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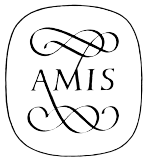

Todini's Golden Harpsichord Revisited

Herbert Heyde

The so-called "Golden Harpsichord" is the only surviving object of the Galleria Armonica, a once private museum in Rome founded by Michele Todini in 1650 (fig. 1a). The name Golden Harpsichord is given to a sculptural ensemble with a single-manual, 2 x 8′ harpsichord in a lavishly decorated case at its center. It is flanked by two sculptures representing Polyphemus and Galatea, who define the iconographic theme of the whole work. Initially, a mechanical bagpipe, associated with Polyphemus and played by a particular tastatura mounted beneath the keyboard of the harpsichord, also was part of the ensemble. After Todini's death in 1690, the Galleria Armonica was transferred to the palazzo of its new owner, Marchese Giovanni Battista Verospi. In 1690–93, the Golden Harpsichord was redesigned, receiving its present layout with Galatea standing sideways instead of seated in front of the harpsichord. In 1796 or shortly after, the Galleria was disposed of except for the Golden Harpsichord that at that time lost, however, its built-in mechanical bagpipe. Thereafter, the Golden Harpsichord changed hands several times and was bought in about 1864 by Comte Etienne-Gilbert-Eugène de Sartiges, then French ambassador to the Vatican (1864–68). After his tenure in Rome, Sartiges took the Golden Harpsichord to Paris and exhibited it a few times, first in 1872 at the South Kensington Museum in London and then in 1878 at the World Exhibition in Paris. His heirs showed it for the last time in 1900 at the Exposition universelle internationale in Paris, subsequently selling it to the Parisian antique dealer Weisshaupt. Thatcher Magoun Adams in New York purchased it from Weisshaupt in 1901–02 for his sister Mary Elizabeth Adams Brown who provided the basis for the musical instruments collection of the Metropolitan Museum of Art in New York.[1] In 1902, she added it to her donations to the Metropolitan Museum, and ever since, the Golden Harpsichord has been a highlight of its Crosby Brown Collection of Musical Instruments (accession no. 89.4.2929).

1. According to a letter of March 19, 1901, from T. M. Adams to Mary E. Brown, the sale price was 22,500 Francs (The Metropolitan Museum of Art in New York, Department of Musical Instruments, Archive [Correspondence Mary E. Brown]).

After the Galleria Armonica declined, starting in 1796, the knowledge about the Golden Harpsichord's history faded and became steeped in legend. Todini's name fell into oblivion, as did the meaning of the two main sculptures, at least in part.[2] The catalog of the London exhibition of 1872 wrote only vaguely that the sculptures would "represent allegorically the power of music."[3] When the Golden Harpsichord came to New York, all knowledge sank temporarily into obscurity; the 1903 catalog of the Crosby Brown Collection of Musical Instruments treated the sculptures as unidentified and showed them assembled around the keyboard of the harpsichord, as if they were playing music together.[4] The 1904 edition treated the statues even as unrelated to the harpsichord, noting that they were made "after the style of Michael Angelo."[5] Some years later, they were detached from their rocks and placed on rectangular wooden pedestals.[6] Like the London catalog cited above, the New York catalog added a story according to which the Golden Harpsichord was once owned by Doria Olimpia Maildachini Pamphili, the sister-in-law and famous confident of Pope Innocent X. This story, based on hearsay and legend, first was reported in 1859 by Baron Pietro Ercole Visconti, then the Commissario delle Antichità in Rome.[7] The New York catalog of 1904 embellished this legend further, however, by indicating the Golden Harpsichord as a gift of the Pope to Doria Olimpia Pamphili. In the following four to five decades the positive knowledge about the Golden

2. The catalog of the 1900 Exposition universelle in Paris still identifies the two sculptures of the Golden Harpsichord as Polyphemus and Galatea. See *Musée rétrospectif de la Classe 17: Instruments de musique: Matériel. Procédés et Produits à l'Exposition universelle internationale de 1900, a Paris. Rapport du Comité d'Installation* (Paris: Exposition universelle, 1900), 48.

3. Carl Engel, *Descriptive Catalogue of the Musical Instruments in the South Kensington Museum.* Preceded by an Essay on the History of Musical Instruments (2nd ed., London: George E. Eyre & Spottiswoode, 1874), 352.

4. Photo see: *The Metropolitan Museum of Art. The Crosby Brown Collection of Musical Instruments of All Nations: Catalogue of Keyboard Instruments.* Prepared Under the Direction, and Issued with the Authorization, of the Donor [Crosby and Mary Elizabeth Brown] (New York: The Metropolitan Museum of Art, 1903), no. 89.4.2929.

5. *The Metropolitan Museum of Art. The Crosby Brown Collection of Musical Instruments,* ed. 1904, 267.

6. Department of Musical Instruments, Archive, photos dated 1911; in print see Stewart Pollens, "Michele Todini's Golden Harpsichord: Changing Perspectives," *Music in Art* 32, 1–2 (2007): 142–144.

7. Pietro Ercole Visconti, *Cembalo figurato del secolo XVII attribuito al celebre Algardi con ornamenti di scultura e di bassorelievo in legno dorato supposto di Doria Olimpia Maildachini Pamphyli* (Rome: Tip. della Belle arti, 1859).

Harpsichord did not increase. It went by the name "Pamphili harpsichord," even was dubbed "great gilded piano," and was displayed both with and without the two main sculptures.[8]

Research on the Golden Harpsichord got under way after 1948, when the Museo di Venezia in Rome acquired a terracotta model that soon after became identified as related to the Golden Harpsichord. In 1954, the director of that museum, Antonino Santangelo, published an exhibition catalog with an entry about the model,[9] and in 1956 Emanuel Winternitz, curator at The Metropolitan Museum of Art in New York, wrote an article about the harpsichord.[10] He introduced the name Golden Harpsichord, while Todini's original name was *la macchina di Polifemo, e Galatea* (Machine of Polyphemus, and Galatea). Although the name Golden Harpsichord refers only to its outer appearance and, therefore, is somewhat misleading, it soon became universally adopted. Winternitz also recovered the small book, *Dichiaratione della Galleria armonica*, which Michele Todini had published in 1676 as introduction to his Galleria.[11] After Winternitz's 1956 article, a three-decade period of silence followed until 1988 when new interest developed. Patrizio Barbieri, with his profound archival research, unearthed the related records in the archives of Rome, added numerous details to Todini's narrative, supplemented his biography, and appended the names of various artists and artisans.[12] Following Barbieri's groundbreaking work, other researchers supplemented knowledge about the Golden Harpsichord.[13]

8. Rebecca M. Lindsey, *A Brief Account of the Musical Instruments Department* (New York, Metropolitan Museum of Art, 2012), 45, 52. Unpublished manuscript.

9. Antonino Santangelo, *Museo di Palazzo Venezia. Catalogo delle sculture* (Rome: De Luca, 1954), 93.

10. Emanuel Winternitz, "The Golden Harpsichord and Todini's Galleria Armonica," *Metropolitan Museum of Art Bulletin* 14, 1 (1956): 149–156. Reprinted in: *Musical Instruments and Their Symbolism in Western Art* (New Haven: Yale University Press, 1967), quotations after second edition (1979), 110–114.

11. Michele Todini, *Dichiaratione della Galleria armonica / Eretta in Roma / Da Michele Todini / Piemontese di Saluzzo, nella sua habitatione, posta all'Arco della Ciambella* (Rome: Francesco Tizzoni, 1676). Reprint: *Musurgiana* 2 (Lucca 1988), Introduction by Patrizio Barbieri.

12. Patrizio Barbieri, "Michele Todini's galleria armonica: its hitherto unknown history," *Early Music* 30, 4 (November 2002): 565–582; Barbieri, "Michele Todini," *Roma Barocca Bernini, Borromini, Pietro da Cortona*, ed. by Marcello Fabiolo and Paolo Portoesi (Milano: Electa, 2006): 304–305.

13. Stewart Pollens, "Michele Todini's Golden Harpsichord: An Examination of the Machine of Galatea and Polyphemus," *The Metropolitan Museum of Art. Metropolitan Museum Journal* 25 (1990): 33–47; Pollens, "Michele Todini's Golden Harpsichord:

Despite all research, knowledge remains sketchy, and some assumptions are in need of revision, including the dating of the Golden Harpsichord, its iconography, and the interpretation of its two protagonists, Polyphemus and Galatea. Winternitz, who laid the foundation for the current understanding, assumed that the iconography of Polyphemus and Galatea was inspired by Ovid's *Metamorphoses*. In that narrative poem, Polyphemus, the savage monster, killed Galatea's lover out of wrath and jealousy. Winternitz saw the harpsichord first and foremost as an instrument for making music and the statues only as decoration. He called the whole ensemble with the harpsichord and the mechanical bagpipe a "one-man orchestra," or a sort of claviorganum, incorporated in a group of sculptures. He believed that Galatea initially had a lute in her hands, which was later lost. Imitated by the harpsichord, Galatea would play music together with Polyphemus on the bagpipe, "thus achieving a combination of winds and strings."[14] The current article takes a different approach. Based on the observation that the statue of Polyphemus represents a stately, handsome man rather than a giant monster, and Galatea an appealing young woman rather than a callous, frightened, and rejecting water nymph, the underlying story can be traced to a different literary tradition: to the *Idylls* of the third-century BCE Greek poet Theocritus, which tells a diverse version of the Polyphemus myth. As for the dating of the Golden Harpsichord, Winternitz understood the current design with the standing Galatea as Todini's original version. In 2002, Barbieri gave confirming evidence that Todini's Galatea originally was seated in the shell and that the current standing Galatea was a later replacement. Building on this evidence the current article makes a case for a comprehensive redesign shortly after Todini's death (1690), when the Galleria Armonica was transferred to the Palazzo

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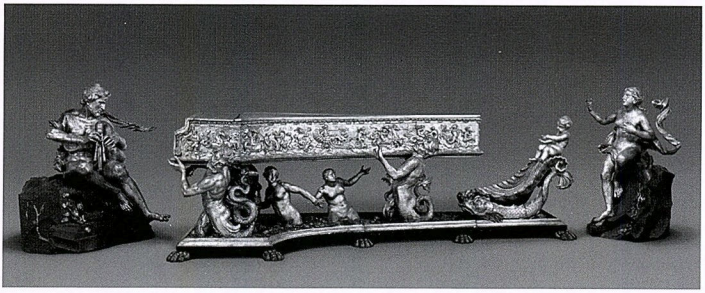
Changing Perspectives," 143–151, Maria Giulia Barberini, et al., "Model of the Todini harpsichord," *Marvels of Sound and Beauty. Italian Baroque Musical Instruments* (Florence: Giunti, 2007), 121–126, see also Luisa Cervelli, *La Galleria armonica: Catalogo del Museo degli strumenti musicali di Roma* (Roma: Istituto Poligrafico e Zecca dello Stato, 1994), 304–305; Laurence Libin, "Keyboard Instruments," *The Metropolitan Museum of Art Bulletin* 47, 1 (Summer 1989): 20–21; Libin,"The Outrageous Instruments of Michele Todini," unpublished lecture at Aston Magna Academy, Great Barrington (MA), 1978 (Department of Musical instruments, files); Wendy Powers, "The Golden Harpsichord of Michele Todini (1616–1690)," *Heilbrunn Timeline of Art History* (New York: The Metropolitan Museum of Art, 2000): http://www.metmuseum.org/toah/hd/todi/hd_todi.htm (October 2003).

14. Winternitz, "The Golden Harpsichord and Todini's Galleria Armonica," 114.

(a)



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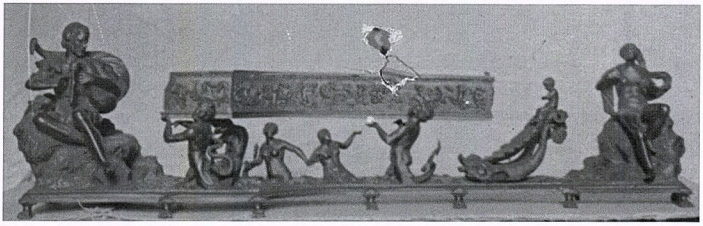

(c)

FIGURE 1. The Golden Harpsichord and its two models. (a) The Golden Harpsichord, Rome, 1692–93. Wood, gilded and painted.The Metropolitan Museum of Art in New York, no. 89.4.2929. Photo courtesy of The Metropolitan Museum of Art, New York. (b) Model 2, Rome, about 1691.Terracotta. Whereabouts unknown. Photo1930s. The Metropolitan Museum of Art, New York, Department of Musical Instruments, Archive. Photo courtesy of The Metropolitan Museum of Art, New York. (c) Model 1, Rome, 1690. Terracotta. Museo di Venezia, Rome, inv. 10373. Photo permission of Museo di Venezia, Rome. See color photos p. 182.

Verospi. A new approach to the well-known terracotta model kept in the Museo di Venezia in Rome and the identification of a second model make it possible to track the steps of the redesign. Other interpretations in need of revision hold that the "machine of Polyphemus" allegedly was an organ rank and the terracotta model a replica produced in the nineteenth century. Rather, it was a mechanical bagpipe, concealed in the mountain on which Polyphemus is seated with a sculpted bagpipe in his hands. The article reads the iconography of the frieze of the harpsichord's bentside as inspired by Loreto Vittori's opera *La Galatea* (1639) and suggests that Todini presented the Golden Harpsichord to the public by narrating the story of Polyphemus and Galatea and by playing the sordellina machine and harpsichord to their characterization.

Todini sided with the modern trends of his time to create crossovers among the arts, which found its most popular expression in opera. In the Golden Harpsichord, Todini blends visual arts, music, and instrument making to form kind of a frozen opera scene. In a more general sense, the article attempts to determine the place of the Golden Harpsichord in the history of ideas and to understand the musical and artistic ideas Todini pursued, approached from the vantage point of seventeenth-century thinking and its intellectual and artistic currents and trends.

Who was Michele Todini?

Though the aforementioned literature provides the basic facts about Todini's life, here is a fresh look at it, at his character and work. Michele Todini (Soluzzo 1616–Rome1690) was an erudite musician in Rome who made his living first and foremost as an instrumentalist. He played double bass, trombone, violin, organ, and other instruments in the bands of Castel Sant'Angelo, the Campidoglio, and in the bands of Cardinal Costaguti and the Congregazione di Santa Cecilia. In the latter he also served for several years as *guardiano* (i.e., caretaker) of the musical instruments and in the 1670s and 80s as *decano* (senior musician) at the Campidoglio.[15] Moreover, Todini designed, invented, and built musical instruments, and he was the creator of the Galleria Armonica.

15. Part of his obligation was to represent the interests of his fellow musicians and to recommend new members for the band. On March 4, 1681, as dean of the musicians of the Campidoglio, Todini and two other musicians recommended the trombonist Giovanni Travagli for Supernumerary of the band. (Rare Books and Manuscripts

Nothing is known about Todini's youth in Saluzzo (Piedmont). He recounts only that he arrived in Rome as "a poor but well educated young man in the blossom of his life," which may have been about 1636–40, at the age of twenty to twenty-four.[16] His knowledge of Latin and music theory, as well as his literacy, suggest that Todini attended school in addition to his education as musician. He presumably had training in woodworking and making string instruments, but he did not pursue a career as instrument maker.[17] Beside his work as musician, he was more interested in improving and developing instruments: "In the early years in Rome I have built various instruments, among others two harpsichords, two violins, two violoni, further some viole da braccio; not satisfied to see them as they were commonly made, I often managed to upgrade them."[18] Most, if not all of them, featured gadgets or novelties. One of the two violins had five strings and a particular arrangement of the tuning pegs; the other incorporated a piccolo violin that could be played as a second register. One violone was a large contrabasso he himself played publicly; another invention was a viola da gamba that could be played as soprano, tenor, and bass viol "without moving the hand from the usual place on the finger board."[19] One harpsichord with two registers had a particular sordino-stop; the other was a cembalo triarmonico on which one could play the three Greek genera, the enharmonic, chromatic, and diatonic tonal systems with their respective scales. Each genus had its own set of keys so that there were altogether 3 x 12 = 36 keys and tones to an octave. This concept indicates that Todini's cembalo triarmonico stood in the tradition of the archicembalo of Nicola Vicentino (1555). None of these instruments has survived. However, from the period after the completion of the Galleria a pochette survives in the Museum of Musical Instruments in Hamamatsu (Japan). Its label reads: "Michaele Todini fecit / Romæ Anno Domini 1679."

