

GIAN LORENZO BERNINI: A HYPOTHESIS ABOUT HIS MACHINE OF THE RISING SUN

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Abstract

GIAN LORENZO BERNINI: UN'IPOTESI SULLA "MACCHINA DEL SOLE"

L'articolo propone un'ipotesi sul funzionamento di una macchina teatrale che Gian Lorenzo Bernini (1598-1680) utilizzò più volte per creare una realistica impressione del passare del tempo: la macchina del sole. L'ipotesi si basa sul confronto fra un disegno di una scenografia, finora inedito, corredato di appunti esplicativi di pugno di un paggio dell'entourage dei Barberini e un acquarello, attribuito al Bernini. Osservando bene i due disegni sembrerebbe che entrambi si riferiscano ad una stessa scenografia teatrale. Una prima conferma di questa impressione è data dai documenti da me analizzati, che dimostrano che il paggio fu effettivamente coinvolto nell'organizzazione di una rappresentazione in cui Bernini usò la macchina del sole. Un'ulteriore conferma è data dal fatto che lo stesso paggio non prese più parte a spettacoli teatrali perché successivamente ricoprì ruoli che lo videro impegnato in questioni diplomatico-militari, che lo portarono lontano da Roma.

Gian Lorenzo Bernini (1598-1680) is usually associated with the art of sculpture; nevertheless, most in-depth studies based on the accounts of his life reveal that he was also an architect, painter, playwright, and stage designer.¹ His biographers and numerous letters and *avvisi* provide abundant evidence that he was involved in staging performances and inventing theatrical devices. His popularity among his contemporaries was especially based on his creation of a machine for the theatre – the machine of the rising sun – which he himself used in some of the spectacles that he staged

¹ See for instance Irving Lavin's 'Bernini and the theater' in Lavin, *Visible Spirit*, I (London: Pindar Press, 2007), pp. 15-32, Elena Tamburini's *Gian Lorenzo Bernini e il teatro dell'arte* (Florence: Le Lettere, 2012), Genevieve Warwick's *Bernini. Art as Theatre* (New Haven and London: Yale University Press, 2012).

during his lifetime. This article proposes a hypothesis about the operation of this machine based on a comparison between a drawing by Malatesta Albani (see fig. 1a), which I found while researching new material for my Ph.D. studies,² and a watercolour attributed to Gian Lorenzo Bernini (see fig. 1b), which is housed in the Kupferstichkabinett of the Berlin State Museum.

Since the young Albani was involved in organizing the *intermedio* entitled *La Fiera di Farfa* which Bernini staged for the Barberini during the 1639 Carnival season and did not participate in the staging of any other spectacles in the following years, I argue that the above drawing might be related to the piece of scenography known as the machine for the rising sun that Bernini also used in this *intermedio*.

Before proceeding with this hypothesis, it is important to introduce Gian Lorenzo Bernini's interest in the theatre. Born in Naples on 7 December 1598, son of the Florentine sculptor Pietro (1562-1629), Gian Lorenzo started producing works, now almost forgotten, when he was still a child. The quality of these early sculptures is of a remarkably high level, which led Pietro Bernini to realize that his son was a child prodigy; consequently, he did his best to teach the young boy the techniques he had learnt during his career. Bernini's fortune was probably due to his family's move to Rome in about 1605, where the young boy spent his early years copying the ancient sculptures and contemporary paintings, which he could admire in the Vatican. Thanks to his talent, the young Gian Lorenzo soon benefitted from the patronage of the Borghese family. Cardinal Scipione Borghese (1577-1633), nephew of Pope Paul V (1552-1621), had already employed Pietro Bernini several times when he discovered his son's skill. One of the Cardinal's early commissions was the marble group entitled *Aeneas, Anchises, and Ascanius fleeing Troy*, which is dated to 1619. The impression of truthfulness that the young Gian Lorenzo was able to achieve during this period would later become one of the artist's main

² I am currently attending a PhD programme in the Centre for the Study of the Renaissance at the University of Warwick (UK), under Drs David Lines and Margaret Shewring, with a research project about the staging of operas under the patronage of the Barberini family during the seventeenth century.

characteristics, which he employed in all the different fields of artistic expression he decided to undertake.³

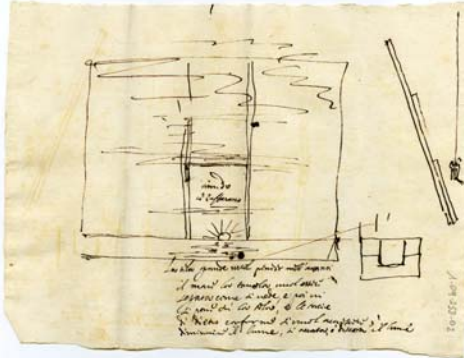


Fig. 1a. Malatesta Albani, *Appunti con disegno* (notes with drawing). Ca.1641-1645. Document 1-09-258-02, project Archivio Albani, Biblioteca Oliveriana, Pesaro.



Fig. 1b. Gian Lorenzo Bernini (attributed to), *Sunrise*. 1635-1639. Drawing in pen and ink on white paper, 295 millimeters long and 273 millimeters wide. Kupferstichkabinett, State Museum, Berlin, Germany.

³ *Neptune and Triton* (c. 1620), *Pluto and Persephone* (1621-1622), *Apollo and Daphne* (1622-1625), *David* (1623-1624), are among Bernini's most outstanding creations of this period and show the development of a technique intended to portray human figures in an increasingly realistic manner.

