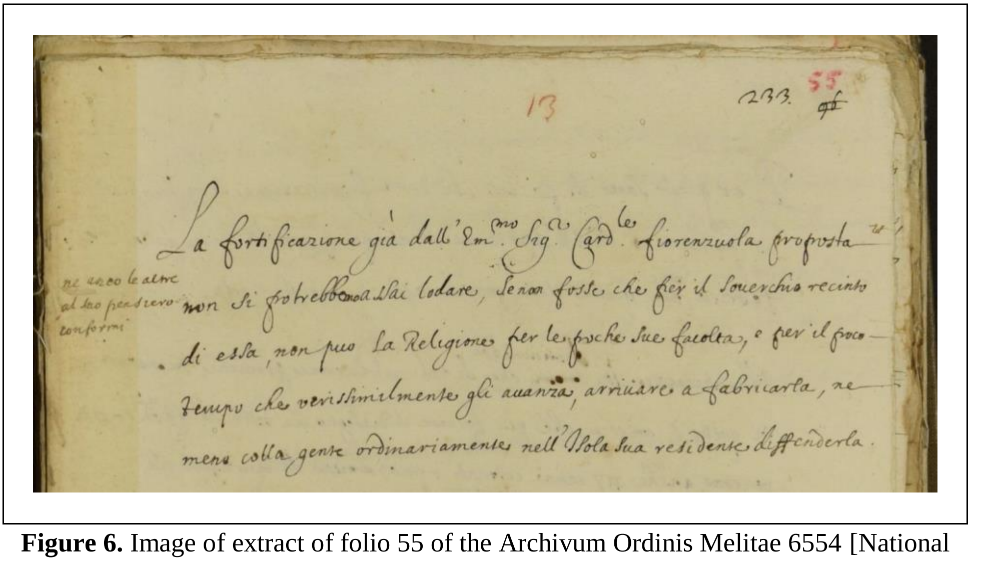
di che al prñte patisce per l'insoluenza se gli si debba constituire Curatore, e poi rife-riscano al Ven: Consiglio.)

Die XXX. Mensis Decembris 1638 ab Incar: feria quinta hora octaua cum tribus quartis de mane Per Emum: ac Revmum: Dnum Dnum fratrem Joannem Paulum Lascaris Castellar Magnum Magistrum Dignissimum iactus fuit primarius lapis in fundamentis nouarum fortificationum construendarum iuxta decretum Ven: Concilij in Colle à Scta Margarita nuncupato et signanter in Angulo Arcis seu Beluardi cui impositum fuit nomen Sancti Ioannis Baptistae Patroni nri suppositis aliquot numismatibus. Celebrata prius ibi sub [illegible] Missa [illegible] Admodum Rev. Priorem Ecclesiae fratrem Saluatorem Imbroll qui ea peracta cum sacris ceremonijs et orationibus opportunis benedixit ipsum Initialem lapidem lustrali aqua aspergendo etiam totum situm pro fundamentis moenium destinatum associati sunt Suam Emam: et praemissis interfuerunt Ven: Marescallus frater Franciscus de Cremeaulx Admiratus et Prior Angliae fr Joannes Baptista Marus, et Baiulinus Mored fr Iacobus du Liegé Charrault Praefectus Triremium, et Populi frequentia quod faustum felixque sit. Unde de mandato Suae Emae per me fratrem Joannem Franciscum Habela [illegible] Ordinis Vicecancellarium qui etiam adfui factum fuit praesens nota ad perpetuam rei memoriam.

Electio Priorissae et Vicepriorissae

Die prima Mensis Januarij 1638 ab Incar: Cum Ven: Margarita Calleya Prio-

Figure 5. Image of extract of folio 177v of the Archivum Ordinis Melitae 112 [National Library of Malta, Valletta].



13 233 55

La fortificazione gia dall'Emmo Sig.re Card.le Fiorenzuola proposta non si potrebbe mai lodare, senon fosse che per il souerchio recinto di essa, non puo la Religione per le poche sue facolta, e per il poco tempo che verisimilmente gli auanza, arriuare a fabricarla, ne meno colla gente ordinariamente nell'Isola sua residente diffenderla.

ne anco le altre al suo pensiero conformi

Figure 6. Image of extract of folio 55 of the Archivum Ordinis Melitae 6554 [National Library of Malta, Valletta].