J. & J. Lubrano, Great Barrington (MA). Photocopy of the autograph, ca. 1990. The Metropolitan Museum of Art in New York, Department of Musical Instruments, files, sub 89.4.2929).

16. Todini, *Dichiaratione*, 27, 38.

17. According to Winternitz, Todini was a maker in the first place and involved visual artists for purely artistic work such as the design of the Golden Harpsichord.

18. Todini, *Dichiaratione*, 78: "Hauendo, ne'primi anni che fui in Roma, fabricato diuersi strummenti, tra gli quali due Cimbali, due Violini, due Violoni, oltre alcune Viole da braccio, e non contendanomi vederli, come sogliono fabricarsi ordinariamente; volsi in molti di quelli aggiungervi qualche cosa."

19. Todini, *Dichiaratione*, 80.

Todini's magnum opus was the Galleria Armonica, begun in 1650.[20] He started with the Greater Machine, of which in 1654–55 four of the planned seven instruments were completed and installed. From that year on, Todini made the Galleria Armonica accessible to visitors, gave presentations, and continued working on the other instruments, such as the sordellina automaton, the organ, mechanical lira, and violin. In 1656, the plague broke out in Rome and the Gallaria was closed for two years by city mandate. Upon reopening in 1658, the organ was ready for installation as the fifth instrument of the Greater Machine. For the next couple of years the Galleria enjoyed lively attendance; afterward the attendance tapered off and Todini ran out of funds when his sponsor, Duke Paolo Giordano Orsini II of Bracciano, died in 1656. Negative rumors arose about how he conducted his Galleria, and people wondered if he had nothing more to show.[21] This situation worsened to the point that, in 1661–63, he considered closing the Galleria for good as a failed project. In that annus horribilis he was haunted by the question of how to manage completing the Galleria. Eventually, he decided to move on. As he failed to raise funds, Todini began borrowing increasing amounts of money to pay the artisans and instrument makers who worked for him.[22] Todini had the unrealistic idea that the completed Galleria would generate enough income from visitors to repay the debts, but even a papal permit issued in 1674, which allowed him to charge admission, did not help.

Finally, in 1677, when more than thirty creditors took him to court and demanded their money back, Todini's scheme collapsed. The creditors, with Marquese Mario Verospi the principal with a share of 40%, imposed a foreclosure on the Galleria and demanded its sale in order to recover their money. All in all, the amount owed was about 9,100 scudi, an enormous sum. To prevent the sale, the distressed Todini resorted to a ploy and rendered the four machines dysfunctional by dismantling essential parts of his inventions and in this way urged the creditors to an agreement. Drafted on August 26, 1677, the agreement included:

1. The creditors became the legal owners of the Galleria Armonica and would sublet the apartment with the Galleria to Todini.
2. Todini bound himself to restore the instruments to playing condition.

20. Todini, *Dichiaratione*, 88.

21. Todini, *Dichiaratione*, 35–36.

22. Barbieri, "Michele Todini's galleria armonica," 566–67; he lists various creditors and the amounts they loaned Todini.

3. The creditors paid him 5 scudi per month as compensation for giving demonstrations and for doing maintenance work two days a week.
4. If the sale of the Galleria should yield more than 9,100 scudi, the surplus would go to Todini.

However, the latter provision did not materialize. A rough estimate shows that the sum of 9,100 scudi approximately equaled the amount Todini had spent for having the instruments built, for furnishings, and for paintings to embellish his Galleria.[23] The deal with the creditors is proof that Todini was not the builder of the instruments but rather the mastermind and entrepreneur who had developed the Galleria. Athanasius Kircher, who knew of that "immensus sumptus" (vast expense), called Todini in Latin eloquently "author," meaning originator, creator, and inventor of the Galleria.[24] This was a correct assessment.

The court papers show that Todini lived as a bachelor in a rented apartment at Via dell'Arco della Ciambella, a house owned by the Confraternità dei Santi Benedetto e Scholastica. There he also died at seventy-four in 1690, a bachelor and in debt, having struggled his whole life to make ends meet. In his apartment, he displayed his Galleria in three rooms, while he lived, worked, and slept in the fourth. Had he had a workshop outside of his apartment to manufacture harpsichords, organs, and clocks, this would have been listed in the court papers. He certainly did all experimental, inventive, and small-scale instrument-making work in his private room.

According to what can be gathered, Todini was an idealist who lived for his grand ideas. From his youth, he was open to the modern intellectual and artistic trends of his time, absorbed them fully, and made them the driving force of his work. Unfortunately for posterity, Todini did not disclose the precise workings of his machines but haughtily posits in chapters 8 and 13 of his *Dichiaratione* that the inventor should not disclose his secrets but keep them for himself until the common people (*gli*

23. Examples of the purchase power of the scudi: Reiff received 150 scudi for carving the Golden Harpsichord and the pilgrim, Onofri for gold leaf and gilding 300 scudi. The 1644 inventory of instruments owned by Cardinal Antonio Barberini lists the following prices: a spinet–30 scudi, a large harpsichord-90 scudi, an organ combined with harpsichord and spinet, all enclosed in a large chest covered with gold-pressed leather and other decorations–180 scudi. See Frederick Hammond, *Music & Spectacle in Baroque Rome: Barberini Patronage under Urban VIII* (New Haven: Yale University Press, 1994), 95.

24. Athanasius Kircher, *Phonurgia nova, sive, Conjugium mechanic-physicum artis & natvrae paranympha phonosophia concinnatum* (Kempten: Rudolph Dreher, 1673), 170.

huomini volgari) had sufficient knowledge to understand them. Todini followed this unwise ideology and, therefore, remained mostly vague when it comes to precise descriptions of his machines. His secretiveness became a practical issue when he was taken to court in 1677–78. When his creditors threatened him with forced sale of the Galleria, he dismantled essential parts of the instruments and took asylum with them in the church Santa Maria dell'Anima. His secret-mongering caused his inventive work to remain unknown and has contributed to minimizing his place in history. Nevertheless, Todini deserves to be remembered as a man of great ideas who, in his Galleria Armonica connected the four main objects with the concept of universal harmony and created a synthesis of instrument making, mechanics, visual arts, and music that rivaled opera, that genre epitomizing the Baroque conception of artistic unity.

The Galleria Armonica as an Image of Universal Harmony and the Relationship between Kircher and Todini

Winternitz referred to Todini's Galleria Armonica as a musical instruments museum. At a first glance, this label may appear correct, but was it meant that way, as a collection and display of various sound producing instruments, to enjoy eye and ear, and to study? The objects of the Galleria were not randomly collected but specially designed for it following particular ideas: three rooms displayed two automatons ("fortress" and "pilgrim") and two multiple instruments ("Golden Harpsichord" and "Greater Machine"). The former were controlled by barrels and driven by weights, the latter played by keyboards. Todini classified the first couple as *orologi* (clocks), the second as *armoniche* (harmonic instruments) and derived from this term the name Galleria Armonica.[25] Each of the four objects was also a work of the visual arts: a castle-like building, a statue in a scenery, a sculptural ensemble with a harpsichord, and a group of instruments adorned with a painting and sculpted stands. Besides, each object featured specific mechanical contrivances: in the fortress, astronomical displays and a mechanism to govern the alternate beating of the bell; in the pilgrim, a mechanism to control the move-

25. The name "mathematical machines" for the clocks, or automatons, was used in the permit of the Camera Apostolica of May 30, 1674, which granted Todini permission to collect an admission fee, and in deeds regarding the settlements of the debts in 1690. See Barbieri, "Michele Todini's galleria armonica," 581.

ment of a rosary and a pilgrim's baton; in the Greater Machine, a system of trackers to regulate the combination of seven instruments from a principal keyboard. Other elements were the bowing mechanisms for lira ad arco and violin, and the entire sordellina apparatus. These mechanical elements and appliances add another feature to the Galleria Armonica atypical of regular musical instruments. The substitution of bodily motions by mechanical gadgets was a matter of great interest in the seventeenth century and an offshoot of the scientific revolution. A major proponent of this trend was René Descartes (1596–1650) who taught that all movements of the body potentially could be substituted by wheels, levers, cogs, pistons, and cams.[26] When Todini came to Rome, he was fascinated by these ideas and studied Vitruvius and the automaton theater, *Nauplius*, by Heron of Alexandria (first century CE).

To Todini, technological innovation was not an end in itself but also a conducing means to frame a complex, overarching idea: the idea of universal harmony. It is the ancient understanding of harmony that, in the seventeenth century, though tapering off, was still powerful and embraced by many great thinkers, including Johannes Kepler, Robert Fludd, Marin Mersenne, and Athanasius Kircher. They believed that simple number ratios would govern the planetary system (harmonia or musica mundana), balance man's body and soul (musica humana), and underlie music in a narrower sense (musica instrumentalis). This tripartite division of harmony (musica) is quite obvious in the four objects and three rooms of the Galleria: the fortress with its astronomical displays stands for musica mundana (room 1), the pilgrim (room 1) and the Golden Harpsichord (room 2) for musica humana, and the Greater Machine for musica instrumentalis (room 3) as that form of harmony that is farthest away from the spiritual source. Further details support this understanding:

The clock in form of a fortress ***(l'orologio fatto in forma d'una Fortezza)*** was a wooden structure with a tower that reached close to the ceiling. Its steeple housed the figures of two sentinels who, every full hour, alternately beat a twenty-pound bell. Further down one could see the spherical planet Earth, which indicated the hours of the day. On the right side

26. Derek J. de Solla Price, "Automata in History. Automata and the Origins of Mechnism and Mechanistic Philosophy," *Technology and Culture* 5, 1 (Baltimore: The Johns Hopkins University Press, Winter 1964): 9–23. See also Joseph Rykwert, "Organic and Mechanical," *Anthropology and Aesthetics* 22 (Autumn, 1992): 11–18.

of the architrave was a display of the zodiac with the current month and the number of days per month. On the left side, the visitor saw the moon indicating the current day of the month, and in the middle was a clock for the hours and minutes. From this imagery one can conclude that Todini sided with the pre-Copernican geocentric model of astronomy that was still the official one in Catholic Rome: heaven was a "fortress" and a central bulwark with Earth and Man at its center, understood as divine harmony of the universe. In this sense, the wooden structure of the fortress was obviously meant as a symbol of the cosmos.

The pilgrim ***(il peregrino)*** was a life-size statue of a man with baton and hat kneeling in front of an installation of Saint Jerome (Hieronymus) in the lion's den. The pilgrim said a rosary that had the form of a moving clock dial that nudged forward in his hands. At one, two, and three quarters of the hour a short Ave Maria sounded, and at the full hour a longer Pater noster. The pilgrim's baton indicated the elapsed hours and thus served as a clock. All was controlled by a pinned barrel. In the perspective of seventeenth-century Catholic Rome, the pilgrim was a metaphor for any Christian's journey to God, and Saint Jerome was the epitome of pilgrimage. In this sense Christian life was regulated by praying and singing, based on the concept of simple and uninterrupted regularity as a form of harmony. It was a symbol of how cosmic harmony percolated the life of a Christian. This must surely have been in Todini's mind as the religious aspect of musica humana.

The Golden Harpsichord ***(la macchina di Polifemo, e Galatea)*** is the secular antipode of the pilgrim and the mundane part of musica humana. It refers to the worldly side of man's life, to love and emotional life. More specifically, the Golden Harpsichord is about the balance between love and unrequited love and the power that music may exercise on man's emotions. Universal harmony bears out in the interpersonal relations.

The Greater Machine ***(la macchina maggiore)*** was a group of seven mechanically connected instruments: *cimbalo grande, spinettone* (a large square spinet), *spinettina all'ottava alta* (a small octave spinet), *tiorbino* (a spinet with gut strings, imitating the lute),[27] *organo* (an organ with "many

27. According to the description of the macchina maggiore by Kircher (*Phonurgia nova,* 169), the tiorbina was a spinet equipped with gut strings to imitate the sound of the lute. See also Grant O'Brien and Francesco Nocerino, "The tiorbino: an unrecognized instrument type built by harpsichord makers with possible evidence for a

registers," as Todini writes), finally a *lira ad arco* and a *violino* whose strings were excited mechanically by regular bows, not rosined wheels.[28] All instruments were controlled by the keyboard of the cimbalo grande, that is, played, activated, deactivated, and set to playing certain combinations of instruments and organ registers. The group was comprised of instruments that substituted for the main types of instruments in practical use: wind instruments (organ), plucked instruments (cembalo, spinets, tiorbino), and bowed instruments (violin, lira). In this sense the Greater Machine stood for musica instrumentalis, for music in a narrower sense as a symbol of universal harmony.

From the previous analyses it can be concluded that the Galleria Armonica was not a collection of musical instruments in a modern sense, randomly put together, but a well-planned organism that embodied a particular world view and is a visual, aural, and intellectual representation thereof. As such, it is a unique documentation of seventeenth-century thinking. It is interesting to read in *Dichiaratione* chapter 12 that automatons like the fortress could also be found in Paris, Amsterdam, and elsewhere, as well as on the towers in Italy—but, Todini says, "also in the rooms of Roman princes, one finds [clocks] such as mine. . . ."[29] Nonetheless, Todini associated with them a particular philosophical idea, the concept of universal harmony.

Notably, the Jesuit scholar Athanasius Kircher in his *Musurgia universalis* (1650) pursued very similar ideas regarding technology and the concept of universal harmony. Already, its frontispiece shows a symbolic Musica as a female figure surrounded by an angelic choir in the heavens. She is a metaphor of universal harmony, seated on the globe in the center of the zodiac, with the lyre of Apollo in one hand and the panpipes of Pan in the other. On the bottom level of the image one sees Pythagoras and the four hammering blacksmiths producing the consonances on anvils of different sizes. Later in the book there is the well-known image of the "celestial organ" with a motto at its keyboard that

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surviving instrument," posting at http://www.claviantica.com/Publications_files/The_Tiorbino/The_tiorbino.htm.

28. Todini (*Dichiaratione*, 22) said the lira "is played with the keys of the harpsichord and with a real bow" (*con li tasti del Cimbalo, con l'arco suo vero*), likewise the violin. He said both were real instruments and not organ stops or devices whose strings were excited by a wheel, as some of his visitors believed.