With the election of Maffeo Barberini (1568-1644) to the papal throne as Pope Urban VIII (1623), Bernini was able to reach a position never before achieved by any other artist in Rome, with the sole exception maybe of Michelangelo. The newly elected pope had already commissioned works from both Gian Lorenzo and his father, but he was particularly fascinated by the younger artist with whom he established a friendly and intimate relationship. Urban VIII helped the young artist to develop his skills in other fields and encouraged him to study painting and architecture. The numerous portraits and self-portraits dating this period give an idea of the mastery that Bernini achieved in painting, while in architecture he created his most celebrated works of art. The baldachin in St. Peter's Basilica and some of his most celebrated fountains including the *Triton Fountain* (1642-1643) in Piazza Barberini and the later *Four Rivers Fountain* in Piazza Navona (1648-1651), bear witness to the artist's expertise in creating astounding effects of light and shade, and giving a vivid impression of movement. Bernini's skill in creating illusionary effects of motion made a few scholars use the term 'theatricality' for some of his sculptures. In this respect, the Cornaro Chapel in the church of Santa Maria della Vittoria in Rome deserves special mention because its theatricality helps to introduce another field in which Bernini was able to express his creativity - the world of theatre. This chapel, a combination of architecture, painting and sculpture, was commissioned by Cardinal Federigo Cornaro, Patriarch of Venice, during the late 1640s, and work continued during the following decade. The lower part of the chapel (see fig. 2) contains the marble group representing the ecstasy of St Teresa of Avila, that is, St Teresa lying with her head reclined back and the Angel, who has just pulled out his dart after piercing her heart, is ready to pierce it again - a perfect representation of a vision by the saint as described in her autobiography.⁴

⁴ St. Teresa's description of her vision is the following: 'Our Lord was pleased that I should have at times a vision of this kind: I saw an angel close by me, on my left side, in bodily form. This I am not accustomed to see, unless very rarely. Though I have visions of angels frequently, yet I see them only by an intellectual vision, such as I have spoken of before. It was our Lord's will that in this vision I should see the angel in this wise. He was not large, but small of stature, and most beautiful—his face burning, as if he were one of



Fig. 2 Gian Lorenzo Bernini, *Cornaro Chapel* (church of Santa Maria della Vittoria). Ca. late 1650s (finished). Rome. Photo by Nina Aldin Thune, distributed by Creative Commons and available at the following URL
http://en.wikipedia.org/wiki/File:Santa_Maria_della_Vittoria_-_1.jpg.

The two figures in the group are both immersed in celestial light, symbolized by the golden beams behind them, and the plastic image they form is framed by four marble columns and a frontispiece, resembling contemporary prosceniums built for theatrical performances. The group in itself represents one of the outstanding sculptures by Bernini, but what strikes

the highest angels, who seem to be all of fire: they must be those whom we call cherubim. Their names they never tell me; but I see very well that there is in heaven so great a difference between one angel and another, and between these and the others, that I cannot explain it. I saw in his hand a long spear of gold, and at the iron's point there seemed to be a little fire. He appeared to me to be thrusting it at times into my heart, and to pierce my very entrails; when he drew it out, he seemed to draw them out also, and to leave me all on fire with a great love of God. The pain was so great, that it made me moan; and yet so surpassing was the sweetness of this excessive pain, that I could not wish to be rid of it'. (*The Life of St. Teresa of Jesus, of the Order of Our Lady of Carmel. Written by Herself translated from the Spanish by David Lewis. Third Edition Enlarged. With additional Notes and an Introduction by Rev. Fr. Benedict Zimmerman, (London: Thomas Baker, 1904), pp. 165-6).*

the viewer, observing the interior of the chapel from the nave of the church, are the two groups of people carved in theatre-like boxes, placed on either side of the chapel. These people represent members of the Cornaro family, more precisely Cardinal Federigo, who commissioned the chapel, his father and six other cardinals who had lived in the previous century. The idea of designing a chapel with people leaning forward from theatrical boxes as if they were attending a theatrical performance is revolutionary, and it was very likely due to Bernini's passion for the theatre.

A confirmation of this passion can be found in his biographies, which report that the artist dedicated a great part of his life to producing theatrical performances, to writing his own plays, to designing sets, and to inventing machines. Bernini was also an actor and enjoyed playing in the spectacles he staged in his own house to entertain his guests. Furthermore, there is some evidence that between 1630 and 1650, usually during the Carnival season, he was often involved in writing comedies, planning scenography, acting and producing performances. Sometimes he did this for one of his wealthy customers, at other times he did it for his relatives and friends.

Some scholars believe that Bernini improved his theatrical skills in Parma in 1628, when he worked side by side with the architect-scenographer Francesco Guitti (1605?-1640), who was involved in building the Teatro Farnese.⁵ There Guitti used the innovative device of changing the flats simultaneously, a technique first introduced in Parma by Giovanni Battista Aleotti, or by the same Francesco Guitti himself (although the invention probably dates to a decade earlier).⁶

From the surviving accounts it is possible to argue that Bernini's productions in Rome were so elaborate that it was necessary for him, and his collaborators, to devote the entire year to preparing their staging during the Carnival season. The plots of these performances were very simple and they usually did not involve professional actors. They included comic episodes and the dialogues were often improvised in the manner of contemporary *commedia dell'arte* plays. The most significant elements in

⁵ See Elena Tamburini, *Gian Lorenzo Bernini e il teatro dell'arte* (Florence: Le lettere, 2012), p.45, Giuseppe Adami, *Scenografia e scenotecnica barocca tra Ferrara e Parma (1625-1631)* (Rome:Breitschneider, 2003), p. 92.