By 1645, there had been marked progress in the construction, "but it was soon clear that the Order's resources were being exhausted with the construction of Floriana and Santa Margherita simultaneously. It was, therefore decided to complete the Floriana Lines and postpone the construction of Santa Margherita Lines until the Order's resources permitted." [18, p. 108-109], which effectively

resulted in the works being abandoned for two decades. Citing the Archivum Ordinis Melitae (AOM) [Archivum Ordinis Melitae 6554, f. 55, National Library of Malta, Valletta] (Figure 6), Spiteri notes that "the Order would not be able to finish [Maculani's] scheme owing to the length of time envisaged for its completion" [21, p. 137].

After the fall of Candia, Grand Master Nicolàs Cotoner (1608-1680) tackled harbour security by completing the defences of Floriana, named after their initial designer, and erecting the Cottonera Lines - a project which recalls his name - which encircled the Three Cities. The foundation stone was laid in 1670 in line with the design by the Italian military engineer Antonio Maurizio Valperga (1605-1688) who, following a request by the Grand Master, was sent by the Duke of Savoy [22]. Maculani was not involved in these fortifications; he died three years earlier. The works on the Firenzuola lines resumed under Grand Master Perellos y Roccafull (1637-1720) and were improved and completed in 1736 during the term of Grand Master Antonio Manoel de Vilhena (1663-1736) [https://commons.wikimedia.org/wiki/File:Malta;_view_from_the_Cotonera_for tifications._Etching_by_M-A_Wellcome_L0019023.jpg, accessed on 7.02.2023] (Figure 7).

Figure 7. View from the Cottonera fortifications; etching by Antoine Benoist (1721-1770), c. 1770, after Joseph Goupy (1689-1769), c. 1725 [https://commons.wikimedia.org].

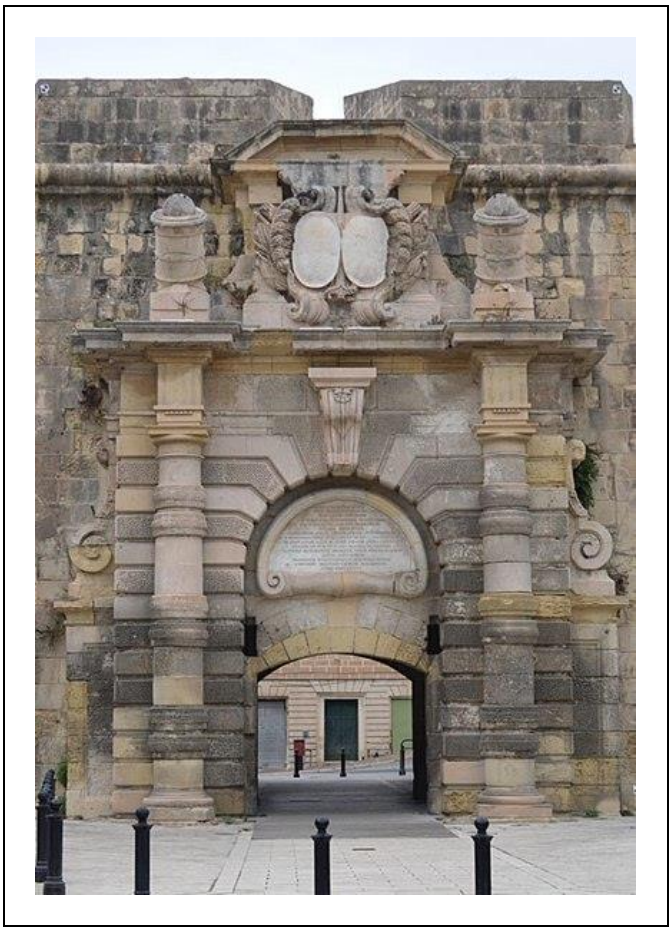


Figure 8. Saint Helen's Gate - Santa Margherita Lines: note the marble plaque above the archway [Continentaleurope, https://commons.wikimedia.org].