29. Todini, *Dichiaratione*, 41: "Orologi simili al mio . . . non solo sopra le torri d'Italia . . . ma nelle camere de' Principi Romani, che fanno quanto fà il mio. . . ."

reads: *Harmonia Nascentis Mundi* (The Harmony of the Birth of the World). The six organ registers symbolize the six days on which God created the universe. Kircher metaphorically represents the second form of harmony, musica humana, in the form of various automatons. They show human figures dancing around a skeleton, shepherds practicing the echo, etc. Finally, for musica instrumentalis, Kircher exemplifies them as a group of interconnected instruments, quite similar to Todini's Greater Machine. Kircher called it, in the headline of chapter 6, "an automatic machine that exhibits the symphony of every sort of instrument."[30]

Not only did Todini's Galleria and Kircher's *Musurgia universalis* rest on the same ideological ground, but both men seem to have been privately connected, were even friends. Citations that support this assumption include: Kircher, the famous scholar, in *Phonurgia nova* (1673) called Todini *vir amicus* (friend), *musicus Romanus clarissimus* (famous Roman musician), and author of the *prodigiosa Machina Organica* (the "wonderful Greater Machine") and the other works of the Galleria Armonica.[31] He said that he included the Appendix about the Greater Machine in his *Phonurgia nova* "out of particular affection and reference which I have for this person as my particular friend, and to recommend his sagacity, diligence and artistry, and to make known his fame. Further also to entice and encourage him to disclose construction and all properties of the whole work, and that he properly may communicate it in a book of this own to the musical connoisseurs and music lovers."[32] These are certainly not words of hollow courtesy, rather, they are the words of a friend. On Todini's side we find, however, only a critical and

30. Kircher may have been inspired by the organ combined with harpsichord and spinetta in the musical instruments chamber of Cardinal Antonio Barberini, with whom he was acquainted. For the 1644 inventory see Frederick Hammond, *Music & Spectacle in Baroque Rome. Barberini Patronage under Urban VIII* (New Haven and London: Yale University Press, 1994), 95. Josclyn Godwin compared Kircher's machine with Todini's Galleria as a whole, which is obviously not correct. The similarity consists only with the macchina maggiore. See J. Godwin, *Athanasius Kircher's Theatre of the World: The Life and Work of the last Man to search for Universal Knowledge* (Rochester, VT: Inner Traditions, 2009), 173.

31. Kircher, *Phonurgia nova*, 167.

32. Kircher, *Phonurgia nova*, 170: ". . . partim ex amore & veneratione viri amici, ut ejus in dictis jam harmonicis machinis rara industriâ concinnandis ingenium posteritati commendarem; atque una cum exhortaret, instimularémque, ut totius Operis constitutionem ordine exponeret, & libro datâ operâ edito detectum arcanum Rei publicæ Musicæ communicaret, . . ."

grumbling response to Kircher's Appendix. This is somehow understandable because the engraving that Kircher published was flawed. Todini nagged about it and insinuated that he should have better contacted him before publication: "And the copper image has turned out not very similar, and another one was not made, [it looks] as if the person who has made the drawing, had not seen the originals."[33] The corrected drawing, which Bonanni published much later in his *Gabinetto armonico* (1722), shows that Kircher's inaccuracy was gross indeed.[34]

Moreover, there is a remarkable biographical synchronicity which suggests that a close relationship between Kircher and Todini had existed for a long time: in 1650, the year when Kircher published his *Musurgia,* Todini conceived the Galleria Armonica, and in the following year, 1651, the Museum Kircherianum was founded within the Collegium Romanum.[35] Though broad in its collecting activities, the Kircherianum included acoustical and musical instruments, Aeolian harps and automatons, and altogether about twenty machines of Kircher's invention.[36] It opened to the public shortly after 1670, not long before Todini's Galleria, in 1673. This remarkable chronological accordance seems to be not accidental, at least not entirely. Although conjecture, one may see several possibilities as to how Todini's and Kircher's relationship may have evolved: their paths crossed latest in the years between 1646 and 1648, when Kircher became involved in the restoration of the hydraulic organ in the gardens of the Palazzo del Quirinale. Kircher added a water-driven and barrel-controlled musical automaton with the figures of

33. Todini, *Dichiaratione,* 25: ". . . e se la figura di rame non è riuscita molto verasimile, da altro non è proceduto, se non che chi n'hà fatto il disegno non hà veduto l'originale."

34. Kircher's engraving of the Greater Machine of 1673 and Bonanni's corrected engraving of 1722 have been repeatedly published, for example, by Winternitz, "The Golden Harpsichord," plate 45, Barbieri, "Michele Todini's galleria armonica," 569, 575, Pollens, "Michele Todini's Golden Harpsichord," 1990, 34, Pollens, "Michele Todini's Golden Harpsichord," 2007, 148, 149.

35. Silvio A. Bedini, "Citadels of Learning. The Museo Kircheriano and other Seventeenth Century Italian Science Collections," *Enciclopedismo in Roma barocca. Athanasius Kircher e il Museo del Collegio Romano tra Wunderkammer e museo scientifico.* A cura di Maristella Casciato, M. G. Ianniello, Maria Vitale (Venice: Marsilio Editori 1986), 249–267.

36. After Kircher's death in 1680, many of his machines were dispersed. Filippo Bonanni in his 1709 catalog of the Kircheriano mentions only six musical automata. See Cristina Ghirardini, "Il Gabinetto armonico di Filippo Bonanni e le sue fonti," *Acta Musicologica* 79, 2 (2007): 363–64.

Pan and Echo and a wing-flapping rooster.[37] Probably at that time the fourteen years younger Todini established relations with Kircher, possibly asking him to be his mentor. As a matter of fact, the later1640s were for both men years of great intellectual activity in two aspects of the same topic: Kircher worked on his new book, *Musurgia universalis* and Todini on the concept of his Galleria Armonica. In 1650, the book appeared in print and Todini started his Galleria. The common ground of their friendship, so one may conclude, was very much the interest in the idea of universal harmony and the analogy between bodily movements and mechanics. It seems likely that Kircher introduced Todini to these ideas and fascinated him, because Todini's early inventions and novelties were devoid of them. While Kircher writes with educational commitment and readily discloses the workings of all of his novel concepts and physical insights, Todini tended to shroud them.

An Allegory of the Power of Music

Winternitz interpreted Polyphemus according to Ovid's *Metamorphoses,* that great Roman poem of the Augustan period that recounted the history of the world. Ovid softened the harsh image in which Homer had painted Polyphemus as a violent monster who devoured the men who came to his shore and added the episode of the sea nymph Galatea whose lover he killed when she left his love unrequited. He also endowed Polyphemus with sarcastic and comic features, responding to an appetence among contemporary readers for poking fun at the love lives of giants. To this eclectic portrayal Ovid even added a beautiful love song. In essence, the following lines, using the words of Galatea, outline how Ovid saw him (Book XIII, 756–766):

> For that savage, and one to be dreaded by the very woods, and be held with impunity by no stranger, the contemner of great Olympus with the Gods

37. Described in Athenasius Kircher, *Musurgia universalis sive ars magna consoni et dissoni in X. libros digesta* (Rome: Francesco Corbelletti, 1650), vol. 2, opposite of p. 342. The water organ by Luca Blasi (1596) in the gardens of the Quirinale palace in Rome was restored in 1647–48 by the organ builder Matteo Marione, and Kircher added an automaton clock. See: Patrizio Barbieri, "L'Organo idraulico del Quirinale," *L'Organo* 19 (1981, Bologna, 1985): 7–61, Antonio Latanza, "The Hydraulic Organ, the self-playing water organs of the Italian Gardens," *Music and Automata,* July 1990, Godwin, *Athanasius Kircher's Theatre of the World,* 172.

themselves, now feels what love is; and, captivated with passion for me, he burns, forgetting his cattle and his caves.

And now, Polyphemus thou hast a care for thy looks, and now for the art of pleasing; now thou combest out thy stiffened hair with rakes, and now it pleases thee to cut thy shaggy beard with the sickle, and to look at thy fierce features in the water, and so to compose them. Thy love for carnage, and thy fierceness, and thy insatiate thirst for blood, now cease, and the ships both come and go in safety.[38]

Winternitz stretched Ovid's Polyphemus-image to make Polyphemus of the Golden Harpsichord more tangible; he made him a "longing, unhappy shepherd, saddened and dandified by his unrequited love of the nymph [Galatea]."[39] Other authors who wrote about the Golden Harpsichord did not compromise, characterizing Polyphemus as a "monster" (Berry O'Neill),[40] "monster-giant" (Hammond),[41] and "man-eating Cyclops" (Powers),[42] also calling him "coarse" (Barbieri) or a "monstrous and wrathful Cyclops."[43] Looking at Polyphemus with critical eyes, neither of these labels matches the actual image. Figure 2 shows a frontal view of Polyphemus with his bagpipe. He looks like a young man with a well-proportioned frame and graceful gestures. He plays the sordellina, a bagpipe with a mellow sound en vogue at Todini's time in circles of Italian aristocracy. Looking critically at Polyphemus' face, it is not that of a "monstrous Cyclops with the rustic sordellina."[44] There is no evidence that would justify interpreting his face as that of a monster, of a savage giant, or as an unhappy, saddened, and dandified shepherd. Figure 3 shows Polyphemus' face, side by side with those of the older and younger

38. Trans. by Henry T. Riley. Quoted after: *The Metamorphoses of Ovid.* Literally translated into English prose, with copious notes and explanations, by Henry T. Riley (London: George Bell & Sons, 1893), book 13, verses 756–766.

39. Winternitz, "The Golden Harpsichord and Todini's Galleria Armonica," 110.

40. Barry O'Neill, "The Sordellina, a Possible Origin of the Irish Regulators," *The Seán Reid Society Journal* 2 (March 2002, 2.17): 7.

41. Frederic Hammond, "Model for a Harpsichord with Polyphemus and Galatea," *Life and the Arts in the Baroque Palaces of Rome: Ambiente Barocco,* ed. M. G. Barberini, Th. Dandelet, F. Hammond, E. J. Olszewski, et al. (New York: New York University Press: 1999), no. 65.

42. Powers, "The Golden Harpsichord of Michele Todini," www.metmuseum.org/toah/hd/todi/hd_todi.htm.

43. Barberini, "Model of the Todini harpsichord," 122.

44. Ibid., 122. Polyphemus' instrument is a sordellina doppia with four pipes. Though the sordellina had rural roots, the type with bellows was an instrument of the upper classes like the the French musette de court.

FIGURE 2. Polyphemus with sordellina doppia (the fourth pipe is covered). Photo courtesy of The Metropolitan Museum of Art, New York. See color photo p. 183.

Triton. His face appears noble with finely chiseled features. Hair and beard are somewhat more elaborate than those of the Tritons who carry the harpsichord and show features of strain from labor. Polyphemus, as such, is clearly recognizable by the third eye, the mark of all Cyclopes. It is indicative more of the tribal context than of his character. His regular eyes are closed, hinting at the adage "Love is blind." They are not the empty eye holes left after Odysseus, in the Homeric tradition, had gouged them out. His third eye is wide open and attentive, but it is not disfiguring. Where are the negative, sarcastic, and ugly features? Obviously, there are none. Looking for a literary or artistic tradition that would match Polyphemus' features of the Golden Harpsichord—these are the *Idylls*

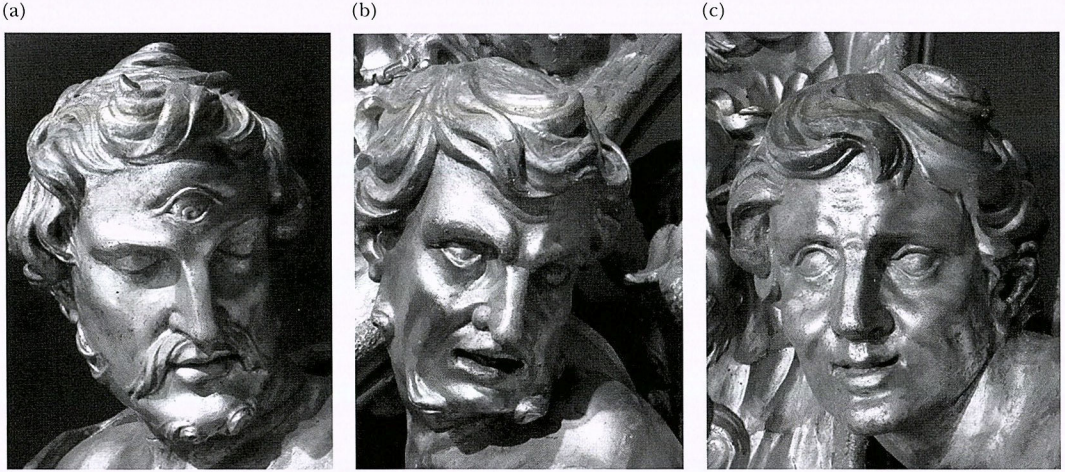

FIGURE 3. Comparison of the male faces. (a) Polyphemus. (b) Older Triton. (c) Younger Triton. Photos by Herbert Heyde. See color photos p. 184.

no. 6 and 11 by Theocritus.[45] Theocritus, the Greek pastoral poet of the third century BCE, describes Polyphemus as a gentle, well-off young man, owner of large sheep herds, who hopelessly fell in love with the sea nymph Galatea:

> I fell in love with you, my sweet, when first you came /
> With my mother to gather flowers of hyacinth /
> On the mountain, and I was your guide.[46]

He became lovesick and asked his doctor, Nicias: Is there a remedy for love-malady? Nicias responded: No, except one: that is music:

> . . . there is no remedy for love, no liniment, / As I believe, not any balm, except the Muses. / Theirs is a gentle, painless drug, and in men's power / To use . . .[47]

Only music could help. From then on, day by day, Polyphemus played onto the sea to charm Galatea with sweet words and music, but she remained unmoved. He became self-conscious for her denial, blaming his single eye on the forehead. But one day, music cured his lovesickness, and he bade Galatea adieu.

Theocritus shows a Polyphemus different from that of Ovid, Virgil, and Homer, a mild and gentle Polyphemus. Theocritus saw him as an epitome of a bygone golden age, in which man lived a simple but happy life in nature, and in his poems he praised that life as the best possible. Theocritus imagined this romanticized life in Arcadia, an idealized Greek landscape.

Following Winternitz and his interpretation of Ovid, the statue of Galatea should display either her rejection of Polyphemus or her fear of his wrath that finally led to the killing of her lover, Acis. Figure 4 shows Galatea's face, on the left, in comparison with the faces of the Nereids in the middle and on the right. All three countenances are fair if not beautiful. Where is Galatea's frightened face, with narrow eyes and the mouth open out of fear of Polyphemus' wrath?[48] There is no fear in her face. Figure 5 shows Galatea in her pose and arm-gesture. An actor of the period would assume this pose to express girlish innocence, purity, and

45. Theocritus, *Idylls*. Anthony Verity, trans., Introduction, and Notes by Richard Hunter (Oxford's World's Classics, 2003, revised 2008).

46. Ibid., *Idyll* 11, 25–27.

47. Theocritus, *Idyll* 11, 1–4.

48. So the characterization by Barberini, "Model of the Todini harpsichord," 124.

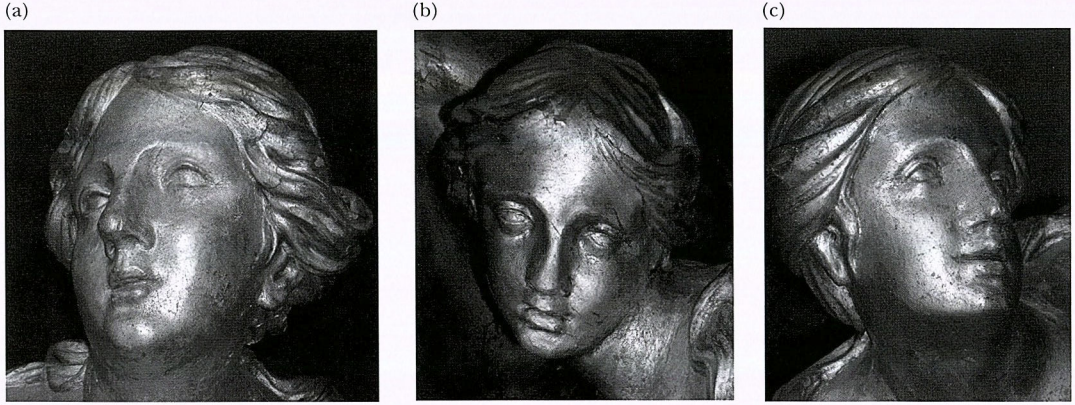

FIGURE 4. Comparison of the female faces. (a) Galatea. (b) Younger Nereide. (c) Older Nereide. Photos by Herbert Heyde. See color photos p. 185.