⁶ See Giuseppe Adami, *Scenografia e scenotecnica barocca tra Ferrara e Parma (1625-1631)* (Rome:Breitschneider, 2003), p. 40.

Bernini's shows were the use of stage machinery and a great variety of scenographic effects. In 1637 he astonished his public by staging a performance entitled *I due covielli* or *I due Teatri* (*The Two Masks* or *The Two Theatres*), which featured two theatres: one was the real theatre with the actual audience made up of the guests that Bernini had invited to attend the spectacle, the other was a fake theatre made up of painted figures mixed with actors to give an impression of truthfulness and placed on stage, mirroring the real audience. The effect was amplified by the presence of two clowns placed back to back (one was played by Bernini himself, the other by his brother Luigi), which gave a kaleidoscopic impression of a multiple reality.⁷ It is worth mentioning another device used by Bernini during this performance, a device that allowed him to show the moon in various stages, creating a deep sense of reality; this impression was magnified by the use of moving clouds, which at times obscured the silver moon as if they were actual clouds. It is very likely that the spectators were not particularly astounded by the use of clouds, which were very commonly used in theatrical performances during the seventeenth century,⁸ but by the feeling of truthfulness created by the fake moonlight: the skilful use of lighting must have been one of Bernini's most successful means of creating optical illusions for these types of realistic landscapes. In another play, entitled *L'inondazione del Tevere* (*The Flooding of the Tiber*), staged for the 1638 Carnival season, Bernini tried to recreate the effect of the true flooding of the Tiber in 1637. This play also included a device used to make a house collapse on the stage, which created a great sensation among the public.

According to his biographer, Filippo Baldinucci (1625-1696),⁹ the artist was also responsible for staging almost all the operas patronized by the Barberini during the seventeenth century: the biographer reports that when he was not directly involved in making the backdrops and inventing new machines, Bernini was engaged to supervise the productions. Proba-

⁷ For more details about this performance see Robert Fahrner and William Kleb, 'The Theatrical Activity of Gianlorenzo Bernini' in *Educational Theatre Journal*, 25.1 (March 1973), p. 10.

⁸ In his manual Nicola Sabbatini describes different methods used to make clouds appear or move on stage: see Nicola Sabbatini, *Pratica di fabricar scene e machine ne' teatri* (Ravenna: 1638, reprint Rome: Bestelli, 1955), chapters 42-49, pp. 105-123.

⁹ Filippo Baldinucci, *Vita del cavaliere Gio. Lorenzo Bernino, scultore, architetto, e pittore* (Florence: Vincenzo Vangelisti, 1682), p. 45.

bly the powerful family also asked him to design the Teatro Barberini, which was built between 1637 and 1638 by the architects Valerio Poggi and Bartolomeo Breccioli, next to Palazzo Barberini alle Quattro Fontane.¹⁰

The newly-built theatre was inaugurated by staging the opera *L'Egisto* or *Chi soffre, spera*,¹¹ which was a remake of the opera *Il Falcone*, performed in the Sala dei Marmi on the *piano nobile* of Palazzo Barberini in 1637, based on a libretto by Giulio Rospigliosi (drawn from the ninth *novella* from the fifth day of Boccaccio's *Decameron*) and with music by Marco Marazzoli (1619-1662). The new 1639 version, which had the collaboration of the musician Virgilio Mazzocchi (1597-1646), younger brother of the composer Domenico, had a revised allegorical prologue, two new scenes to give space to the subplot of Coviello's and Zanni's sons, Colello and Frittellino, a revised first *intermedio* after Act I, and the new *intermedio* at the end of Act II entitled *La fiera di Farfa*, the staging of which was entrusted to Gian Lorenzo Bernini; it soon became one of the most celebrated theatrical pieces of the seventeenth century. Because the matter has not been fully examined by scholars, I will offer some in-depth details on Bernini's involvement in the staging of this *intermedio*.

Bernini created the 'perspective' scene for the *intermedio* with the help of the skilled workers from St. Peter's Basilica: the total amount of money that the artist spent to buy what he needed and to pay his collaborators

¹⁰ See Patricia Waddy, 'The Design and Designers of Palazzo Barberini' in *Journal of the Society of Architectural Historians*, 35.3 (Oct., 1976), 151-85, and by the same author, *Seventeenth-Century Roman Palaces: Use and the Art of the Plan* (New York: MIT Press, 1990).