4.3. A historical statement

A comprehensive account of the construction of the Firenzuola lines in Latin is included in the inscription in marble on Saint Helen's Gate, the main entrance of these fortifications, a Baroque gateway by the French architect and military engineer Charles François de Mondion (1681-1733) [Continentaleurope, https://commons.wikimedia.org/wiki/File:St_Helen_Gate.jpg, accessed on 8.08.2023] (Figure 8). A free translation reads as follows: "These fortifications, erected to the design of Cardinal Firenzuola, for the greater defence of these harbours, in the reign of Grand Master Lascaris, was suspended owing to the building of the Cottonera defences. Grand Masters Raymond Perellos and Marc'Antonio Zondadari decided respectively to proceed with and to alter the construction. Finally, His Eminence Grand Master António Manoel de Vilhena, in the same way that he completed the other forts, ordered that these defences be

completed to a larger design by more skilled architects, with the approval of the whole Military Order in the year 1736."

The description on Saint Helen's Gate formed the basis of Scicluna's account of 'The Firenzuola Fortifications', which included the Firenzuola Bastion and Firenzuola Curtain, both named after their architect [22]. He nowhere mentions the Santa Margherita fortifications or Santa Margherita enceinte but he does make an important statement regarding their military engineer: "This line of defensive works … were built … under the direction of the Dominican Friar, Vincenzo Maculano da Firenzuola, an eminent engineer who was in the Pope's service, and who was sent to Malta at the request of the Grand Master [Jean-Paul Lascaris Castellar]. The Forte Urbano in Rome was also erected on his designs." [22, p. 222]

5. Discussion

5.1. Maculani and Galileo in the literature on the fortifications of Malta

In 'The Building of Malta' [15], based primarily on authoritative secondary sources, Hughes makes reference to Maculani in his historical account of the Santa Margherita and Cottonera lines as part of the defences of the Grand Harbour [15]. He includes a biographical note on Maculani [15]. He remarks that the Santa Margherita Lines were wrongly attributed to the military engineer 'Francesco Fiorenzuoli' (1470-c.1537) [15]. This engineer could not have been the one involved for two reasons, both based on the time of his demise. Firstly, the Order of Saint John was given the islands of Malta, Gozo and Tripoli (the last of these currently being part of Libya) by Emperor Charles V (1500-1558) as a perpetual fiefdom of the Kingdom of Sicily in 1530, less than a decade from Fiorenzuoli's demise. Secondly, at the time of the Order's arrival in Malta the capital was Mdina, a medieval city towards the centre of the island. Given that the Order was a sea-fearing power, it settled for the maritime town of Birgu, which included an old fort known as Castrum Maris. Works to rebuild it and strengthen the town's defences commenced soon afterwards. The Firenzuola lines were designed and their erection commenced almost a century after his demise.

Furthermore, in his biographical note on Floriani, Hughes states that "Cardinal Vincenzo Maculano da Firenzuola d'Arda was sent to Malta by the Pope" [15, p. 211]. He was not a cardinal at that time. In 'Fortress' [16], based on both primary and authoritative secondary sources, Hughes again refers to Maculani in the context of the historical account of the Santa Margherita and Cottonera lines as part of the outer defences of Valletta [16]. The former was later named the Firenzuola lines after their military engineer [16].

Maculani "was a personal friend of Galileo Galilei" [16, p. 123]. On directing the reader to consult the writings of Paul Galea [23-26] for details of these fortifications [16], Hughes reveals the source of the unsubstantiated claim about Maculani and Galileo. Galea (1913-2006) - a conservative Dominican friar and editor of two local Dominican magazines, *Militia Christi* (*Army of Christ*)

and *Ir-Rużarju* (*The Rosary*) [27] - published a series of five consecutive, weekly articles in *The Sunday Times of Malta* from 3 June 1956 [23-26, 28], addressing "the vital contribution brought to Malta's defences by an illustrious 17th century military engineer, the Dominican Cardinal Vincenzo Maculano da Firenzuola" [23]. These articles did not present any references. In his second article, he claimed that "Father Maculano was an intimate friend of Galileo Galilei" [24]; there is indeed an early reference to Galileo, albeit factually incorrect, in the literature on the history of the fortifications of Malta.