FIGURE 5. Galatea. Photo courtesy of The Metropolitan Museum of Art, New York. See color photo p. 186.

helplessness.[49] Rejection would likely be indicated by a gesture with the palms pointing toward Polyphemus. In Theocritus' *Idylls*, Galatea is an idealized, beautiful young girl, who appears not directly before Polyphemus' eyes but only in his dreams. When he awakens, she disappears. This tender and delicate image fits a young girl who faces her first love, even only beheld in a dream. This is what the carver apparently intended to express. Following a conjecture in the catalog of the Crosby Brown Collection of 1904, Winternitz claimed that Galatea originally played a lute. There is, however, not enough space between hand and chest to hold a lute; not even an instrument with a flat body would fit comfortably. Besides, hands and fingers are not properly positioned to stop and pluck strings, and normally, a lute is plucked with the right hand, not with the left. There is also a historical aspect: in seventeenth century upper-class courtship, the advancing suitor would serenade his love interest but they would hardly play music together in the phase of courting.[50]

The visual arts tradition represents Polyphemus in two primary guises, as monstrous giant and killer of Galatea's lover, and in a mild version.[51] The first follows the literary tradition of Homer, Virgil, and Ovid, the latter the *Idylls* of Theocritus. This dichotomy started most clearly with the frescos *The Loves of the Gods* which Annibale Carracci completed in 1597 in the Galleria Farnese in Rome. Carracci painted both the furious Polyphemus, who kills Acis, and the enamored Polyphemus. Italian art history makes a distinction between both topoi and calls them Polifemo furioso and Polifemo innamorato, respectively.[52]

49. Actors, painters and sculptures imitated the gestures they observed in life. General rules of seventeenth century acting included: gestures should never be performed with only one arm; arms and hands should never hang down; a face should never be shown in profile; to realize a particular expression hands, arms, eyes, head, legs, feet, and fingers should always act together. See Anna Migliarisi, *Renaissance and Baroque Directors: Theory and Practice of Play Production in Italy* = Studies in drama and theater 4 (New York, Ottawa, 2003), Andrew Gurr, *Staging in Shakespeare's Theaters* (London: Oxford University Press, 2000).

50. Philomusus, *The Academy of Complements Wherein, ladies, gentlewomen, schollers, and strangers, may accommodate their courtly practice*, London: Hymphrey Moseley, 1650.

51. For a survey of the Polyphemus-Galatea iconography see Jane Davidson Reid, *The Oxford Guide to Classical Mythology in the Arts*, 1300–1990s, vol. 1 and 2 (New York, Oxford: Oxford University Press, 1993).

52. Charles Dempsey, *Annibale Carracci: the Farnese Palace, Rome* (New York: George Brailler, 1995), 60, 64. Caracci's distinction was based on the image descriptions by Philostratus of Lemmos (born c. 190 CE).

The metaphor of the power of music was a popular conversation piece among musicians and artists of the seventeenth century; it was reiterated in the myths of Orpheus and Arion, and it was the plot of Monteverdi's masterpiece *Orfeo* (1607), of Stefano Landi's *La morte d'Orfeo* (Rome 1619), and Luigi Rossi's *Orfeo* (Rome 1647). There, music overcomes death; in the Golden Harpsichord it cures lovesickness. To bring across the story of Polyphemus and Galatea musically, Todini used the contrasting sound characteristics of sordellina and harpsichord. The infatuated Polyphemus employs the gentle and seducing sound of the sordellina-bagpipe to fan Galatea's love, while on Galatea's side stands the dispassionate and "objective" sound of the harpsichord to articulate her denial and bewilderment. The presenter would play runs and broken chords and employ the code of Affects to characterize her mood and the aquatic environs.

Todini followed the trend of his period to use instrumental sound to help articulate dramatic situations and to support the intents and emotions of the protagonists. This trend affected playing technique and structure of most musical instruments. For example, starting in the 1620s violinists began developing the violin's expressive power, and between the 1640s and 1680s shawms and oboes, dulzians and bassoons, recorders and flutes underwent structural changes that enabled them to produce more colorful and dynamically flexible timbres. At the same time in Rome evolved the "cimbalo piano e forte a tre registri," a two-keyboard harpsichord with three registers and pedals to quickly change the registers to effect dynamic differences.[53] There were also trends that endowed the harpsichord with a softer and "rounder" sound, which Todini seemed to aspire to and realize with a concave, casket-shape lid (fig. 1c). With this kind of lid Todini presumably wanted to dampen and round the sound to better illustrate Galatea's elfin character. The results were probably not satisfactory so that the casket-shape lid was later abandoned. In a different way, the same trend was realized in a kind of lira a tastiera as shown in Andrea Sacchi's painting *Marcantonio Pasqualini Crowned by Apollo*, Rome 1641.[54] Sacchi, Todini's older fellow citizen in Rome, contrasts Apollo's small lira with a large and modernized version

53. Patrizio Barbieri, "Harpsichords and spinets in late Baroque Rome," *Early Music* 40, 1 (September 2012): 55–72, in particular 55.

54. The Metropolitan Museum of Art in New York, inv. no. 1981. 317. Terrence Ford, "Andrea Sacchi's 'Apollo crowning the singer Marc Antonio Pasqualini,' " *Early Music* 12, 1 (January 1984): 79–84.

with keyboard but without a soundboard, to produce a softer, harp-like sound.[55] The same trend underlies the use of the sordellina, the bagpipe with bellows and narrow, soft sounding cylindrical pipes. The use of the bellows was also a sign of a higher degree of technical command and sophistication that demonstrated superiority to ancient technology. While in Sacchi's painting Marsyas played a bagpipe with leadpipe that prevented him from playing and singing at the same time and caused him to lose against Apollo. Instead, Todini's Polyphemus could sing and play at the same time. Moreover, it had a more refined sound and could be played on a keyboard. Like the step from the simple ancient plucked lira toward the lira a tastiera, Todini upgraded the harpsichord with a casket-shape lid and equipped the bagpipe with bellows and a keyboard. In both cases the sound changed toward greater softness. Soon after Todini had accomplished his Galleria, the trend continued: the viola d'amore and the horns with their mellow sound became fashionable. Finally, around 1700, pianoforte and clarinet were invented.

Evolution of the Design

The oldest element of the Golden Harpsichord was the precursor of the sordellina machine, the mechanical bagpipe associated with Polyphemus. That precursor, which Todini called Sordellina, was planned as an independent unit, probably as an automaton. Todini, who speaks only fleetingly about it in chapter 10 of his *Dichiaratione*, made a start on it as the second project of the Galleria right after 1654–55, when the first four instruments of the Greater Machine were installed. The Sordellina was sponsored by Duke Paolo Giordano Orsini II of Bracciano, who as an aficionado of the sordellina, once had developed a large four-pipe sordellina doppia with an extended bass range. Todini's mechanical sordellina was apparently modeled on it. The regular sordellina was an elegant bagpipe with three narrow cylindrical pipes, double reeds, and bellows.[56] It was the Italian counterpart of the French musette, and as

55. Like the later piano harp, Sacchi shows an instrument without sound board, and therefore it is not a clavicytherium. It was apparently a novel instrument at his time.

56. Barry O'Neill, "The Sordellina, a Possible Origin of the Irish Regulators,"1–20, Barbieri, "Michele Todini's galleria armonica," 569–71, John Henry van der Meer, "La sordellina: organologia e tecnica esecutiva," in Giovanni Lorenzo Baldano, *Libro per scriver l'intavolatura per sonare sopra le sordelline*, ed. by Maurizio Tarrini, Giovanni Farris, and John Henry van der Meer in connection with Associazione Ligure per la Ricerca delle Fonti Musicali (Savona: Editrice Liguria, 1995), 73–105.

such was a fashionable instrument of the Italian upper class during the seventeenth century. As Kircher mentioned, Todini owned a regular three-pipe sordellina to study, practice, and to understand its workings.[57] His goal was to substitute all body operations through mechanical equivalents. That included replacing such delicate operations like the player's left arm movements that controlled the air pressure changes to make the reeds properly speak. The whole project was intricate and involved a complex system of levers, fulcrums, and trackers to connect the sound holes of the tubes with the controlling system, a moving barrel or—later—a keyboard. Todini does not mention any details, not even regarding the case and its possible adornment with a sculpture. As long as Duke Orsini was alive, Todini was concerned only with the technical apparatus, which he apparently crafted himself. Todini seemed to have made good progress until 1656, to judge by a positive response from Duke Orsini: ". . . he very much enjoyed the second of my works, that is, the Sordellina, and he let me know that if I could make it easier [to play], as he had heard it of the other [instruments], I could make the price in my way, because besides curiosity and knowledge, he owned great wealth."[58]

After Duke Orsini died in 1656, the project was shelved until about 1661–63 when Todini decided upon significantly enhancing the gallery project. Having already invested much work in the Sordellina, Todini thought about consolidating it with another theme, one that eventually took place. He associated the mechanical Sordellina with the mythological figure of Polyphemus and consolidated it with a Triumph of Galatea, which he connected with a harpsichord.

When searching for ideas and suggestions, Todini presumably read Salomon de Caus' books about hydraulic machines that he envisaged for display in princely gardens.[59] De Caus was a renowned Hugenot engineer, architect and artisan, who from 1612, published *Hortus Palatinus*

57. Kircher, *Phonurgia nova*, 170.

58. Todini, *Dichiaratione*, 36: ". . . il quale si dilettava grandemente della seconda delle mie opere, cioè della Sordellina, e mi fece dire, che se la riducevo alla facilità, che haveva inteso delle altre, il prezzo, lo potevo fare a mio modo, perche oltre la curiosità, e'l sapere, possedeva ricchezze grandi."

59. De Caus' book *Hortus Palatinus* was first published in 1612 by Abraham Pacquart in Frankfurt (Main) in a German and a French edition: *Von Gewaltsamen Bewegungen / Le Raissons des forces movvantes.* 1615, 1620 and 1626 followed editions under the title *Hortus Palatinus a Fredrico rege Boemiae, electore Palatine* Heidelbergae, printed by Theodor de Brÿ, Frankfurt. Reprint of the French edition 1973 by Frits Knuf, Amsterdam. Reprint of the German edition 2003 by Stiftung Kloster Michaelstein and Verlag Janos Stekovics, Halle (Saale, Germany), 2003.

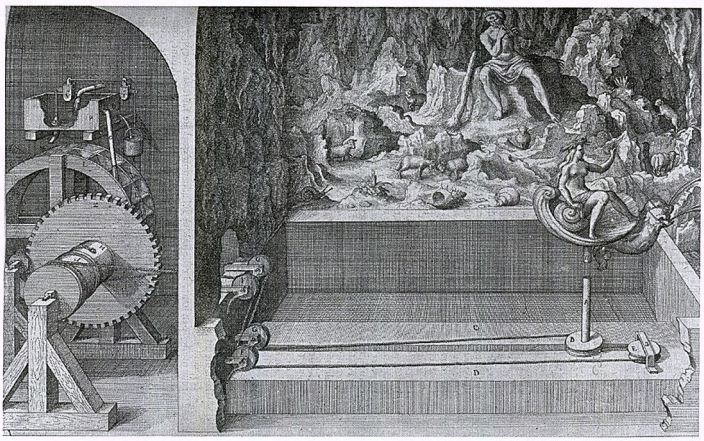

FIGURE 6. Salomon de Caus, *Hortus Palatinus* (1615): Engraving of a "machine" of Polyphemus and Galatea, submitted to the princely gardens of the Palatinate in Heidelberg. Polyphemus's play on panpipes is imitated by a barrel organ driven by water power, which also drove the movement of Galatea back and forth in the water basin. Photo courtesy of The Metropolitan Museum of Art, New York.

and *Les Raisons des forces mouvantes*, in different editions and in different languages. Those were the most comprehensive publications about music machines prior to Kircher's *Musurgia universalis* (1650), and Kircher himself seemed to have benefited from them as the structural and thematic similarities of his own machines appear to indicate. Some of de Caus' machines employed water-driven organs and were controlled by barrels; others featured moving life-size figures. They included a shawm-playing Satyr whose melody was echoed by a Nymph from the other side of a water; a grotto with Orpheus playing a viol; a machine that showed Apollo playing on his lyre in contest with Pan on the panpipes—and finally, there was a machine with Polyphemus serenading Galatea (fig. 6). So far, this is the only known example of the Polyphemus-Galatea iconography that was developed as a music machine.[60] This was the machine that seemingly appealed to Todini most and which thus he adopted. It shows Galatea seated in a shell, drawn back and forth in a

60. A comprehensive list of all works of art of the Polyphemus-Galatea iconography see Davidson Reid, *The Oxford Guide to Classical Mythology in the Arts*, 1993.

water basin before the eyes of Polyphemus, attracting his attention. Meanwhile, Polyphemus played on panpipes, imitated by a water-driven organ to gladden Galatea. Studying the Polyphemus-Galatea iconography and the underlying stories by Homer, Ovid, and Theocritus, Todini surely pondered how his own version could fit in the whole concept of the Galleria Armonica. At some point, Todini decided on the version that Theocritus narrates in his *Idylls,* placing the theme of the power of music at its center. That resonating idea became the guideline for the entire concept of the Golden Harpsichord. A decisive point was the inclusion of the harpsichord to give also Galatea a musical voice and to develop the musical side of the iconography. The harpsichord, which became the optical centerpiece of the display, was an absolute novelty in the Galatea iconography. Todini as an art lover, who owned and showed thirty-one paintings in his three display rooms, had surely studied many representations of Polyphemus and Galatea, which had become a quite popular topic in seventeenth-century Rome. He probably had studied the frescos by Rafael in Villa Farnesina and Annibale Carracci in Palazzo Farnese, and many other paintings and frescoes. Picking out suggestions from here and there, Todini developed a sculptural concept, which stayed within the iconographic tradition of the Triumph of Galatea, but nonetheless had its own character by virtue of the harpsichord. The typical Triumph of Galatea shows, on the one side, Galatea seated in a shell, drawn by dolphins, and surrounded by Nereids and Tritons, and on the other side, Polyphemus playing panpipes. What is essentially new in Todini's rendering of the Polyphemus-Galatea myth is the harpsichord and the mechanical sordellina.[61] With the Tritons carrying the harpsichord on water waves and Nereids between them, Todini found an amazing visual solution for the sculptural ensemble. In a theatrical commotion, the figures appear emerging from the sea, bringing Galatea a harpsichord. Not a painter or sculptor himself, at some point Todini must have involved an artist for working out details, gestures, faces, and postures, for designing the frieze of the bentside and producing a master drawing for the sculptor.

61. Polyphemus is shown only rarely with a bagpipe. An early mentioning of Polyphemus playing a zampogna is found *in Stanze per la giostra* by Angelo Poliziano (1454–94). Loreto Vittori in *La Galatea* (1639), which inspired the iconography of the frieze of the bentside of the Golden Harpsichord, also mentions Polyphemus with a "sampogna."