¹¹ Egisto, an impoverished gentleman, is the main character of the opera. He loves Alvida, a young widow. To prove his feeling, Alvida asks the young man to sacrifice what he loves the most. Egisto agrees and Alvida, conquered by the man's loyalty, accepts his love. This main plot of the opera is linked to subplots including one about Lucinda, who hopelessly loves Egisto, and that of Egisto's servants, Coviello and Zanni, who are also the protagonists of *La Fiera di Farfa*, modeled on characters of the *commedia dell'arte*, always fighting to defeat the pangs of hunger and worried about satisfying their appetite without working. (For further information about the opera and for a more detailed plot see Margaret Murata, *Operas for the Papal Court (1631-1668)*, (Ann Arbor: UMI Research Press, 1981), pp. 32-33.

was of 248.66 *scudi*¹² as recorded in a request for payment signed by the artist on 9 April 1639.¹³ Along with his invention of the above-mentioned machine of the rising sun, he also used live animals, which entered on stage to recreate a convincing environment for the Fair,¹⁴ and he also created a device to simulate a storm with lighting and rain.¹⁵

The *intermedio* can be divided into sections. The first, introduced by a double chorus placed at the end of the second act, creates the feeling of a festive event, a lively fair with its vendors calling for the attention of potential buyers.¹⁶ Since fairs usually started early in the morning, it is very likely that, during this episode, Bernini began to move his machine slowly so as to give an impression of a real sunrise. The arrival of a lady, who steps down from her litter and enters the fair, creates a break in the lively atmosphere and brings this first episode to an end. At this point of the performance the sun was probably higher in the sky. The following, and longest section, stages an episode which involves a mountebank from Narni, surrounded by a large crowd, and accompanied by his *zanni*.¹⁷ This episode renews the festive atmosphere. Early in the afternoon, while the sun is slowly descending, the lady, who had previously appeared, enters for the second time and again interrupts the joyful feeling. Later, a swordfight

¹² The Giustificazioni report a great amount of expenses for the workers, which help to understand that the cost of each worker per day was about 0.40 *scudi*.

It must also be considered that in Rome at the time the *scudo* corresponded to 100 copper *baiocchi* and to 10 silver *giuli* as reported by Frederick Hammond in his *Music and Spectacle in Baroque Rome. Barberini Patronage under Urban VIII* (New Haven and London: Yale University Press, 1994), p. 3.

¹³ Vatican City, BAV, Arch. Barb. Giust. I, vol. 76, n. 3315, fol. 28r.

¹⁴ Vatican City, BAV, Arch. Barb. Giust. I, vol. 76, fol. 31v '[...] per il tavolato del ponte dove sagliono le bestie [...]' ([...] for the boards of the bridge where the beasts pass [...]).

¹⁵ The methods used to imitate lightning and thunder are well described by Nicola Sabbatini in his *Pratica di fabricar scienze e machine ne' teatri* (Vol. 2, chapters 52 and 53).

¹⁶ Vatican City, I-Rvat Urb. Lat. 1107, Avvisi di Roma, fol. 39v, 5 March 1639, quoted in Alessandro Ademollo, *I teatri di Roma nel secolo decimo settimo* (Rome: L. Pasqualucci, 1888), p. 29: '[...] artisti e mercanti d'ogni sorte, che parlando in musica vanno procurando di vendere le merci, et opere loro; [...]' ([...] artists and merchants of all sorts, who speaking in music try to sell their merchandise and their products; [...]).

¹⁷ The term *zanni*, borrowed from the *commedia dell'arte* performances, was at the time a generic term used for any character belonging to the comic servant class. See Cesare Molinari *Storia del Teatro* (Milan: Editori Laterza, 2001) pp. 103-112.

arises caused by a gentleman who has struck a dog during a dance. The combat leads to the end of the *intermedio*. At this point Bernini's machine was probably making the sun gradually set.

The person responsible for organizing the swordfight and making it as realistic as possible was Malatesta Albani (1612? -1645).¹⁸ Malatesta's involvement in the 1639 performance is fundamental to support the hypothesis that the drawing by him shown in the opening of this article (fig. 1a) refers to Bernini's machine of the rising sun. A request for payment records that Albani received a new sword because his had broken, which confirms his involvement in the swordfight.¹⁹ As already mentioned, the swordfight took place towards the end of the *intermedio* and it is arguable that at this point Bernini's machine made the sun set, which possibly made a great impression on the young Albani.

Numerous conjectures have been offered about Bernini's machine of the rising sun, but it seems that the artist did not leave any documents related to it, although there are reports and letters attesting that the artist used this device several times in the performances he staged. We know from a letter written by Francesco Barberini (1597-1679) to Jules Mazarin (1602-1661), dated 14 February 1635, that the Cardinal, who had attended a performance staged in Bernini's house during that Carnival, had been impressed by a device used by the artist in the prologue of his comedy which consisted of '[...] un bel tratto di mare col sole, che à puoco à puoco è venuto nascendo con il suo riverbero nell'acqua [...]' ([...] a glimpse of the sea with the sun gradually rising with its reflection in the water [...]).²⁰ The only drawing attributed to the artist that contains an im-

¹⁸ At the time Malatesta Albani was a young page, son of the former Roman senator Orazio Albani (1576-1653) from Urbino and a member of that city's high nobility. His promising skills in the art of swordfight would make him, in a few years, one of the main protagonists of the battle of Castro (1643-45), which the Barberini engaged against Odoardo Farnese, duke of Parma. (for further information see Claudio Costantini 'Malatesta Albani: un uomo di fiducia' in *Fazione Urbana* 11-12 <<http://www.quaderni.net/WebFazione/11.htm>>.

¹⁹ Vatican City, BAV, Arch. Barb. Giust. I, vol. 76, n. 3315, fol. 135v: '[...] per haver dato una guardia che la sua si era spezzata [...]' ([...] for having given a *guardia* (a type of sword) because his had broken [...]).