Hoppen's work [17], which is highly analytical and rigorously based on primary and authoritative secondary sources, is concerned with reports on the fortifications of Malta. She outlines in detail Maculani's engagement with respect to Floriana's fortifications, notably in the context of Floriani's approved scheme. The input of both military engineers was referred to in the context of the evolution of the idea to design the Santa Margherita Lines as part of the fortifications of the Grand Harbour. Hoppen noted that "the bitter quarrels over the relative merits of Floriani's and Firenzuola's proposals show that feelings could undoubtedly run high, aggravated by the rivalry of different nationalities" [17, p. 57]. The decision to engage Floriani was likely a move to appease the French and Spanish factions; each wanted the Order to secure the services of a fellow countryman to review the fortifications [17]. The presence of notable Frenchmen in 1645 was indicative that the Order was shifting from the Spanish to the French sphere of influence [17].

In 'The Knight's fortifications: An illustrated guide' [18], which has no references included except for the illustrations, Spiteri mentions Maculani in the context of submitting the design for the Santa Margherita Lines. In the publication 'Fortresses of the Cross' [19], Spiteri cites the AOM [6554, ff. 47-62], which includes Maculani's opinions and his recommendations for the defence of Valletta [20, p. 381]. He discusses at length the history of the construction of the Santa Margherita Lines [19]. In the 'Fortress of the Knights', Spiteri mentions Maculani in the context of Floriani's work [20] - again citing the AOM [6554, f. 49] - and when critically outlining the history of the construction of Santa Margherita Lines [20]. In 'The Art of Fortress Building', Spiteri cites and reproduces Maculani's plan for an "unfinished enceinte on the Santa Margherita heights to be converted into an isolated fort [available at the Vatican Library]. … According to Quentin Hughes, this represents Floriani's earlier unexecuted project for the site." [21, p. 128] Based on the AOM and authoritative secondary sources, Spiteri includes a brief and concise discussion on issues, which Maculani faced with his scheme for Santa Margherita [21]. In none of his texts does Spiteri mention Galileo. He mentions the rapport between the two in his review of De Lucca's book [2] published in 2016: "Vincenzo Maculano da Firenzuola … was the same Firenzuola - Il Cardinal Maculano - who examined Galileo Galilei during his trial in 1633" [29, p. 16]. This observation was noted in the book review of the edited publication 'Lines of Defence: Fortification drawings of the Baroque Age at the National Library of Malta' [30], penned in 2015 and issued in 2019: "Santa Margherita Enceinte is also known as the Firenzuola Enceinte, named after its designer the military architect Cardinal Vincenzo Maculani da Firenzuola. As an

inquisitor, Cardinal Maculani da Firenzuola had presided over the trail and condemnation of Galileo Galilei to indefinite imprisonment." [31, p. 200]

The compendium on the Baroque age complied by De Lucca [3, p. 253], "an annotated anthology of primary sources" [4, p. 290], quotes Karolides, Bald and Sova [32] (a publication which the author did not secure access to consult by the time this article went to print) when discussing Galileo's treatise 'Dialogue': "the verdict of the Inquisition tribunal, which was chaired by the Dominican Cardinal and military engineer called Vincenzo Maculano da Fiorenzuola - a consultant to the Knights of Malta and a severe man who was harsh in his manners and without a shred of compassion - found Galileo 'vehemently suspect of heresy'. … Threatened with torture, Galileo was also required to 'abjure, curse and detest' his views and subsequently sentenced to house arrest in a secluded house at Arcetri, outside Florence, for the rest of his life. Moreover his offending book was banned and, in an action not announced at the trial, the publication of all his works was forbidden by the Catholic Church, including any that he might write in the future."

The rapport between Maculani and Galileo was reported in local parochial media in 2010. This source noted that Galileo's treatment at the trial and the subsequent sentence were less harsh than they are often portrayed in popular contemporary literature [33].

Table 2. Lascaris Towers (mainly based on [19]).

Phase	Name of Tower	Location	Constructed
First Phase	Lippija (also known as Ġnejna)	Mġarr, Malta	1637
	Għajn Tuffieħa (also known as Għajn Mixkuka)	Mġarr, Malta	1637
	Nadur	Rabat, Malta	1637
	Saint George	St. Julian's Malta	1637
	Blat Mogħża (also known as Ta' Capra)	Mġarr, Malta	1637(?)
	Qawra (also known as Fra Ben)	St. Paul's Bay, Malta	1638
	Xuta or Sciutu (also known Wied iż-Żurrieq)	Qrendi, Malta	c. 1640s
Second Phase	Saint Agatha (also known as the Red Tower)	Mellieħa, Malta	1648
	Xlendi	Munxar, Gozo	1650
	Dwejra (also known as Qawra)	San Lawrenz, Gozo	1652