Todini mentions in his *Dichiaratione* that from the very beginning, most of his visitors to the Galleria Armonica belonged to the upper and learned class. Aware of this background and anticipating it, he developed his work according to the taste of his visitors. He endowed the Golden Harpsichord with a flair that resonated with the Arcadian current that was much espoused by the upper class. Arcadian trends emerged in the sixteenth century from the literary tradition of Theocritus, that is, from the same root on which rests the musical theme of the Golden Harpsichord. Arcadian sentiments in life and in the arts remained in vogue all over the seventeenth century, and in some places they extended well into the eighteenth century. This current embraced the utopian idea of harmony between nature and man and the imagination of a gone-by golden age. The Arcadians believed that the golden age had really existed in ancient Arcadia as a pastoral landscape with shepherds, satyrs, and nymphs who dedicated their life to the beauty of nature, to poetry, and to singing. In the Golden Harpsichord all figures are gilded and bare, a convention of the period to indicate that all emotions they express are pure and part of human nature. People who embraced Arcadian sentiments drew aesthetic pleasure from poetry and art that extoled the life of those gentle and romantic lovers, satyrs, and nymphs, when they were exposed to the whims of love, to faithfulness, jealousy, and envy.[62] This is the feel, character, and flair Todini and the artists who assisted and advised him tried to impart to the Golden Harpsichord. It nurtures its idealistic beauty and the sentiment of the romantic encounter between Polyphemus and Galatea. As a quintessentially Arcadian instrument, the sordellina with its gentle sound has an important part in conveying the Arcadian character of the Golden Harpsichord. The tabulature book *Libro per scriver l'intavolatura per sonare sopra le sordelline* of Giovanni Lorenzo Baldano, compiled about 1600, contains songs and dances that articulate just this spirit, in particular in pieces like the canzona "Sopra una verde riva" by Sannazaro (one of the major poets of Arcadian poetry), the pastoral "Omrosa valle," or in the dance, "Bassa de Ninfe."[63]

62. Among the most influential works that spurned the Arcadian poetry in the seventeenth century was the pastoral novel *Arcadia* (1504) by Jacopo Sannazaro and the forest fable *L'Aminta* (1573) by Torquato Tasso.

63. G. L. Baldano, *Libro per scriver l'intavolatura per sonare sopra le sordelline* (see note 56), 155–202.

Todini describes the macchina di Polifemo of the Golden Harpsichord as an enlarged sordellina, as an ingrandimento or sordellina doppia. It corresponds to the instrument Polyphemus holds in his hand, a sordellina with four pipes (the fourth is not visible in the photo) and a long bass pipe. Todini's description is only brief:

> Polyphemus sits at the slope of a mountain where he has his dwelling, as the tale says, in the act of playing a sordellina or musetta to please Galatea; and inside the mountain are the machines to play the said sordellina, which is played on a tastatura placed under the keyboard of the before-mentioned cembalo.[64]

By "machines," Todini meant the whole technical apparatus with pipes inserted in a pipe stock, the closed keys, levers, trackers, bellows, etc. When Todini presented the Golden Harpsichord, he stood in front of the keyboards and operated the pedals "by the two heels, with little movement" (*con li due calcagni, con poco moto*). He admitted, "One cannot install a great number of pipes on the pipe stock, because it could not accommodate them, and it would dilute the wind. . . ." The context of his writing suggests his instrument had just the four pipes of the sordelina doppia.[65] The highest pipes produced the range of a fifth and the lowest pipe the range of an octave, resulting in an overall compass from GG (the lowest note of the harpsichord) apparently to a″. The rock was open at its back, from where the trackers would travel along the rear wall and floor to the harpsichord. There they probably entered it close to the front through the bottom plate of the case or the trackers ascended vertically in front of the harpsichord where they connected with the tastatura. No physical evidence is left of the entire sordellina machine, of the tracker system, or how it was connected with the harpsichord. Also, the frontal sections of the bottom plates of case and harpsichord proper are later replacements. Between the bottom plates of case and harpsichord is an empty space of 6.8 cm height that, in its frontal sec-

64. Todini, *Dichiaratione*, 6: "Polifemo siede alle falde d'vn monte, nel quale hà la sua habitazione, come dice stanno le Machine per far sonare la detta Sordellina, quale si suona con vna tastatura posta sotto à quella del già nominato la fauola, in atto di sonare vna Sordellina, ò Musetta per compiacere à Galatea; e dentro al detto monte Cimbalo."

65. As each pipe cannot produce more than one note at a time, only a limited form of polyphony is possible. The common three-pipe sordellina had a left hand chanter for d′ – g′, a right hand chanter for g′ – d″ (sometimes additional keys), and a bass pipe with closed keys.

tion, is now occupied by an empty box (6.8 x 46.5 x 79.8 cm).[66] It is something of a space-filler, installed after the disposal of the sordellina in 1796 or after. Originally, presumably there was a similar box from which the keyboard (tastatura) of the sordellina projected. Todini describes quite clearly that the tastatura was underneath the keyboard of the harpsichord, but there is not any evidence to fill this information with details. It is quite sure that the tastatura was not an under-keyboard of the harpsichord, but an independent unit installed between the bottom plates of case and harpsichord. It was associated with additional levers (piroletti), whose function remains unclear. The only surviving evidence is some vague remainders of mounts within the rock on which Polyphemus is seated. The lack of physical evidence has led to the erroneous assumption that the sordellina machine was an organ rank to imitate the sound of the sordellina.[67]

The harpsichord is laid out in the traditional inner-outer construction with a single keyboard and two eight-foot registers.[68] Todini decided for a very large size measuring 282.5 cm in its outer case. Harpsichords of this size were built only occasionally; one was owned by Cardinal Antonio Barberini,[69] two others by the Rospigliosi and Pallavicini families.[70] Because of its length, the Pythagorean stringing extends in the bass to C. The original keyboard range, as Stewart Pollens concluded, was GG-d‴. Later, it was extended to FF-f‴, whereby the positions of bridge and nut were altered. There is no trace of a former lute or sordino stop. Originally, the harpsichord was equipped with a hollow casket-shaped lid whose intended acoustical function apparently was, as said before, to dampen the sound in a particular way. Since this kind of lid is unknown

66. Photos of the space between the bottom plates, of box, etc., see Pollens, "Michele Todini's Golden Harpsichord: An Examination of the Machine of Galatea and Polyphemus," 1990, 38.

67. Pollens, "Michele Todini's Golden Harpsichord: An Examination of the Machine of Galatea and Polyphemus," 1990, 33–47; Pollens, "Michele Todini's Golden Harpsichord: Changing Perspectives," 2007, 144.

68. For technical description see Pollens, "Michele Todini's Golden Harpsichord," 1990: 33–47.

69. Inventory of 1644. See Hammond, *Music & Spectacle in Baroque Rome*, 95. See also Barbieri, "Harpsichords and spinets in late Baroque Rome," 2012, 58. He lists some more large harpsichords.

70. For images see: Daniela Di Castro, "Music in a Roman Palazzo: The Pallavicini and Rospigliosi instruments," *Marvels of Sound and Beauty: Italian Baroque Musical Instruments* (Florence: Giunti, 2007), 131–136.

to have survived from any other instrument, it would need reconstruction and practical testing to determine its acoustical effect.

The years between 1661 and 1665 were for Todini not only years of uncertainty about the future and years of financial distress, but also years of utmost creativity. In those years he developed the Golden Harpsichord, the pilgrim, and the fortress. He also may have completed the mechanical lira and violin as the last instruments of the Greater Machine. In August 1665, Todini commissioned the sculptor Hans Jacob Reiff (1627–1700) with the execution of all carving work, including the pilgrim and probably also the fortress. Reiff came about 1650 from Freiburg, Switzerland to Rome and worked there as a sculptor until 1680. In that year he returned to his hometown, but his workshop in Rome continued under his son Peter Paul Reiff. Unfortunately, very little is known about Reiff's work as a sculptor and carver[71] and nothing at all is known about the artist who presumably made a master drawing for Reiff. Basilio Onofri was charged with the gilding, as Barbieri documented in his article of 2002.

The Golden Harpsichord in Todini's apartment

After seven years, in April 1672, Hans Jacob Reiff delivered all carving work, gilded and painted, to Todini's apartment in Via Arco della Ciambella. It took another year or two until everything was installed in three rooms on the piano nobile.[72] On the left side up the stairs was the large room for the Greater Machine. On the right side were two rooms; one housed the two automatons, the other the Golden Harpsichord.

The room with the Golden Harpsichord was probably five to six meters wide. Its inventory (see article Appendix), which was drawn up by a notary on February 21, 1678 as part of the lawsuit, helps reconstruct the furnishing of the room. It had two doors, both of which were crowned by a painting. There were sixteen more paintings in the room, fourteen of them obviously hanged on either side of the doors and on the side walls.

71. In 1690, Peter Paul Reiff, as proxy of his father Hans Jacob Reiff, claimed money from Todini. More is known about the two brothers of Hans Jacob Reiff in Freiburg: one was a painter, the other a sculptor. See Gérard Pfulg, *L'atelier des frères Reyff, Fribourg (1610–1695). Un foyer de sculpture baroque au XVIIe siècle* (Fribourg: Éditions La Sarine, 1994).

72. The house in Via Arco della Ciambella with the chapel of Santi Benedetto e Scolastica still stands, but it was reconstructed several times.

Also on either side of the doors were twelve chairs for the visitors. The remaining two paintings were large and measured 8 palme = 1.8 m each and were most probably mounted above the harpsichord. With its casket-shaped lid it always remained closed. The Inventory mentions that one of the large paintings represented *The Judgment of Paris*, the other *Bacchus with Various Figures*. It is possible that the topics of the other paintings were consistent and formed with the Golden Harpsichord and the two main paintings above it an overarching mythological theme. When the inventory was raised, the Galleria had been closed for quite a time already. To protect the objects, the caretakers had covered the sculptural ensemble with "a used curtain of turquoise taffeta" (see article Appendix).[73] Before closing of the Galleria, this curtain assumedly served as drapery between the visitor section and the Golden Harpsichord, giving the impression of a theater ambient. When the visitors were seated on the chairs, they saw the Golden Harpsichord in front of the room like in a small theater.

When Todini mounted the Golden Harpsichord in 1672, Polyphemus' rock was found to be too small, so he ordered an additional mountain to be placed underneath. With both mountains on top of each other, Polyphemus reached almost to the ceiling.[74] This shows that Todini and his artist had not correctly estimated the effect of the full-size figures and the impression they would make. This seems to indicate that Todini had supplied Reiff only with drawings and not with a three-dimensional model that would have allowed a better assessment. It is safe to say the rocks did not box the sordellina entirely so the delicate mechanism could be accessed from the rear for maintenance. In the same year, 1672, Gaspard Dughet painted three canvases representing "sea and air to be mounted behind the mountain and behind the statue of said Galatea."[75] This citation from Dughet's invoice in conjunction with the room's Inventory (see article Appendix), clarifies the placement of the canvases (fig. 7). The two canvases behind Polyphemus' mountain

73. Barbieri interprets the text in a way that the turquoise curtain used had been part of the actual installation and "may well have represented the sky in an attempt to make the scene more realistic." See Barbieri, "Michele Todini's galleria armonica," 574.

74. Todini, *Dichiaratione*, 7: "The aforementioned machine takes up from the floor to the ceiling." (*Detta Machina occupa da terra fino al soffitto*).

75. Dughet's invoice, quoted after Barbieri, "Michele Todini's galleria armonica," 573: ". . . tre tele che hà dipinte de marine et arie da mettersi dietro al monte e dietro la statua di detta Galatea."

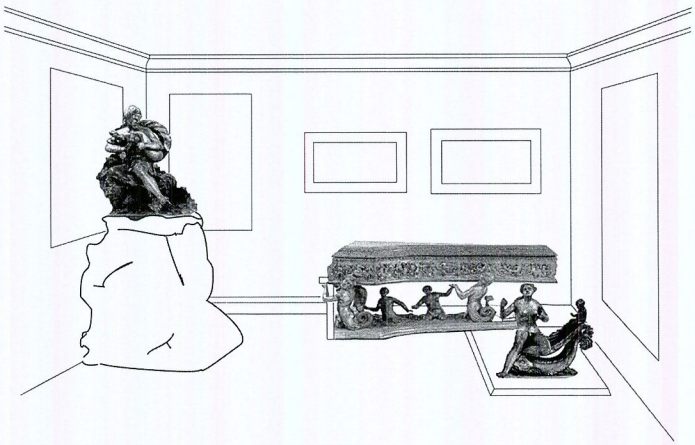

FIGURE 7. The Golden harpsichord in Michele Todini's Galleria Armonica, 1672. Reconstruction of the setup in room 2. The two canvases behind Polyphemus showed "sky" or clouds, the canvas behind Galatea "sea" according to the invoice of the painter Gaspard Dughet. The two paintings above the harpsichord represented *The Judgment of Paris* and *Bacchus with Followers.* Reconstruction by Herbert Heyde.

showed "air" and probably represented nothing but open sky with some clouds as Dughet had painted in 1658 for the organ of the Greater Machine.[76] There are no clues about what the "sea" behind Galatea looked like. About her placement Todini reports:

> In the second room one sees represented the story of Polifemo, with many gilded statues, among others Galatea who is shown traveling on the water and sitting in a shell courted by water nymphs, [the shell] is carried by two dolphins bridled by a Cupid. She is attended by life-size Tritons who bring her a harpsichord.[77]

76. Filippo Bonanni, *Gabinetto armonico pieno d'istromenti sonori indicate e spiegati* (Rome: G. Placho, 1722). The engraving with the Greater Machine has been reprinted repeatedly, see note 34.

77. Todini, *Dichiaratione*, 5: "Nella seconda stanza si vede rappresentata la fauola di Polifemo con molte statue messe à oro; e trà le altre Galatea, che mostra passeggiar per il mare portata da due Delfini imbrigliati da un Cupido, sedendo lei in vna Conchiglia cortegiata da Ninfe marine, eseruita da Tritoni grandi al natural, che li portano vn Cimbalo; . . ."

With the "sea" canvas at her back, she may have appeared emerging from the sea, greeted by the two Nereides. Winternitz disregarded Todini's description of the seated Galatea in front of the harpsichord—probably not that he had overlooked this passage, but he believed the originality of the surviving setup with the standing Galatea and distrusted Todini's words. In 2002, Barbieri found a 1672 list on which Todini confirmed the receipt of the sculptures, carved and delivered by Reiff, that clearly confirms Galatea was seated on a shell: ". . . . the statue of that Galatea, the shell she sits on, the dolphins, the little Amor, as well as the statues of the tritons, . . ."[78] Even this proof for the seated Galatea was not easily accepted.[79]

If visitors had seen the Golden Harpsichord first in Todini's apartment and later its redesign in Palazzo Verospi, they must have had a very different impression and surely had given preference to the younger version. The room in Todini's apartment was not large enough to capture the grandeur intrinsic to the whole ensemble. The seated Galatea may have appeared as too close to the floor and too close to the other sculptures and Polyphemus as seated too high. The Verospis certainly had good reasons to break up Todini's display and to redo it.

Unfortunately, Todini does not mention the artists and artisans who assisted and worked for him, not to mention the artists who made the drawings of the sculptures and the frieze and the maker of the harpsichord. He subsumed the assisting and contributing artists and artisans only anonymously as *valent'uomini* (capable people). He did not even mention Duke Orsini by name but referred to him only as a personality of great birth. Todini cited Gaspard Dughet (1615–1675) only once, as painter of the canvases for the Greater Machine in 1658, but omitted him later. The names of the sculptor, Reiff, and the gilder, Onofri, are known only from archival records Barbieri had discovered. As for the sculptures and the frieze, several names have been suggested on the basis of stylistic similarities. In 1859, Visconti mentioned Alessandro Algardi (1598–1654), a name Winternitz also supported.[80] Winternitz

78. For Italian text see Barbieri, "Michele Todini's galleria armonica," 573: ". . . statua d'essa Galatea, conchiglia dove siede, delfini, amorino, come statue di tritoni, . . ."