²⁰ The entire letter is transcribed in Silvia Bruno, 'Arte e teatro nelle residenze romane dei Barberini' in *Lo spettacolo del sacro, la morale del profano* (Florence: Polistampa, 2005), p. 68.

age of a rising sun that may correspond to the above description is the watercolour shown in fig. 1b. Observing the image, it can be noted that the shape of the shore is unusually well defined, forming an almost perfect horseshoe (see fig. 3); therefore, it does not seem to reproduce a natural landscape, and might very well be a sketch for the design of a theatrical set.

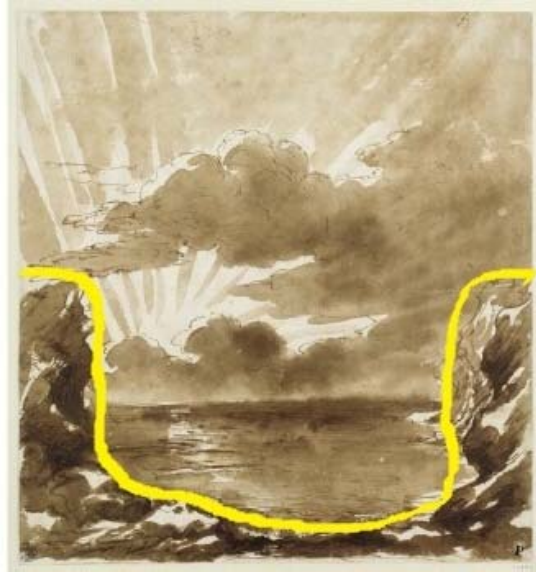


Fig. 3 Fig. 1b with shores evidenced in yellow.

The image is very similar to the drawing reproduced in fig. 1a,²¹ which was sketched by Malatesta Albani (see also fig. 4). To add further support to the hypothesis of a relation between the two images, it must be considered that the young Albani, after his participation in staging the swordfight, very soon went on to other types of roles. The Barberini engaged him mainly as an expert in military strategy and gave him delicate diplomatic assignments, which took him far from Rome.²² Therefore, it seems very likely that the sketch might refer to Bernini's celebrated machine of the rising sun, which the

²¹ Both images will be fully analyzed later in this article.

²² See for instance Vittorio Siri's *Il Mercurio ovvero historia de Correnti tempi* (1635-1655) (Casale: Gorgio del Monte, 1655), from p. 552 and the numerous letters written between 1641 and 1644 by Malatesta Albani and by Francesco Barberini, collected in the *Archivio Albani of the Biblioteca Oliveriana of Pesaro*.

young Albani had the occasion to see during his participation in the performance staged in the Teatro Barberini during the Carnival of 1639.

The documents, which I investigated for my research, attest that Bernini did not build the set design for *La Fiera* all by himself: to help him create a more convincing illusion, the artist chose the best masons who were at the time engaged in refurbishing St. Peter's Basilica. There is also evidence in the documents that he worked mainly at St. Peter's on the 'perspective' scene, which was later transported to the Palazzo alle Quattro Fontane.²³ He selected different types of wood: planks and panels of alder, joists and rafters of chestnut wood, and planks of fir at a cost of 30.44 *scudi*. He also spent 61.62 *scudi* for different types of canvases and cardboards, tins, ropes, wires, strings of zither, a kind of glue called *cervona*,²⁴ different types of nails, and thread. Another 35.10 *scudi* were spent to buy glue, chalk, some gold and silver, coal, and wood to make glues and plasters, and another *scudo* was spent to buy eight *maschietti ordinari* (bigger nails with a pointed threaded tips).

Although it is not altogether clear how these materials were used to build Bernini's perspective scene and how his machine worked, we do know that the total dimension of the room where the performance was staged was about 17.5 meters wide and 30 meters long. Moreover, thanks to the payment records, it is possible to argue that they built a main section of the stage, where the actors performed, along one of the shortest sides of the room. This part of the stage, about 12.5 meters wide on the front, was framed by four columns, two on either side, which occupied the other 5 meters of the remaining width. A proscenium arch covered the device used to raise or lower the curtain and the slots placed under the ceiling. The front stage, which progressively diminished its width in the back, was followed by a second illusionistic section of the stage, which was about 2.6 meters wide, and 1.7 meters long. A third section, which was about 2 meters wide, and 0.55 meters long, was in the background. During the performance these two smaller sections were used to place the

²³ Vatican City, BAV, Arch. Barb. Giust. I, vol. 76, n. 3315, fol. 27v: 'per portatura di detta scena da S. Pietro alle quattro fontane sc.3' (to bring the already mentioned scene from St. Peter's to the four fountains 3 *scudi*).

²⁴ This was a type of glue, which was stronger than other types. It was prepared using flashings. (see Salvatore Battaglia, *Grande dizionario della lingua italiana* (Turin: UTET, 1961-2002).

lontananze (backdrops), which allowed changing the set design. The illusion of a darkened stage was certainly obtained by using eight pikes, 20 palms (about 4.5 m)²⁵ long, and putting some cloth on top of them to cover the lights.

As regards Bernini's machine, it very likely consisted of a painted *lontananza* of the sky, placed between the front stage and the second section of the stage, which was lit by eight torches placed into *canali ad uso di cassetta* (ducts used as boxes).²⁶ The torches could be moved thanks to a mechanical device made to raise and lower them: once the stage had been darkened, the audience had the sensation of a real sunrise thanks to the wise use of this device, which allowed moving the torches slowly in a gradual and natural way.