5.2. Maculani and the coastal towers of Malta

There was an extensive defence programme at the time of Maculani's involvement in the design of fortifications of Malta, which included the erection of a series of coastal watchtowers. These works commenced in 1637 under Lascaris. These towers were constructed in two phases between 1637 and 1652 (Table 2): seven were erected on mainland Malta between 1637 and 1638, and a

larger tower and two smaller ones were built in Gozo between 1647 and 1652. Wikipedia states, under the entry for Giovanni Paolo Lascaris, that the "[Lascaris] towers were designed and built by papal military architect, Vincenzo Maculani" [https://en.wikipedia.org/wiki/Giovanni_Paolo_Lascaris]. There are no references in the AOM to suggest that Maculani was consulted on their design, nor is there any documentation proving that he visited them during his stay in Malta. Soon after his departure for Rome ([Archivum Ordinis Melitae, 257, f. 4, National Library of Malta, Valletta], cited in [17, p. 52]), he was promoted to the post of Maestro dei Sacri Palazzi by Urban VIII [34]. Did Pope Innocent X (1574-1655), who succeeded Urban VIII, send Maculani (who had failed to make pope himself due to lack of support from the French faction) to Malta to supervise military works? If he did, it must have been after 15 September 1644, when Maculani was 66 years old, and during the second phase of the towers' construction. It is therefore unlikely that he would have been involved in such a menial assignment.

5.3. Maculani - an able engineer but no friend to Galileo

Galea's assertion, cited above [24], that Maculani was a close friend of Galileo, and Hughes's statement that he was a personal friend [16] are remote from the truth. Although Maculani was a powerful personality in the Church, notably within the Roman Inquisition, the relatively lenient sentence was not his doing but mainly due to individuals in the papal court such as Barberini. The correspondence of 28 April sent in confidence to Barberini by Maculani - who at the time was at Castel Gandolfo with Urban VIII [13, p. 213] - gives an insight to his shrewd, Machiavellian approach to get Galileo to enter a guilty plea judicially (reproduced in full in Gebler [13, p. 213-214]). Maculani "suggested a course, namely, that the Holy Congregation should grant me permission to treat extra-judicially with Galileo, in order to render him sensible of his error, and bring him, if he recognises it, to a confession of the same. … I entered into discourse with Galileo yesterday afternoon, and after many arguments and rejoinders had passed between us, by God's grace I attained my object, for I brought him to a full sense of his error, so that he clearly recognised that he had erred, and had gone too far in his book. And to all this he gave expression in words of much feeling, like one who experienced great consolation in the recognition of his error, and he was also willing to confess it judicially. He requested, however, a little time in order to consider the form in which he might most fittingly make the confession, which, as far as its substance is concerned, will, I hope, follow in the manner indicated."

The tactic of addressing this trial extra-judicially - a smart legal move - was Maculani's. It aimed to bring the trial to an end; otherwise the Inquisition would have had to opt for more rigorous procedure following Galileo's first deposition. The Holy Office wanted to see an end to the case; Barberini had already dropped hints about the course of action and the subsequent judgement to Maculani: the desire was for a lenient judgement for Galileo while maintaining the reputation of the Holy Office. This can be inferred from the same correspondence: "I [Maculani] have thought it my duty at once to acquaint your Eminence with this

matter, having communicated it to no one else; for I trust that his Holiness and your Eminence will be satisfied that in this way the affair is being brought to such a point that it may soon be settled without difficulty. The court will maintain its reputation: it will be possible to deal leniently with the culprit; and whatever the decision arrived at, he will recognise the favour shown him, with all the other consequences of satisfaction herein desired. To-day I think of examining him in order to obtain the said confession; and having, as I hope, received it, it will only remain to me further to question him with regard to his intention, and to impose the prohibitions upon him; and that done, he might have the house [of Niccolini] assigned to him as a prison, as hinted to me by your Eminence." [13, p. 213]