79. Pollens, "Michele Todini's Golden Harpsichord," 2007, 148, assumed the standing Galatea is original and suggested Todini might have confounded the sculpture of Galatea with the seated Galatea in the frieze.

80. Visconti, *Cembalo figurato*, 6.

and his art historical adviser, Olga Raggio, in 1956 also considered Domenico Guidi (1625–1701), Ercole Ferrata (1610–86), and Filippo Parodi (1630–1702).[81] In 1825, when the Golden Harpsichord was offered to the Vatican Museum, Vincenzo Camuccini, at that time the foremost academic painter in Rome, pointed to Francesco Albani (1578–1660) as the artist who designed the frieze. As one can see, the naming of artists remained only guesswork. The role Reiff and Dughet may have played was left unconsidered. Reiff, as the sculptor, was likely a draftsman as well and surely had a model collection from which Todini could have selected the figures for carving. In this sense, Todini and Reiff could have managed the whole project themselves. Dughet had worked for Todini for a long period of time, and he may have painted in 1658 and 1672 not only those five canvases but also assisted Todini with sketches and advice.

There is no mention of the builder of the harpsichords and spinets for the Greater Machine nor for the instrument of the Golden Harpsichord. In the records of the lawsuit, the harpsichord maker Giuseppe Boni da Cortona (1629/30–1702) appears only as a creditor. Todini owed him 20 scudi in 1677 and 1690 for repairs of the harpsichords and for tuning.[82] Two other artisans were mentioned as potential makers: Giovanni Battista Maberiani[83] and Pietro Todini. About the latter, possibly a brother, nothing is yet known. He is evidenced only by the two-keyboard three-register harpsichord in Castello Sforzesco in Milan (no. 603) that is labeled: "Petrus Todinus fecit Anno Domini 1675 / Roma."

The Frieze of the Harpsichord's Bentside

The carved frieze of the harpsichord's bentside shows aquatic life of Poseidon's realm with hippocampi, sea lions, sea monsters ("sea monks"), putti, mermen, and Galatea in a chariot at its center. The frieze is purely decorative and adds another episode of Galatea's mythology, unrelated to the main story. Todini describes the scene as "Triumph of said Galatea, with sea monsters who present her with marine creatures as

81. Winternitz, "The Golden Harpsichord and Todini's Gallaeria Armonica," 112.

82. Listed by Barbieri, "Michele Todini galleria armonica," 568.

83. Grant O'Brien suggested a similarity between the spinets of the macchina maggiore and a rectangular "virginal" that is part of a Baroque cabinet by Giacomo Herman, made in Rome 1678. See Grant O'Brien, "The Virginal," in *A Magnificent Roman Baroque Cabinet by Giacomo Herman* (London: Sotheby's, 4 December, 2007), sale number LO7311A "HERMAN."

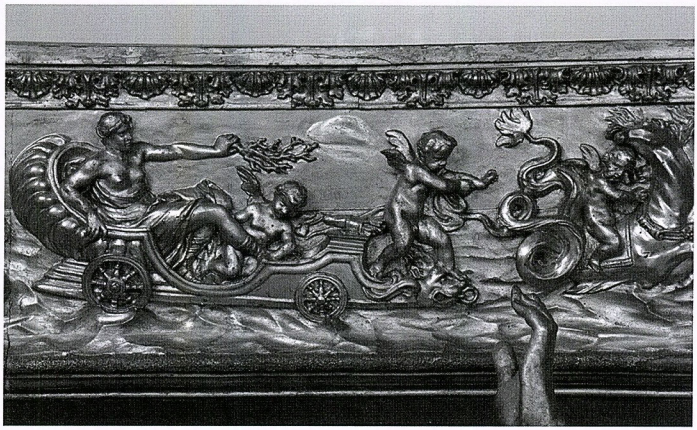

FIGURE 8. Frieze of the harpsichord's bentside (detail). Galatea in a chariot with two Cupids. Gilded bas-relief. Photo courtesy of The Metropolitan Museum of Art, New York. See color photo p. 187.

tribute."[84] This is a free description and interpretation that ignores the meanings of the details. A more detailed iconographic analysis has led to the following understanding:

In the center of the frieze, Galatea is seated in a triumphal chariot and holds a coral branch over a Cupid (fig. 8). To his right is a quiver with arrows, and farther to the front of the wagon is another Cupid. The underlying story of this scene has led the author of this article to the favola maritima *La Galatea* by Loreto Vittori, the libretto of which was published in Rome 1639.[85] It is unclear, however, if it was staged in that year. The plot and the story of the libretto are unrelated to Theocritus and Ovid but follow a different literary tradition. Scene 4 in Act I establishes the motive that underlies the described scene of Galatea in the chariot. In a recitative Venus remembers her common childhood with Galatea and recounts: When she gave birth to Cupid, Galatea gathered corals and shells to adorn infant Cupid. She recalls:

84. Todini, *Dichiaratione*, 6: "la cassa del quale è ricca d'intagli, rappresentante, in basso rilieuo pur messo à oro, il Trionfo di detta Galatea, con Mostri marini, che li porgono per tribute diuersi frutti di mare."

85. Loreto Vittori, *La Galatea* (Rome: Vincenzo Bianchi, 1639). Ed. and trans. into English by Thomas D. Dunn (Middleton, WI: A-R Editions, 2002).

Often do I recollect
The fond amusements and merry dances,
And how you [Galatea], upon these native sands,
With the others graceful daughters of Nereus,
Now gathered coral,
Now carried off seashell,
Just to adorn the infant goddess's swaddling-band.[86]

The libretto gives a long explanation why Galatea is associated with two Cupids. In short, they stand for the double love she met: Acis (a figure, introduced in the Galatea myth by Ovid), whom she loved, and Polyphemus, whom she did not love. A small Cupid also bridles the horses that pull the chariot. Another Cupid sits on Galatea's shell to bridle the dolphins. The ubiquity of Cupids is quite common in the iconography of Galatea, most notably in Rafael's Galatea of 1512 in the Villa Farnesina in Rome.

Another scene that seems to go back to Vittori's libretto is Aurora, the goddess of dawn (fig. 9) and the fishermen with crabs. At the end of Act I, the chorus of fishermen sings that fishing yields best harvest at first rays of dawn, when Aurora opens the heavens' gates for the sun. There is Aurora with sunbeams and two cornua players.[87] The fishermen chorus warns: if Orion is overhead, storm looms and the fishermen would better take off the sea. When retreating in shallow waters the harvest is poor, only crabs and turtles. The frieze shows indeed figures that carry crabs and turtles on their heads. However, the figures are Amoretti instead of fishermen. In the rest of the frieze these figures recur in variations and fill out most of the space. At the head of the frieze are two shell- or horn-playing mermen, or Tritons, and at the beginning of the frieze, sitting on land, is a lute player. It is well justified to call also this scenery a Triumph of Galatea. The frieze is not a visualization of the opera plot but only picks some elements and renders them otherwise freely in an artistic manner. Todini's cited description of the figures as sea monsters who present Galatea with marine creatures as tribute, is free, if not to say not very correct. It may be an indication that Todini himself was not much involved in the iconography of the frieze.

86. Vittori, *La Galatea*, ed. and trans. by Dunn, 22.

87. The terracotta model represents only one cornu player, the second Triton struggles with a monstrous fish. This is the only difference in the frieze between model and full-scale instrument. Otherwise both friezes are extremely similar.

FIGURE 9. Frieze of the harpsichord's bentside (detail). Aurora with sunrays, two cornua players, and Tritons wrestling with a sea monster. On the left an Amoretto riding on a sea lion and a turtle on his head. Gilded bas-relief. Photo courtesy of The Metropolitan Museum of Art, New York. See color photo p. 187.

It is unknown who designed the stage set for the opera or who drafted the frieze for the harpsichord. In both cases, it may have been the same artist. Though it is not clear if the opera was staged in Rome, in any case it was put on stage in Naples. In 1825, when the Golden Harpsichord was offered to the Vatican Museum, a description mentions the frieze of the harpsichord would follow a drawing by Francesco Albani (1578–1660), a conjecture which may deserve scrutiny.[88]

Presenting the Golden Harpsichord

In Todini's apartment, the room with the Golden Harpsichord conjured an *ambiente teatrale*. There were twelve chairs for the visitors and, probably divided by drapery, the Golden Harpsichord in front. The visitors could easily have the impression of scenery, and in Todini's mind they probably were supposed to have this impression. As there are no sources, not even hints, about how Todini presented the Golden Harpsichord, all suggestions are conjecture. For sure, he was flexible enough to

88. Barbieri, "Michele Todini's galleria armonica," 577, dismissed the attribution as unsupported.

adjust his presentation to the wishes and expectations of the visitors. Some were pleased simply to see the beautiful display and to listen to the instruments, to learn about the meaning of the figures, and to hear their story. Others were perhaps interested only in the wondrous sordellina apparatus and how it worked. The design of the Golden Harpsichord, though, was developed for more than any of these special interests. Leaving the wishes of the individual visitors aside, the Golden Harpsichord embodies a consolidated story, frozen in a moment and honed to a complex artistic message. It was developed for performance and, if a performance were adequate to the design, it would unravel it in word and sound. In this sense, design and performance are two sides of a coin.

There were many different ways Todini could have given an appropriate full presentation, formal or informal, serious or with tinges of humor. Todini may have narrated the story, but a reasonable assumption is that he had broken down Theocritus' text for recitation and singing, using known melodies. In essence, it was a dialog between Polyphemus and Galatea, carried on by the play on sordellina and harpsichord. Standing at the harpsichord and inconspicuously pumping the bellows with his heels, Todini played a love song on the sordellina machine to express Polyphemus's love and longing. Then, at some point would follow Galatea's response on the harpsichord, using the rules of the Doctrine of Affects and figures. He would characterize her watery ambient with runs and broken chords and, exploiting the harpsichord's inflexible sound, express her denial. Galatea of the Golden Harpsichord, in particular in her standing version, is a tender young girl, more, even an elusive ideal image and a vision. The casket-shaped lid dampened the sound of the harpsichord to give the impression of a distant answer. Todini probably repeated the indicated dialog between Polyphemus and Galatea a few times in variants. At the end, music had cured Polyphemus' lovesickness. Like the contrasting satyr play in the ancient tragedy, Polyphemus would play a merry melody, bidding Galatea adieu and philosophically concluding that there are many other pretty girls around. Perhaps, as a finale, the presenter may have played sordellina and harpsichord together.[89]

89. Pinarola's travel guide of 1700 reported that in the Lobby of the Verospi palace harpsichord and sordellina were playing together. See Giacomo Pinarolo, *Trattato delle cose più memorabili di Roma, tanto antiche, come moderne. Con l'eruditioni di alcune statue, e bassi relievi, Palazzo, Chiese . . . di detta Città* (Rome: Antonio de Rossi, 1700), parte 2, 125–26.

A musical dialog of identical basic structure as outlined features Monteverdi's crusade story *Il combattimento di Tancredi e Clorinda* (1624). There, too, is a narrator who mediates the dialog between the two protagonists, the Christian knight Tancredi and the Saracen maiden Clorinda, while the orchestra supports text and expression of both protagonists, using the Doctrine of Affects and figures, such as in the "theme of the horse" and in the battle music. This structural concept also may have been the framework for many presentations of the Golden Harpsichord, entirely in keeping with the aesthetic and philosophical sensibilities of the era.

The Two Terracotta Models and the Reconstruction in the 1690s

After the lawsuit of 1677–78, Todini lived for another twelve years, until 1690. Marchese Mario Verospi (1602–87), who had paid off the other creditors and became the owner of the Galleria Armonica, had died in 1687. Afterward, his brother Giovanni Battista (1620–1700) became the head of the Verospi family and assumed responsibility for the Galleria Armonica. After his death in 1700, this role was shared by his sons, Fabrizio (1666–1748) and Leone Verospi (1669–1743). Giovanni Battista relocated the Galleria to his palazzo in Via del Corso (today a Banca di Credito) and between 1690 and 1693 oversaw the redesign of the Golden Harpsichord. In 1693, Pietro Rossini's *Il Mercurio errante delle grandezze di Roma* listed the Galleria Armonica already on display in the Palazzo Verospi.[90] It is possible that in 1699 Francesco Magini (1668/70–1714), the "trombone-organista" and composer, became involved with the presentation of the Galleria Armonica, because in that year he moved into the Verospi palace.[91]

The Verospis had sincerely appreciated Todini's talents and work; otherwise they would not have loaned him so much money and would not have paid off the other creditors. They were aware that the middle class house in Via Arco della Ciambella, with its limited space, was not suited to show the Galleria to advantage. They probably criticized how Todini had displayed the Golden Harpsichord, with Galatea seated close to the

90. Pietro Rossini, *Il Mercurio errante delle grandezze di Roma, tanto antice, che moderne* (Roma: Fausto Amidei, 1693).

91. Saverio Franchi, "Francesco Magini," *Dizionario Biografico degli Italiani* 67 (2007), sub Magini.

floor, Polyphemus reaching almost to the ceiling, and not enough space between Galatea and the harpsichord. They presumably envisioned a more spacious display in the Loggia of their palazzo with the frescos of Francesco Albani (1609–15). So they abandoned Todini's three-room display in favor of a large one-room gallery, opted for a standing Galatea and for a Polyphemus seated on a lower rock. This new concept turned out to be more difficult to realize than anticipated and required significant structural changes.

To ensure an advantageous and aesthetically pleasing outcome for his plans, Giovanni Battista Verospi involved an artist and commissioned a model made of terracotta (fig. 1 c). After its completion, he realized the result was not entirely satisfactory, and so he ordered another model (fig. 1b). The first model survives in Museo di Venezia, Rome, the second is evidenced only by a small photograph probably from the 1930s. It is kept in the archives of the Musical Instruments Department of the Metropolitan Museum of Art, where it entered sometime before 1941.[92] The whereabouts of the actual model, if it survives at all, is unknown. Winternitz, who found the photo in the Departmental files, overlooked the differences with the first model and, therefore, left the second model out of consideration. The main differences between the two models are:

- In Model 2 the Tritons, Nereides, and the shell are shifted farther to the right, but not yet to the full extent as in the surviving full-scale harpsichord.
- Triton 1 has different legs. In Model 1 they are smaller and have a spiral form. In Model 2 they are larger and have a serpentine shape.
- Some smaller differences may or may not have been caused, or aggravated, by the modeling process and photography: Polyphemus' circular veil appears to be smaller in Model 2. Galatea's rock differs on its left border. Polyphemus, in Model 2, appears straightened and his left leg stands at a somewhat different angle.
- The support plate of Model 2 has seven feet at the forefront, that of Model 1 only three feet.