It is now fundamental to understand how this device actually worked and where they placed it. Assuming that Malatesta Albani's drawing refers to part of the set design that Bernini realized for the second *intermedio*, the notes written by the young man himself and transcribed below may offer a possible reconstruction of the way in which the machine was built and how it worked.

Transcription as in the drawing with modern punctuation and spelling
Amido con zafferano |

Modern English

Starch ²⁷with saffron |

La tela grande vuole passare nell'avanti | il mare, la tavola vuole essere | segata come si vede e poi vi | si pone su la tela, e le torce | di dietro. Conforme si vuole accrescere o | diminuire il lume, si accosta, o discosta il lume.

The large canvas must be placed in the front of | the sea, the board must be | sawn as shown and then | the canvas must be placed on it, and the torches | behind. Depending on whether you want to increase or | decrease the light, the light is brought nearer or further away.

²⁵ All the old measures in this article are converted in the modern ones according to the rules established by the following documents: *Prospetto delle operazioni fatte in Roma per lo stabilimento del nuovo sistema metrico negli stati romani dalla commissione de' persi e misure. Edizione unica ufficiale* (Rome: Mariano de Romanis e Figli, 1811) and *Prospetto delle Operazioni Fatte in Roma per lo Stabilimento del Nuovo Sistema Metrico negli Stati Romani dalla Commissione dé Pesi, e Misure* (Rome: Mariano de Romanis e Figli, 1811).

²⁶ Vatican City, BAV, Arch. Barb. Giust. I, vol. 76, n. 3315, fol. 30r.

²⁷ Starch was used for preparing canvases before applying tempera colours or pigments. See Gino Piva, *Manuale pratico di tecnica pittorica* (Milan: Hoepli, 1989), pp. 47 and 211.

The words transcribed above suggest that the correct operation of the machine relied mainly on the skilled use of light, on the transparency of the coloured canvases, on the banks-shaped board, and on the accuracy of the drawing. All these elements, perfectly combined together, created an amazing optical illusion, which gave the audience the impression of watching a real sunrise.

Therefore, a comparison between Bernini's watercolour and Albani's drawing is important to substantiate the hypothesis that the latter is the bare image of all the elements, which combined, created the image painted in the former: it might be assumed that Albani's sketch is a sort of backstage view of Bernini's scenography. Figures 3 and 1 have been modified (see picture below) in order to highlight the elements common to both of them: the same colour highlights a common element in the two images.

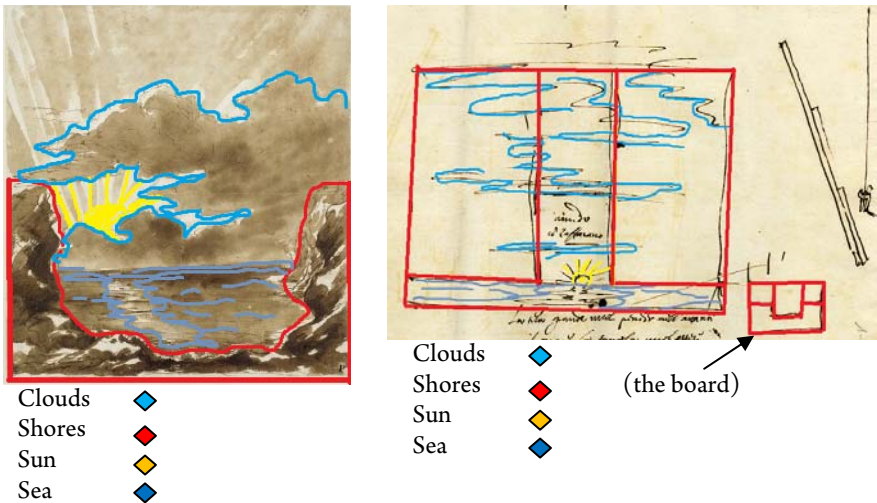


Fig. 4 Comparison between fig. 2 and 3 with common elements highlighted with same colours.

It can be noticed that the elements visible in Albani's sketch perfectly correspond to all the main elements present in Bernini's watercolour. This means that they might refer to the same scenography and to the same device used to make the sun rise.

Robert Fahrner and William Kleb, in a section of their article about Gian Lorenzo Bernini's theatrical activity published in 1973, speculated about the operation of Bernini's machine, writing that 'it may have been similar to the dawn machine described in Nicola Sabbatini's manual for building theatre scenes and machines, published in 1638'.²⁸ In the same article the authors reported that in his *Disegni del Bernini*, published in 1944, the art historian Luigi Grassi²⁹ had identified the drawing by Bernini used in this article as a theatre design and they argued that, if this identification were correct, it might be the only surviving image of the performance entitled *La marina* (the Seashore), although they complained about the difficulty of interpreting its theatrical nature. They observed that 'the cliffs on either side might be flat wings and the narrow beach in the foreground a ground row [...]'.³⁰

Albani's drawing might be the missing link in understanding the operation of Bernini's machine. As already observed, Albani's and Bernini's drawings have all the main elements in common; therefore it is now fundamental to see how the machine could technically work. To understand whether this article's hypothesis can be supported by any practice of scene building common in Bernini's time, it is worth investigating a contemporary source: Nicola Sabbatini's manual entitled *Practica di fabbricar scene e machine ne' teatri*,³¹ which provides a large amount of information on building scenes and machines. A comparison with Sabbatini's description of how to make the sun rise appears to be the best chance of further substantiating the hypothesis that the two images above refer to the same scenography. Sabbatini explains that the first thing to do to give the impression that dawn is breaking is to prepare a painted canvas a little bit higher than a person; he goes on to say that this canvas is the main element used to simulate a dawn and therefore he suggests painting it with shaded colours, ranging from light blue and white, to orange, red, and a

²⁸ Robert Fahrner and William Kleb, 'The Theatrical Activity of Gianlorenzo Bernini' in *Educational Theatre Journal*, 25.1 (March 1973), p.10.