The session was eventually held on 30 April, possibly due to Galileo's health [13, p. 214]. It seems that Galileo bought time to formulate his confession. Whilst in the first deposition, he denied that he defended the Copernican system in the *Dialogue* - at one stage going as far as to assert that he had done the contrary. During the second examination of 30 April he stated that he had overstated his case. On 16 June 1633, Galileo was explicitly threatened with physical torture by Maculani, who was authorised by Urban VIII [35]. Maculani refrained from administering torture due to Galileo's age - he was over 69 years old - and ill health. This was not an expression of goodwill on Maculani's part; it was not at his discretion to decide on this matter. Based on Francesco Bordoni [36], also cited by Finocchiaro [37], Müller argued that it was a tenet of the Inquisition that "frail seniors older than sixty are not to be tortured, but may be threatened at the discretion of the inquisitor" [38]. Thus, Maculani adhered to the procedure allowed by his office.

A final note on this theme relates to Maculani's religious education. Bargrave's source, referred to previously, in which Maculani is portrayed as "always going in black, in his Dominican habit" [11], implies loyalty to his priestly commitment as a member of Order of Preachers. By supporting the Copernican theory, Galileo ran counter to the geocentric cosmological model of Ptolemy (c. 100 - c. 170), who endorsed Aristotle (384-322). The context of the trial was the Counter-Reformation, a critical period for the Catholic Church, where not only was its authority challenged but new interpretations of the scripture were put forward. Galileo challenged Aristotelian science, which was entrenched in the Catholic tradition - if Aristotle was wrong then the Church was wrong, a position which was inconceivable at the time. The Order of Preachers supported and championed Aristotelianism. Two main scholars from the order who interpreted and systematized Aristotle's works were Albertus Magnus (c. 1200-1280), who read theology as an applied science, and Thomas Aquinas (1225-1274) - "one of the three great metaphysicians who ever existed", the others being Plato and Aristotle [39]. Aquinas argued that Philosophy (reason) is independent of Theology (faith). Thus, Galileo's position challenged the foundations of Thomistic thought; Aquinas was promoted as a Doctor Ecclesiae Universalis, Doctor of the Universal [Catholic] Church in 1567, soon after the Council of Trent, the embodiment of the Counter-Reformation. Through the *Dialogue*, Galileo challenged the main foundations of Aquinas's philosophy.

Maculani's examination of Galileo during the trial was based on deductive logic and an analytic inductive method, typical of Aristotelian reasoning.

5.4. Galileo, a disgraced man

It is not surprising that Galileo's name failed to appear notably in scientific and engineering literature. By order of Urban VIII, the sentence handed to Galileo was promulgated and disseminated throughout Europe. All apostolic nuncios and inquisitors received a copy, along with Galileo's abjuration and an order to publicise them [37, p. 26]; "all (or most) scholars agree that one feature of Galileo's trial was most unusual, namely, that his sentence and abjuration were widely published, by order of the pope" [12, p. 727]. The condemnation of Galileo by the Church forced him to recant any of his discoveries - which were based on observations and not just theoretical axioms - that accepted Copernicus's model. The *Dialogue* was condemned and banned in 1634; this was confirmed by the *Index Librorum Prohibitorum* in 1664. Galileo's name was removed from the Index in 1885; he was unequivocally rehabilitated months off the 360th year since his condemnation for endorsing the model of the Polish polymath Copernicus by the first Polish pope in Church history. In the seventeenth and eighteenth centuries, Galileo did not have the standing he has nowadays; he and his works were still censored.

Publications referring to Galileo with respect to Maculani's stay in Malta are limited. An earlier one example is from 1956 by Galea [24], the main source for Hughes [15, p. 148]. A 1858 publication on the history of Malta by Porter refers to Maculani - although he is mistakenly described as an Augustinian friar - but not to Galileo [40]. Crocker's work [5] is the same; both are cited in Hughes [15, 16]. This may be due to either of the following scenarios: (i) the respective authors were not aware of this fact or (ii) they knew but did not consider it relevant to the theme, which, in hindsight, may be a plausible position.