The comparison of the two models with the surviving full-scale ensemble suggests they represent two consecutive steps in the redesign process that Giovanni Battista Verospi drove forward. In other words, they

92. The photo was taken with a film camera and is unmarked. Its dating was suggested by the Photograph Department of the Metropolitan Museum of Art in New York.

represent two steps between Todini's original version of 1672 and the surviving version with the standing Galatea. The estimated dates of design and redesign are pooled:

I Todini's version of 1672 with seated Galatea (fig. 7)
II Model 1, 1690 (fig. 1c): version with standing Galatea
III Model 2, 1691–92 (fig. 1b): version with shifted Tritons, Nereides, and shell and added tail for Triton 1
IV Todini-Verospi version, 1692–93 (Galatea possibly somewhat later), i.e., the surviving Golden Harpsichord (fig. 1a)

Before describing the initial step of the redesign, some remarks about the first model are necessary. Model 1 was part of the collections of Evan Gorga (1865–1957) in Rome, a huge amalgam of musical instruments (now Museo statale degli strumenti musicali, Rome), antiques (now in Galleria Borghese), excavations, porcelain, etc., put together from about 1900 forward.[93] Gorga acquired the model one or two generations after it was shown in 1878 together with the Golden Harpsichord at the Exposition universelle in Paris, but surely prior to 1940. In 1948, from Gorga's collections the model entered the Museo di Venezia.[94] Evan Gorga called it a work of Gian Lorenzo Bernini (1598–1680), an attribution connoisseurs have dismissed.[95] Winternitz (1956) and Hammond (1999), who followed his views, understood it as presentation model

93. Andrea Cionci, *Il tenore collezionista: Vita, carriera lirica e collezioni di Evan Gorga* (Broccostella: Nardini Editore), 2004.

94. So the date given by Santangelo, *Catalogo delle sculture*, 93. Winternitz in his article of 1956, 151, gives the impression he had discovered the model on a photo that Gorga showed him in 1949 on the occasion of a visit. The correspondence between Winternitz and Gorga gives a different picture. On November 28, 1949, Winternitz sent photos of the Golden Harpsichord and of the second model (Model 2) to Gorga, asking him if this model is the same as that which he once owned (i.e., Model 1). Gorga in return sent him a photocopy of the proof sheets of a catalog of his collection (which was never printed) with an image of his model, i.e., Model 1. Only then did Winternitz see a picture of Gorga's model. Gorga in his letter of December 20, 1949, wrote to Winternitz that the photo of Model 2 would represent the model he once owned, that is, Model 1. Both Winternitz and Gorga were mistaken in the assumption that the photo of Model 2 would represent the model Gorga once owned. They did not examine carefully and critically the two images and Model 1. (The Metropolitan Museum of Art in New York, Department of Musical Instruments, Correspondence Winternitz).

95. Letter from Evan Gorga to Winternitz, dated December 20, 1949 (Department of Musical Instruments, Archive. Correspondence Winternitz). Winternitz saw the real model only years later in Museo di Venezia, most probably in 1952. The restoration of the model took place in 1953.

made for Todini's original version of 1672.[96] This verdict is erroneous, because it rather was made in preparation for the reconstruction of the Golden Harpsichord with the standing Galatea. In a similar way, Antonino Santangelo erred in 1954 in his catalog of an exhibition of sculptures in the Museo di Venezia.[97] He dated Todini's original version too late, into the 1690s (after Todini's death) but was possibly right when he attributed the first model of the redesign to Ludovico Gimignani (1643–97).[98] Almost fifty years later, in 2002, Barbieri assumed the model was created between 1676 and 1825, that is, between the publication of Todini's *Dichiaratione* and the sales bid of the Golden Harpsichord to the Vatican Museum. More recently, Maria Giulia Barberini decided similarly for "early nineteenth century" and regarded the model as a replica of the existing Golden Harpsichord.[99] Barberini bolstered her verdict with two arguments: there are many stylistic similarities between model and full-scale ensemble, and there is Prussian blue in the model's paint of the sea.[100] A closer look at both arguments shows, however, that neither is convincing. Beside the similarities there are significant differences between model and full-scale ensemble, which Barberini disregarded. These differences alone, though, refute the interpretation of the model as a replica. The argument of Prussian blue—a pigment first synthesized in about 1706 but hardly used by artists before the second half of the eighteenth century—is no compelling argument either, because

96. Winternitz, "The Golden Harpsichord," 110–15; Frederick Hammond, "Model for a Harpsichord with Polyphemus and Galatea," in *Life and the Arts in the Baroque Palaces of Rome Ambiente Barocco*, ed. Stefanie Walter and Frederick Hammond (New Haven: Yale University Press, 1999), no. 65.

97. Antonino Santangelo, *Catalogo delle sculture*, 93.

98. Gimignani designed the décor of a few keyboard instruments, including the grand harpsichord of Maria Camilla Pallavicini; all of them are different in style. About Gimignani see Giulia Fusconi, *Disegni decorative del barocco romano. Mostra: Gabinetto dei disegni e delle stampe. Catalogo* (Rome: Ministeri per i beni culturali e ambientali, 1986), 16. Who the actual modeler of the first and second terracotta model was remains an unanswered question.

99. Barberini, "Model of the Todini harpsichord," 121–125. Barberini also observed in the model a stylistically "more passive reference leading us to believe that it is a copy of the original . . ." (125). "More passive reference" is, however, not a period-specific quality but the result of the working in different materials, here in terracotta instead of wood. Hammond already pointed to this difference, "Model for a Harpsichord," no. 65.

100. Barberini, "Model of the Todini harpsichord," 121–25. The respective paragraphs and their authors are: "The Restoration" by Davide Fodaro (125–6), and "Stratigraphic and Micro-Raman Analysis" by Alberto De Santis, Elisabetta Mattei, and Claudia Pelosi (126).

terracotta models were often left without finish. The model has the characteristics of what Italian artists called a *modello*, that is, a more refined kind of a *bozzetto*.[101] Having a length of 118 cm, it is carefully crafted with great attention to detail so that the artisans who worked on the reconstruction of the Golden Harpsichord had precise guidance.[102] Serving primarily practical purposes, bozzetti and modelli had to be made very accurately and true to scale but not necessarily finished with paint and gilding.[103] In this case, gilding and paint were probably added sometime during the nineteenth century.[104]

Giovanni Battista Verospi commissioned Model 1 to visualize his plan for how to display the Golden Harpsichord in the Loggia of his palace. As presentation model it was expected to visualize his concept in distinction from Todini's original version (fig. 7), i.e., with Galatea standing, Polyphemus seated on a lower rock, and with the shell shifted toward the tail of the harpsichord. All other aspects—the decoration of the frieze, the poses, gestures, and facial expressions of the sculptures—had to be copied meticulously.[105] Looking at the model, the result is in one way beautiful, yet unsatisfactory in these respects: the tail of the harpsichord appears to be too long and the shell shifted too far under the tail so the putto is too close to the tail's end. In Todini's version the long tail was necessary—and it was aesthetically undisturbing—because Galatea sat in

101. Bozetti are less refined and usually made for the artist's own use. Modelli were more refined and made true to scale and with greater attention to detail, mostly for the execution by other artists and artisans, and for patrons to be evaluated. Some were painted and gilded. See Irving Lavin, "Bozetti and Modelli," *Stil und Überlieferung in der Kunst des Abendlandes: Akten des 21.* Internationalen Kongresses für Kunstgeschichte in Bonn, 1964. Vol. 3: *Theorien und Probleme* (Berlin: Gebr. Mann, 1967), 93–104, Phoebe Dent Weil, "Bozzetto-Modello: Form and Function," Orfeo Boselli, Osservazioni della scoltura antica, ed. by Ph. D. Weill (Florence: Edizioni S.P.E.S., 1978), 113–34.

102. Finer differences, owed to the vastly different dimensions and to the different materials (clay, wood), are unavoidable and, therefore, unsuitable as arguments to determine the dating of the objects.

103. See exhibition catalog: C. D. Dickerson III, Anthony Sigel, and Jan Wardropper, *Bernini: Sculpting in Clay.* With contributions by Andrea Bacci, Tomaso Montanari, and Steven F. Ostro (New York: The Metropolitan Museum of Art, 2012).

104. Asking for a second opinion about the chemical analysis published by Barberini, conservator Pascale Patris, Fairchild Center of Objects Conservation of The Metropolitan Museum of Art in New York, wrote on August 11, 2012: "We found the analysis not clear enough or convincing in any case. The terracotta might have been just terracotta, or could have been painted at any time in the 19th century, . . ."

105. Barberini, "Model of the Todini Harpsichord," 121–125, describes accurately the accordance of these characteristics of the model and the full-scale realization but dates the model erroneously into the nineteenth century.

front of it. Had Todini placed the third Triton more to the right to give the tail its regular, shorter length, Galatea would have shielded the visitors' view of the Triton. Thereupon, Verospi and his artist came to the conclusion that all sculptures needed to be shifted to the right. So he commissioned a second model. After the modeler had delivered it, a few aspects still were not yet fully satisfactory, as a comparison with the surviving full-scale ensemble shows. In Model 2, the sculptures were not yet shifted far enough to the right, Polyphemus' circular veil was still to be replaced by a fluttering veil to achieve full consistency with Galatea. Finally, Verospi decided for reasons that are no longer understandable, for a change of the anterior end of the harpsichord. A comparison of Model 1 and 2 on the one hand and the surviving ensemble on the other hand shows:

- Model 1 shows Polyphemus with a circular veil or "bulge" around his shoulders. It is similar to the scarf or cloth with which Annibale Carracci shows his Polifemo innamorato. In the surviving 1690s version, this kind of scarf was changed to a freely fluttering veil, similar to that of Galatea. In a pre-World War II photo of Model 1, Galatea's veil is still intact and corresponds to that in the full-scale version. It also shows the extension of Polyphemus' veil on the left side.
- Model 1 shows the harpsichord with a casket-shaped lid.[106] The full-scale harpsichord owned this kind of lid still in the eighteenth century, suggested by four holes on top of cheek and spine. In two of them, the rear ones, the detents of the casket lid engaged, while the keyboard flap engaged in the anterior two holes. The current lid and spine may date from the eighteenth century, while their gilded ornaments of flowing trails and diapers date from the last third of the nineteenth century.[107]

106. The lid of the model was smashed to smithers during a bombing attack in World War II. The current lid that can be seen in fig. 1c is a replica of 1953, produced in the course of a restoration and informed by the remaining shards of the original. Winternitz, "The Golden Harpsichord," 112, remembered the visit in Museo di Venezia in Rome, probably in 1952, when he saw the model the first time: "In one of these rooms [in Museo di Venezia] was a wooden box filled with small reddish clay fragments. Among them I recognized a tiny bagpipe, ..." Among the fragments were those that informed the restorers to reconstruct the casket-shaped lid.

107. Dr. Daniëlle Kisluk-Grosheide, Department of European Sculpture and Decorative Arts of The Metropolitan Museum of Art, kindly gave her opinion about the date of the ornaments on lid and spine. She wrote on April 5, 2013 to the author: "In looking at the ornaments, I am afraid they don't look 18th century to me at all and

- Model 1 shows the Tritons and Nereides obviously positioned as in Todini's original version (1672). Model 2 has them farther to the right and the full-scale ensemble even more to the right. The estimated dimension of the shift, comparing Model 1 and full-scale harpsichord is that the first Triton was moved about 7 cm to the right. This relocation has left its mark, visible from inside, in the form of the cutout in the sidewall for the Triton's right shoulder. The original cutout section was filled with a wooden block, which is still in place (fig. 10). The second Triton in the rear, not very visible, was kept in place. Both Nereides and the third Triton were shifted each about 24–25 cm to the right. This means, in Model 1 the third Triton is (enlarged to full size) positioned about 85 cm from the end of the tail, in the full-scale ensemble only 60 cm (measured to the middle of the head). Model 2 shows positions approximately in the middle between both. Figure 11 shows an overlay to visualize the significance of the shift. The shift to the right resulted in a gap between the first Triton and the first Nereide; it was bridged by the insertion of two long serpentine fishtail legs in Model 2 and the surviving instrument. The serpentine legs replaced the short spiral legs as seen in Model 1. Triton 2 and 3 retained their spiral legs.
- Position of dolphins and shell: In Model 1, they are about 52 cm under the tail (measured from the beginning of the dolphins), in the full-scale ensemble only 25–30 cm. In Model 2 the placement is approximately in the middle between both positions.
- The shell in both Model 1 and Model 2 appears to be flatter and its profile slightly different from that of the surviving shell. Judged by the photos, the differences are not large, so that they may be owed to inaccurate modeling.
- The harpsichord case in both Model 1 and Model 2 is, in comparison to the surviving instrument, shorter at its keyboard-side toward the bottom and longer toward the lid (fig. 12). The extension at the cheek side is evidenced by an attached 4–5 cm wide strip of wood and an added floral ornament left of the lute player. The shortening above is visible at the ornaments that extend in the full-scale instrument under the head of the lute player. Lacking evidence,

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I would believe they were late 19th century additions to beautify the piece. Especially the flowing trails of ivy seem more at home in the Art Nouveau than in the Baroque period. Although the diaper pattern was a popular motive during the Régence style, the crudeness of it makes me think that it was added at a later moment as well."

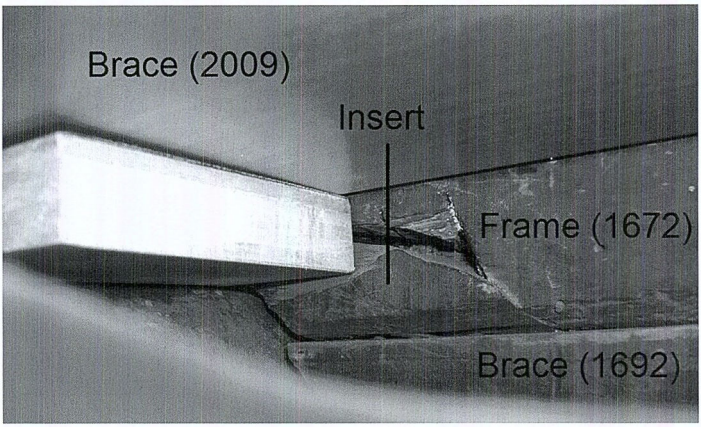

FIGURE 10. Support system of the harpsichord's case (detail). View onto the inner cheek from underneath the keyboard. The 7 cm wide insert was added in about 1692. It indicates the original position of the Triton's right shoulder, before the Triton was shifted farther to the right. Photo by Herbert Heyde. See color photo p. 188.

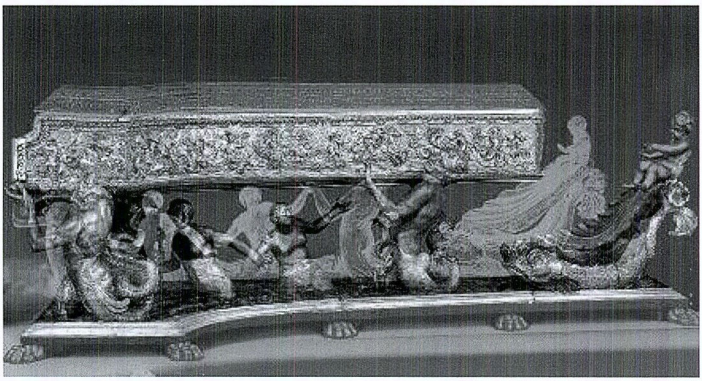

FIGURE 11. Overlay of model 1 and full-scale Golden harpsichord. The bright parts represent the model, the others the surviving instrument. Overlay by Edward Toran. See color photo p. 188.

(a)

(b)

FIGURE 12. The cheek section of the harpsichord's case. (a) Model 1 (1690). Photo permission of Museo di Venezia, Rome. (b) the surviving harpsichord (1692–93). Photo courtesy of the Metropolitan Museum or Art, New York. See color photos p. 189.

the purpose and meaning of this change cannot be fully understood: the front sections of the bottom plates of both harpsichord and case are later replacements and, therefore, cannot provide evidence. Given the originally shorter case, the current harpsichord proper would project beyond the case by 8 mm.[108] From this evidence would follow that the current harpsichord is not the original one but dates from about 1692–93, if not somewhat later.