²⁹ Luigi Grassi, *Disegni del Bernini* (Bergamo: Istituto di Arti Grafiche, 1944).

³⁰ Robert Fahrner and William Kleb, 'The Theatrical Activity of Gianlorenzo Bernini', p. 10.

³¹ Nicola Sabbatini, *Practica di fabbricar scene e machine ne' teatri* (Ravenna: 1638, reprint Rome: Bestelli, 1955), chapter 55, pp. 128-129.

shaded light blue. He adds that it is necessary to place the canvas on the machine which brings the dawn. This description seems to correspond to the section of Albani's notes where he writes 'the board must be sawn as shown and then the canvas must be placed on it.' As for the colours, the sketch seems to suggest that in Bernini's scenography they used only saffron on the smaller canvas placed on the board, while there is no reference to the colours used on the larger canvas.

The comparison between Albani's drawing and Sabbatini's description adds further information on Bernini's scenography. Albani's notes seem to suggest the use of a double canvas, which may be inferred from the following two sentences: the first sentence states that 'the large canvas must be placed in the front of the sea', while the other states that 'the canvas must be placed on it (on the board)'. Looking again at the sketch, it is possible to guess the position of the two canvases, which might be useful in adding further details to the operation of Bernini's scenography. In the picture below the large canvas is bordered in red, while the small canvas is bordered in saffron.

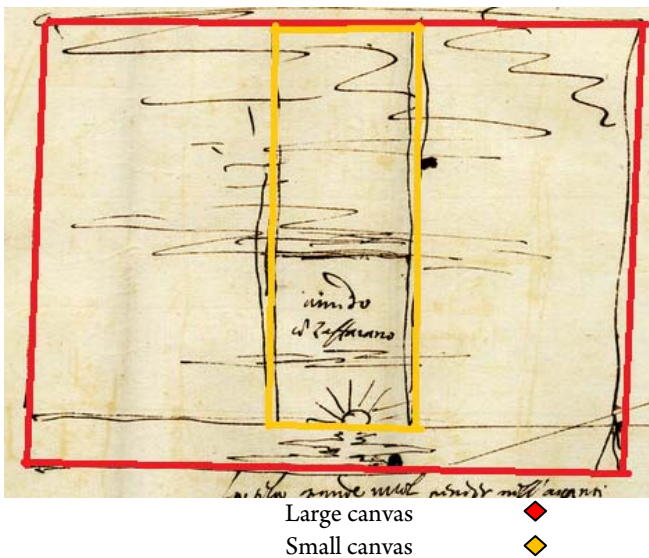


Fig. 5 Detail of picture 3 with the two canvases highlighted with different colours.

It can be argued that the two colours, which we can see in Albani's sketch, were not the only colours used by Bernini, who very likely used different colours for the large canvas; however, it must be remembered that the central section of the scenography, that is the small canvas placed on the machine, was probably the most important section of Bernini's scenography (since it was used to simulate the movement of the sun) and therefore Albani's sketch only reports the colours for the small canvas. Since Bernini must have employed it for the lighter part of the sky, it was essential for him to intensify the tonality of that section with brighter colours in order to give the impression of a real sun crossing the sky. It is consequently evident that obtaining the correct result depended on the optical illusion created by the movement of the machine and of the clouds, by the juxtaposition of the two canvases and by the skillful use of the torches placed behind them.

Also, Sabbatini's manual suggests the use of different canvases to create sections of the sky with different nuances of colours. It is possible to infer this from the section of his book where he writes that the piece of sky placed on the dawn machine should be moved by a lever in a direction opposite to the main heavens.³² If we compare Sabbatini's description of how to make the dawn rise and Albani's notes, we can notice that the difference mainly concerns the way in which they moved the dawn and the sun-rising machines respectively. Sabbatini speaks of a lever, while Albani does not mention any specific device to move the sun-rising machine, which might suggest that they moved it with the help of grooves carved on the stage floor, on which the machine could slide smoothly. This is not surprising since the *Giustificazioni I*³³ record numerous payments for

³² 'Non sarebbe disdicevole ancora servirsi di una leva, la quale però non mostrerebbe così bene, essendo necessario che nel moto descriva una porzione di cielo al contrario del cielo principale.' In Nicola Sabbatini, *Pratica di fabricar scene e machine ne' teatri* (Ravenna: 1638, reprint Rome: Bestelli, 1955), chapter 55, p. 128.

³³ The *Giustificazioni I* is a collection of accounts, payment requests or payment receipts by craftsmen, artists, or servants, who were hired by the following members of the Barberini family: Francesco *seniore* (the Elder), Antonio *iuniore* (the Younger), Carlo, Francesco *iuniore* (the Younger), and Benedetto. These manuscript documents are preserved in the Barberini Archives of the Vatican Library, and they have been recently

tracks, about 187.70 meters in length, which the workers made both on the stage and on the ceiling: it is very likely that some of these were only used to move the ‘perspective’ scene by Bernini.