6. Conclusions

In seventeenth-century Malta, the Hospitaller Order of Saint John secured two reputed military engineers, Floriani and Maculani, over the period 1635-1639 through the papal court at the time of Urban VIII. Maculani was initially consulted on Floriani's work by the head of the Roman Inquisition, Cardinal Barberini. Chigi headed the Inquisition Tribunal in Malta from 1634 to 1639, that is, during the temporary residence of both engineers. Being inquisitors, he and Maculani fell under the authority of Barberini. The following are the principal conclusions:

1. The rather romantic idea in the literature on the fortifications of Malta that Maculani was a close friend of Galileo dates back to an article published in 1956 by Galea in Malta's leading newspaper [24]. There is no evidence to support this claim; given Galileo's standing, Maculani was undoubtedly acquainted with his work. Galileo's friends in the Roman curia were of an

even higher rank. These included the head of the Roman Inquisition and other influential members of the papal court. Also, Galileo was admired by the Pope himself; "in 1620, he had even written a poem in praise of Galileo" [41]. From ample documented circumstantial evidence [7, 10-13, 37, 38, 41], it is palpable that Maculani - himself a respected member of the apostolic court - was aware of these interpersonal facts.

2. The comparably lenient sentence in terms of corporal punishment, as compared to contemporaries such as Bruno, was due to directions conveyed by Barberini; Maculani left no stone unturned to ensure a confession from Galileo, even threatening physical torture. Galileo's "guilty plea of favouring heliocentrism without heretical intention triggered an automatic examination of his private beliefs under torture (in his case, threat of torture), a new procedure adopted by the Holy Office around the turn of the seventeenth century" [12, p. 724].
3. Maculani's stay in Malta involved advising on: (i) Floriani's designs with respect to the outer defences of Valletta and (ii) the Santa Margherita Lines - according to Hughes, his proposal for the latter was indeed Floriani's project [21] - but not on the coastal towers of Malta.
4. Research on Maculani, Galileo and the fortifications of Malta may not only have been hampered by limited literature on Maculani - there is far more ample literature on Galileo - but also due to the fact that Galileo's works were on the *Index Librorum Prohibitorum* until the late nineteenth century. Lack of reference to him in the dogmatic Catholic environs marked by ignorance, arrogance and superstition, is comprehensible. Galea's article [24] was published less than a decade after his tricentennial rehabilitation as a Catholic hero [37].

Acknowledgement

The author would like to thank his colleagues from the International Institute for Baroque Studies, University of Malta, most notably Professor Denis De Lucca and Dr. Stephen Spiteri, for their academic support with respect to Baroque studies and fortification design, respectively. Thanks are also due to Professor Francis Ciappara at the same institute for assistance on matters relating to the Inquisition. Final thanks go to Dr. Hermann Bonnici, a scholar at the same institute versed in the history and practice of architectural restoration, including the fortifications of the Order in Malta.

References

[1] D. De Lucca, *Jesuits and Fortifications: The contribution of the Jesuits to military architecture in the Baroque Age*, Brill, Boston, 2012, 185-234.

[2] D. De Lucca, *Tomaso Maria Napoli: A Dominican friar's contribution to military architecture in the Baroque Age*, International Institute for Baroque Studies. University of Malta, Malta, 2015, 7-55.