- The rocks as shown in Models 1 and 2 are different from the renderings in the full-scale wooden version. There, Galatea's and Polyphemus' rocks are structured differently and, therefore, may date from a different time. Galatea's rock is carved from four wooden blocks, including its outside structure. Polyphemus' rock has an internal frame of boards to which carved wooden blocks are attached on the outside. It is possible that Polyphemus' rock is the upper section of the 1672 version, that is, the original rock Todini supplemented by another one underneath.

Taking all changes together, which trail the modifications from Todini's original version of 1672 to the surviving ensemble—the Verospi version—the redesign and reconstruction was profound, invasive, and expensive. It was paramount to a second birth of the Golden Harpsichord. Carving the standing Galatea was only one major element. Other elements that, in the context of the described changes had to be redone, included the sea floor, or major parts of it. The shift of the sculptures required refashioning of some of their wooden components. The fluttering veil for Polyphemus, Galatea's rock, and the serpentine tails for Triton 1 were other major changes, not to mention the work on the anterior end of the harpsichord case and the apparent replacement of the harpsichord proper. All woodwork was performed in admirable perfection and in a remarkably consistent style. This observation makes one wonder if the woodwork, including the shifting of the sculptures and the carving the standing Galatea, was done in the same workshop as Todini's original version, that is, in the workshop of Peter Paul Reiff, the son of Hans Jacob Reiff.[109] The carver, while working on Galatea, was probably able to study the Nereides close by, and so he could make her stylistically consistent with them as much as possible.

108. The inner cheek length of the original, short case without moldings, measures 480 mm; the extended cheek of today's case measures 521 mm. By comparison, the cheek length of the current harpsichord proper measures 488 mm.

109. See note 71.

The Verospi version is characterized by a spread out display with the principal objects lined up in a row, extending the ensemble to a width of 6.8–7.0 m. The new layout with the standing Galatea did not only break the mold of the display in Todini's apartment but also led to an artistic enhancement. It abandoned the dramatic and sensual touch in Todini's original version with Galatea rushing from the sea before the eyes of Polyphemus in favor of a greater idealization of Galatea. In her standing posture she assumes a more transfigured and tender character that comes closer to what Theocritus' *Idylls* conveys. There, she appears only during the night in Polyphemus' dreams and disappears when he was awakening. The standing Galatea is a sublime and romanticized figure of an innocent young girl who faces the wooing of a man. Galatea's and Polyphemus' positioning, as shown in both models, their gestures and the direction of their gazes is obviously the precise mode of how Giovanni Battista Verospi and his artist wanted them to be displayed. Galatea's forlorn gaze goes to a point somewhere above the visitors and away from Polyphemus' gaze. Polyphemus himself looks diagonally at the floor before the visitors, just at that place where Galatea once was seated. There is no evidence about the supplementary aspects of how Verospi displayed the Golden Harpsichord in the Loggia and if he had remounted the canvases by Dughet. A photo of the display at the 1900 Exposition universelle internationale in Paris shows an additional piece of sculpted rock –so it appears—beside Polyphemus, and one wonders if it is a remainder from the display at the Palazzo Verospi.[110]

The reconstruction appears to have been completed by 1693 because of the cited travel guide by Pietro Rossini. In 1700, in another travel guide, compiled by Giacomo Pinarolo, Todini's Galleria Armonica is mentioned again, as displayed in the vault of the Loggia with the frescos of Francesco Albani. Also on display there was a collection of antique statues, showing Minerva, Mars, a Ganymede, a Gladiator, etc. and heads of Agrippina, Faustina, Druso, and others. Pinarolo briefly describes Todini's macchina maggiore as being comprised of four harpsichords and an organ, all controlled from a single keyboard. Pinarolo outlines the Golden Harpsichord in this way: ". . . another harpsichord, partially gilded, of excellent workmanship, with the statue of a Polyphemus who

110. *Musée rétrospectif de la Classe 17: Instruments de la Musique. Matériel, Procédés et Produits a l'Exposition universelle internationale de 1900, à Paris. Rapport du Comité d'Installation* (Paris: Exposition universelle, 1900), between pp. 80–81, see: Vue d'ensemble: instruments à vent, lutherie e clavecins.

holds a musetta; playing the harpsichord, sounds the musetta, . . ."[111] Pinarolo further mentions the automaton of the pilgrim, but neither the statue of Galatea nor the fortress and the mechanical lira and violin. He may have simply overlooked or forgotten them. The Loggia was the perfect display space in the Palazzo Verospi in so far as frescos and Galleria shared the theme of universal harmony associated with the heliocentric and geocentric model, respectively. Albani's frescos embody the heliocentric world image with the sun (Apollo) shown in the center and encircled by the zodiac. In a wider perimeter, the sun is surrounded by the planets, the four seasons, and the four parts of the day. The fortress of the Galleria Armonica stood metaphorically for the geocentric model, showing the Earth as a globe, the zodiac, and the division in months and days associated with Earth and Moon. Both astronomic models still competed with each other during the seventeenth century.

Twenty-two years after Pinarolo, in 1722, Filippo Bonanni in his *Gabinetto armonico,* published an engraving of the Greater Machine.[112] It offers a correction of the misleading representation in Kircher's *Phonurgia nova* of 1673. It seems that Giovanni Battista Verospi or his sons also subjected this machine to a reconstruction. Bonanni wrote in the caption only: "Vista of the Chamber called Galleria Armonica in the palace of the Signori Verospi in Rome/ in which there are many instruments fabricated with great artistry by Michele Todino."[113]

When in 1771 Charles Burney visited "the famous Todini gallery, in the Verospi palace" it was still in the Loggia with the frescos and the other instruments, but no longer in playing condition.[114] In 1775 the instruments underwent a major repair by Gioacchino Martelli, and 1791 is, so far, the last year that attests the Galleria Armonica in the Loggia of the Verospi palace. In that year Thomas Martyn mentions in his travel report the Greater Machine as being displayed there: ". . . the ceiling of which is painted by Albano. There is a remarkable harpsichord here, so con-

111. Pinarolo, *Trattato delle cose più memorabili di Roma,* 125: "& è curiosissima: un'altro Cembalo à parte indorato di un superbo lavoro, con la statua di un Polifemo, quale tiene una Musetta, suonando il Cembalo, suona la Musetta . . ."

112. For recent publications of the engraving see note 34.

113. Bonanni, *Gabinetto armonico,* 1722, plate 33: "Prospetto della Camera detta Galleria armonica nel Palazzo delli Signori Verospi in Roma / in cui sono molti Strumenti sonori, fabricate con prodioso artifizio da Michele Todino."

114. Charles Burney, *The Present State of Music in France and Italy: or, the Journal of a Tour through those Countries, Undertaken to Collect Materials for a General History of Music* (London: T. Becket & Co, 1771), 392–93.

trived, that by playing on one, you make three others play at the same time. Over is a large good landscape, by Gaspard Poussin." [Dughet][115] In 1796, the Verospi palace was sold, and this is obviously the year from when on the Galleria began to be discarded.[116]

Conclusion

The Golden Harpsichord was part of the Galleria Armonica, a private museum conceived and put into operation by Michele Todini. It displayed two automatons, the Golden Harpsichord, and a compound of seven instruments played from one keyboard. Only the Golden Harpsichord survives, however, without its sordellina machine and the canvases.

Todini was a multifaceted musician and a designer of musical instruments who absorbed the intellectual and artistic trends of his time, creatively developed and translated them into his own works. All four objects of the Galleria Armonica featured novel mechanical contrivances that substituted for the actions of the player. All four objects were complex works of mechanical art that integrated elements of the visual arts, of music and instrument making. The concept of the entire Gallery rested on the overarching idea of universal harmony, and thus manifested a particular worldview. Todini's thinking was closely associated with the mindscape of his friend, Athanasius Kircher. The Galleria was created at a time when visual arts and music were in the period of the high Baroque, when the Renaissance concept of the parallelism of the senses, of the equivalence of eye and ear, fully unfolded in a society of unprecedented wealth. In the visual arts and music, the notions of dynamics, movement, emotionality, and contrast became preeminent driving forces of expression. The crossovers among music, sculpture, and painting found nowhere stronger expression than in opera as the most popular art form of the seventeenth century. The Golden Harpsichord evolved from the same artistic background as another form of crossover art, as kind of a frozen opera scene that needed performance by word and music.

The Golden Harpsichord is, according to the revisionist interpretations of this article, a seventeenth century hymn on the power of music,

115. Thomas Martyn, *A Tour through Italy. Containing Full Directions for Travelling that Interesting Country* (London: C and G. Kearsley, 1791), 243.

116. For the history of the Golden Harpsichord during the nineteenth century see P. Barbieri, 2002.

realized by the legend of Polyphemus and Galatea in the literary tradition of Theocritus' *Idylls.* Lovesick young Polyphemus sings and plays on his sordellina onto the sea to charm Galatea, who left his love unrequited. The Golden Harpsichord is conceived in a way that the intentions of both protagonists are illustrated and supported by music on sordellina and harpsichord. The gentle and endearing sound of the sordellina stood on Polyphemus' side, the impassionate, neutral sound of the harpsichord on Galatea's. Todini gave the Golden Harpsichord a layout that, in the optimal case of presentation, required a performer who would narrate the underlying literary story and who would play both instruments from two keyboards at the harpsichord.

The Galleria Armonica was an attraction for interested visitors between 1673 and the 1790s. It differed not only from modern musical instruments museums but also from the private collections of Manfredo Settala (1600–80) or Marco Contarini (1631–1689) as a unique project with neither predecessors nor followers. Smaller compound instruments were well known, as claviorgana or various kinds of automata that could be found in many palaces and royal gardens.[117] The lavish high Baroque style as realized in the Golden Harpsichord continued to some degree in the decoration of harpsichords until well into the first half of the eighteenth century,[118] but complex combinations of instruments as in the Greater machine and the Golden Harpsichord never came back although they echoed in the orchestrions that started to emerge toward the end of the eighteenth century.

The Golden Harpsichord covers now a history of 340 years that falls into four periods. After the initial period in Todini's apartment (1672–1690) followed a second in the Palazzo Verospi (1690–1796) and a third that covered another century (1796–1902). Afterwards, when the Golden Harpsichord entered the Metropolitan Museum in 1902, it was ushered into the fourth period of its history. Ever since, at least since 1904, no invasive measures were executed anymore.

Starting in the eighteenth century, after the redesign of the 1690s, a series of more or less profound repairs and restorations were performed.

117. In 1715, a flute clock with a life-size sculpture was built by Filippo Testa as one of the fifteen instruments Pope Clement XI sent to the Chinese Emperor Kangxi as a dynastic present. See Maureen Cassidy-Geiger with Erwee and Jill Deupi, "From Rome to Beijing: A 1719 Document of Musical and Other Papal Gifts to China," *Studies in the Decorative Arts* 15, 1 (Fall–Winter 2007–2008): 178–89.

118. Ibid. In 1715, among the instruments was "a standing harpsichord with a gilded case, painted with flowers, having statues below" by Nicolo Passarini.

A thick layer of a history of modifications and interventions has grown ever since. In the nineteenth century, the repairs and restorations were much motivated by the attempts of the various owners to sell the ensemble as a piece of decorative art. Some of the invasive measures, such as the replacement of lid and lion's feet, and the partial replacement of the bottom plates of case and harpsichord are offhand recognizable, while many others are not. They include the dating of spine, lid, and shell. The art-critical method has not only its potentials but also its limitations. Other research methods have to be applied which may or may not be able to answer open questions. In 2009, the Department of Objects Conservation and Scientific Research of the Metropolitan Museum began investigating the Golden Harpsichord, and results are reported in the subsequent article in this JOURNAL, "An Unfolding Tale: the Making and Transformation of the Golden Harpsichord," by Pascale Patris and Adriana Rizzo.[119]

APPENDIX

***Inventory of the room with the Golden Harpsichord in Todini's apartment at Via Arco della Ciambella, drawn up on February 21, 1678* (Rome, Archivio di Stato, 30 Not. Cap., uff. 28)**[120]

In the first room at the right hand up the stairs:

The machine of Polyphemus' mountain with the Triumph of Galatea and the carved harpsichord that represents various marine matters regarding Galatea, which comprise the statues of Tritons and Nymphs who support that harpsichord, the statue of Galatea, and the Amoretto with the car drawn by dolphins, and the statue of Polyphemus on the said mountain with other gilded things to enhance this mountain. Inside this mountain is the invention that sounds the sordellina; air scapes painted by Gasparo di Posino [Dughet]; above the gilded cornice; and a used curtain of turquoise taffeta which covers the mentioned machine, with its layer of used green cloth.

A pair of matching paintings about 8 palmi (180 cm) wide, one representing the Judgment of Paris of the three Goddesses,[121] the other

119. Pascale Patris and Adriana Rizzo, "An Unfolding Tale: the Making and Transformation of the Golden Harpsichord," *Journal of the American Musical Instrument Society* XXXVIV (2013): 62–88.

120. Italian text after Barbieri, "Michele Todini's galleria armonica," 579.

121. Hera, Athena, Aphrodite.

Bacchus with various figures, [both] with carved frames, gilded and in walnut color.

A pair of matching paintings with marine topics and figures, with carved frames, mounted above the two doors of this room.

Two small rounded paintings in square frames showing the baths with various figures.

Another small painting with a bull fight, gilded frame.

Another painting with Erminia sul Giordano,[122] 4 palmi (90 cm) high and 4 palmi (90 cm) wide, gilded frame.

A pair of two small matching paintings, canvas of "mezza testa con manne" (meaning unclear).

Two other round paintings with flowers, gilded frames.

Four more small paintings with landscapes, and country scenes, gilded frames. Two are by Mr. Michele.[123]

Seven armchairs with gilded cow leather.

Another large chair of leather without armrest.

Four small stools of walnut covered with green damask.

Two more round paintings with gilded square frames.

Nella prima stanza a mano dritta salita la scala. La machina del monte di Polifemo con il trionfo di Galatea con il cimbalo con cassa intagliata rappresentante varie cose marine per detta Galatea, con le statue di tritoni e ninfe che sottengono detto cimbalo, la statua di Galatea, et armorino con iI carro tirato da delfini e la statua di Polifemo in detto monte con altre cose indorate poste per ornamento di detto monte, dentro il quale monte sta l'inventione che sona la sordellina, con l'arie depinte da Gasparo di Posino, cornicione sopra indorato, et una tenna di taffetano torchino usata che copre tutta la sudetta machina, con il suo strato di panno verde usato.

Due quadri compagni di grandezza di palmi 8 in circa rappresentanti uno il Giudizio di Paride delle 3 dee e l'altro il baccante con varie figure con cornice intagliate indorate e color di noce.

Due quadri compagni con marine e figure con cornice indorate sopra le due porte di detta stanza.

Due quadretti tondini con cornice quadra in tavola, rassembrano li bagni con varie figure.

122. Title of an opera by Michelangelo Rossi, performed 1633 in Palazzo Barberini in Rome.

123. Probably the Roman painter Michele Pace del Campidoglio (1610–70).

Un altro quadretto con la caccia del toro, cornice indorata.

Un altro quadro con Erminia sul Giordano alto palmi 4, e longo altri palmi 4, cornice indorata.

Due quadretti compagni, tela da mezza testa con manne.

Due altri quadretti tondi con fiori, cornice indorate.

4 altri quadretti con paesi, anzi campagne, cornice indorate, due sono del signor Michele.

Sette sedie d'appoggio di vacchetta indorate.

Un'altra sediola di corame senza appoggio.

4 scabelletti di noce coperti di damasco verde

2 altri quadretti tondi con cornice quadre indorate.