The painted section of the sky, which was placed on the machine, was not the only fundamental element of Bernini’s scenography; the skilled use of light was also important. In this respect Albani’s notes state that ‘depending on whether you want to increase or decrease the light, the light is approached or turned away’, while in the payment records a line states that they placed eight torches into *canali ad uso di cassetta* and the following line writes that they made 7 slots for boxes to raise the torches.³⁴

In Albani’s drawing the two elements on the right (see picture below) seem to match the above description and might refer to the lighting techniques used by Bernini: the element on the right seems to be a torch tied to a long rope, while the element on the left might be an example of the device used to raise the torches with the slots in which to place them (this interpretation seems to fit with the definition ‘ducts used as boxes’ mentioned above).

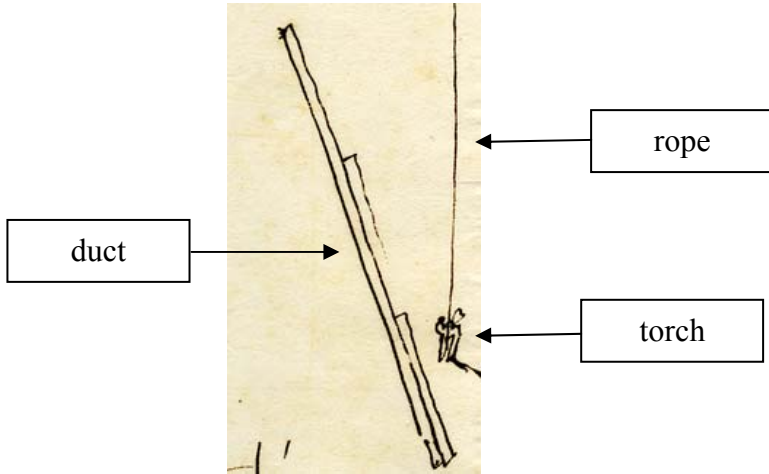


Fig. 6 Detail of picture 3, showing devices for lighting.

inventoried by the archivist Luigi Cacciaglia. See Luigi Cacciaglia, *Le “Giustificazioni” dell’Archivio Barberini - Inventario* (Vatican City: Biblioteca Apostolica Vaticana, to be published).

³⁴ Vatican City, BAV, Arch. Barb. Giust. I, vol. 76, n. 3315, fol. 30r.

Another important element in Bernini's scenography is the use of clouds. Again the payment records are useful for understanding how these were made: in BAV, Arch. Barb. Giust. I vol. 76, n. 3315, fol. 32v, there are two interesting payments, which refer to expenses for the canvas used for the sky and for some edged boards, which served to make clouds and landscapes. Therefore, we can infer that the clouds were not painted canvases but edged boards, probably built according to the method illustrated by Sabbatini in chapter 49 of his manual,³⁵ where he illustrates how to make a cloud divide into three parts as it is lowered and then to make it become one when it is raised. This can be inferred by reading the payments, which record that the workers from St. Peter's Basilica, engaged for the performance, moved the clouds with the help of ropes and wires.³⁶

In conclusion, we can affirm that the discovery of the drawing by Malatesta Albani in the Oliveriana Library in Pesaro is important for numerous reasons. First of all, because it seems to confirm the hypothesis that the watercolour by Gian Lorenzo Bernini held by the Kupferstichkabinett of the Berlin State Museum refers to his scenography for the rising sun. Then, because the drawing also shows all the basic elements used to make it and allows us to compare Bernini's machine with the machine to make the dawn rise described by Sabbatini in his treatise and commonly used by other architects-engineers during the seventeenth century and most likely also in the previous century.³⁷ Further investigation, and

³⁵ See Nicola Sabbatini, *Pratica di fabricar scene e machine ne' teatri* (Ravenna: 1638, reprint Rome: Bestelli, 1955), chapter 49, pp. 121-122.

³⁶ In BAV, Arch. Barb. Giust. I vol. 76, n. 3315, fol. 8r there is a payment to the masons from St. Peter's Basilica, which specifies that they were paid because they had pulled the clouds in the sky; a few lines below, another payment refers to the purchase of three bunches of rope and some wire to tie the clouds.

³⁷ See for example the following description from Sebastiano Serlio's *Secondo libro di architettura* translated by Barnard Hewitt, in his *The Renaissance Stage Documents of Serlio, Sabbatini and Furttenbach* (University of Miami Press, 1958), p. 35: 'To make a planet or other heavenly body pass through the air, it is painted well on cardboard and cut out. Then far back in the scene, at the last house. A soft iron wire is stretched across the scene with small rings attached to the back of the cardboard figure, which may be drawn slowly across, by a dark thread.'

further documents yet undiscovered, might provide additional new details concerning the operation of this machine, which was described by contemporary audiences as an astonishing device. It is, in this respect, worth mentioning that Bernini's sunrise machine soon became so popular that Louis XIII (1601-1643), through Cardinal Richelieu (1585-1642), requested a model of it. But Bernini must have considered the device very difficult to operate by others because, when asked to explain its use, he wrote at the end of the directions sent to Cardinal Richelieu: 'riuscirà quando io costà manderò le mie mani e la mia testa' (it will work when I send my hands and my head there), which means that the artist was conscious that the difficulty of the device did not consist in the way it was built, but in the way it was used. Therefore the fundamental element of the machine was Bernini himself, his genius, his creativity.