[3] D. De Lucca, *The Baroque Mind*, International Institute for Baroque Studies. University of Malta, Malta, 2018, 122-271.
[4] L. Bianco, Kultúrne Dejiny/Cultural History, **10(2)** (2019) 290-293.
[5] J. Crocker, *History of the fortifications of Malta*, General Staff, Malta, 1920, 14, 36.
[6] L. von Ranke, *History of the popes; their church and state*, Vol. III, George Bell and Sons, London, 1896, 400-407.
[7] F. Beretta, *Maculani, Gaspare, known as Firenzuola*, in *Biographical Dictionary of Italians*, vol. 67, Institute of the Italian Encyclopedia, Rome, 2006, 1, available at https://www.treccani.it/enciclopedia/maculani-gaspare-detto-il-firenzuola_(Dizionario-Biografico)/.
[8] W.A. Wallace, *Baliani, Giovani Battista (1582-1666)*, in *Encyclopedia of the Scientific Revolution: From Copernicus to Newton*, W. Applebaum (ed.), Routledge, New York, 2000, 71-72.
[9] G. Galileo, *Dialogue concerning the two chief world systems*, Giovanni Batista Landini, Florence, 1632.
[10] G. de Santillana, *The Crime of Galileo*, University of Chicago Press, Chicago, 1962, 258-261.
[11] J. Bargrave, *Pope Alexander the Seventh and the College of Cardinals*, J.C. Robertson (ed.), The Camden Society, London, 1867, 43-44.
[12] H.A. Kelly, Church Hist., **85(4)** (2017) 724-761.
[13] K. von Gebler, *Galileo Galilei and the Roman Curia*, Kegan Paul, London, 1879, 201.
[14] S. Greenblatt, *The Swerve: How the World Became Modern*, W.W. Norton & Company, New York, 2011, 255.
[15] Q. Hughes, *The Building of Malta during the period of the Knights of St. John of Jerusalem. 1530-1795*, Alec Tiranti, London, 1967, 31-32, 200, 210-211.
[16] Q. Hughes, *Fortress: Architecture and military history in Malta*, Lund Humphries, London, 1969, 123-126, 148.
[17] A. Hoppen, *The Fortification of Malta by the Order of St. John 1530–1798*, Scottish Academic Press, Edinburgh, 1979, 45-55, 57, 71-78, 188-191.
[18] S. Spiteri, *The Knights' Fortifications: An illustrated guide of the fortifications built by the Knights of St. John in Malta*, Print Services Limited, Malta, 1989, 107-114.
[19] S. Spiteri, *Fortresses of the Cross: Hospitaller military architecture (1136-1798)*, Heritage Interpretation Services, Malta, 1994, 375, 401-412, 489-495, 666.
[20] S. Spiteri, *Fortress of the Knights*, BDL Publications, Malta, 2001, 274, 290-294.
[21] S. Spiteri, *The Art of Fortress Building in Hospitaller Malta*, BDL Publications, Malta, 2008, 102-103, 128, 136-137.
[22] H.P. Scicluna, *Buildings and Fortifications of Valletta*, in *Malta and Gibraltar Illustrated*, A. Macmillan (ed.), W.H.L. Collingridge, London, 1915, 199-223, 221-222.
[23] P. Galea, The Sunday Times of Malta, **1830(June 3)** (1956) 4.
[24] P. Galea, The Sunday Times of Malta, **1831(June 10)** (1956) 4.
[25] P. Galea, The Sunday Times of Malta, **1833(June 25)** (1956) 4.
[26] P. Galea, The Sunday Times of Malta, **1834(July 1)** (1956) 6-7.
[27] M.J. Schiavone, *Dictionary of Maltese Biographies*, vol. 2, Pubblikazzjonijiet Indipendenza, Pietà, 2009, 882.
[28] P. Galea, The Sunday Times of Malta, **1832(June 17)** (1956) 4.
[29] S. Spiteri, Baroque Routes Newsletter, **11** (2016) 16-18.

[30] D. De Lucca, S. Spiteri and H. Bonnici (eds.), *Lines of Defence: Fortification drawings of the Baroque Age at the National Library of Malta*, International Institute for Baroque Studies. University of Malta, Malta, 2015.
[31] L. Bianco, Eur. J. Sci. Theol., **15(6)** (2019) 197-202.
[32] N.J. Karolides, M. Bald and D.B. Sova, *100 Banned books: censorship histories of world literature*, Checkmark Books, New York, 1999, 197-200.
[33] P. Spiteri, *Dawn l-ismijiet strambi ta' nies barranin min jahbtu?*, in *Festa 2010. Madonna tal-Karmnu*, Fgura, Malta, 2010, 115, 117, 119, 121, 123, 125.
[34] J. Catalano, *De magistro sacri palatii apostolici*, Fulgoni, Romae, 1751, 158-163.
[35] D. Berti, *Il processo originale di Galileo*, Cotta & Company, Roma, 1876, 118-119.
[36] F. Bordoni, *Tribunal Indictum in Causis Fidei*, Corbelletti, Rome, 1648, 576.
[37] M.A. Finocchiaro, *Retrying Galileo. 1633-1992*, University of California Press, California, 2005, 275-294, 411.
[38] A. Müller, *Galileo Galilei*, Max Bretschneider, Rome, 1911, 457.
[39] E. Gilson, *The Unity of Philosophical Experience*, Sheed and Ward, London, 1938, 324.
[40] P. Whitworth Porter, *A history of the fortress of Malta*, P. Cumbo, Valletta, Malta, 1858, 144-146.
[41] M.A. Finocchiaro, *The Routledge Guidebook to Galileo's Dialogue*, Routledge, Taylor and Francis, London, 2014, 44-49.