S K E N È

Journal of Theatre and Drama Studies

10:1 2024

Memory and Performance. Classical Reception in Early Modern Festivals

Edited by Francesca Bortoletti, Giovanna Di Martino, and Eugenio Refini

SKENÈ Journal of Theatre and Drama Studies

Founded by Guido Avezzù, Silvia Bigliazzi, and Alessandro Serpieri

SKENÈ Theatre and Drama Studies
https://skenejournal.skeneproject.it
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Edizioni ETS
Palazzo Roncioni - Lungarno Mediceo, 16, I-56127 Pisa
info@edizioniets.com
www.edizioniets.com

Distribuzione
Messaggerie Libri SPA
Sede legale: via G. Verdi 8 - 20090 Assago (MI)

Promozione
PDE PROMOZIONE SRL
via Zago 2/2 - 40128 Bologna

ISBN: 9788-8467-6968-8
ISBN (pdf): 9788-8467-6969-5
ISSN 2421-4353

Contents

Memory and Performance.
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Special Section

Benedetta Colasanti*

A Rediscovery of Antiquity. Traces of Ancient Mechanics in the Staging of the Opening Perfomance of the Farnese Theatre in Parma (1628)

Abstract

When studying Baroque theatre, which was characterized by surprising scene changes and mechanical movements, we cannot ignore ancient mechanics. In the sixteenth century, we can observe that the Renaissance city and its symbolic monuments were represented in perspective in the court theatres. Perspective rigor, scenic metamorphosis and mechanical wonder coexisted on stage; the latter were a point of arrival (and also a new starting point) of a tradition that, starting from antiquity, seems to have continued into the seventeenth century. When we study the machines of the inaugural performance of the Farnese Theatre in Parma – *Mercurio e Marte* (1628) – and the sources related to it, we easily come across the knowledge of the ancient heritage. The anonymous treatise *Il corago* (1628-1637) offers entire chapters from Julius Pollux's *Onomasticon* translated into the vernacular, and in his *Pratica* (1638) Nicola Sabbatini, like Heron, recommends oiling the machines in order to achieve a more fluid movement. Literary and iconographic documents also refer to machines already described by Vitruvius, Pollux and Heron of Alexandria: the cranes for suspending gods or other figures, the 'staircase of Charon' for access to the corridors between the stage and the under-stage, various systems for scene changes. By overlapping the sources for the study of the inaugural performance of the Farnese Theatre, the seventeenth-century treatises and the ancient treatises, this article aims to identify the ancient machineries still valid in *Mercurio e Marte* and in the Baroque theatre; it also aims to evoke a tradition of transmission of knowledge among mechanics that, starting from antiquity, extends directly into modern times, partially denying the extemporaneous 'rediscovery' of antiquity.

Keywords: rediscovery of antiquity; stage machinery; Farnese Theatre; scenery; set design

1. A Rediscovery of Antiquity

When approaching the study of Renaissance and Baroque theatre and the seventeenth-century treatises on scenography, the need to examine the influences of antiquity becomes immediately apparent. In the fifteenth

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and sixteenth centuries, the 'rediscovery of antiquity' relied primarily on the translation and discussion of classical works such as Vitruvius' *De architectura*. From the sixteenth century onwards, the performing arts were also included; in the theatre, Neoplatonic philosophy and the representation of political and cultural values and aspirations coexisted with the practise and experience of architects, engineers and set designers, who brought the technical skills they had learnt on construction sites to the stage and vice versa. The emergence of 'modern' theatre is the result of the intertwining of these two phenomena as well as classical Vitruvian principles, staging practices and new scientific achievements.

The monumental *scaenae frons* inspired by Greco-Roman theatre coexisted in the sixteenth century with the perspective scene conceived on the stages as a reflection of the real and rational city of the Renaissance; think of the Olimpico Theatre in Vicenza (1580-1585). Other examples of stable theatre buildings in modern times are the Mediceo Theatre of the Uffizi (1586-1589) and the Sabbioneta Theatre (1588-1590).[1] In some of these buildings, in addition to the rigor of perspective, another tradition can be observed, that of the *ingegni* by Leonardo Da Vinci or Filippo Brunelleschi (Bortoletti 2020; Ventrone 2016), as well as the technological advancement of the architectural or technical construction site on the stage. In court theatre, this tradition led first to the *intermezzi* of the sixteenth-century Baroque scene, which – despite the persistence of perspective – were characterized by metamorphoses and scenic technical wonders. While the process of translation and reinterpretation of Vitruvius in terms of architecture and perspective is well known, the studies on mechanics are more limited,[2] although this knowledge was widespread among professionals both in antiquity and in the sixteenth and seventeenth centuries. Lucien Febvre's reflection confirms the pioneering value of the *Annales d'histoire économique et sociale* (1935): the history of techniques, at least until now, would have been

[1] The Olimpico Theatre in Vicenza, commissioned by the Olympic Academicians, was built by Andrea Palladio and completed by Vincenzo Scamozzi, see at least Mazzoni 1998. For the theatre of Sabbioneta (1588-1590), built by Scamozzi himself, see at least Mazzoni and Guaita 1985. Finally, the bibliography on the Mediceo Theatre is endless; for a summary, see at least Mamone 1981. Not to forget the Roman experience in the first half of the sixteenth century at the papal court of the Medici and in the circle of Bramante and Antonio da Sangallo 'the young', a group of painters, architects and set designers who were engaged in the study and revival of the idea of ancient theatre. Think of Raffaello's project for the Capitoline Theatre (1513) and the never-realised project for the open-air theatre of Villa Madama (1518-1519) as well as the design of the stage set for Ludovico Ariosto's *I Suppositi* in the Vatican (1519). See at least Cruciani 1969.

[2] Although several contributions are the exception, see as an example Harris and Korda 2002.

ignored by history *tout court*; he aims to highlight the work of technicians, the dissemination of mechanical 'secrets' and the fact that the discipline was at the service of men's everyday life, first and foremost in the religious and political and artistic spheres (Febvre 1935, 646-8). Thus, if one reflects – in the wake of Febvre – on the possibility and necessity of shedding new light on the history of technology, it will be a natural consequence to bring technology and the history of entertainment as a political instrument into dialogue, even before it is an instrument of entertainment.

2. The State Technician

In Baroque theatre in particular, the machines and their builders and operators were essential elements, both historically and stylistically. In line with Traversier, we imagine a world behind the scenes consisting of mechanisms and machines coordinated by experienced professionals (Traversier 2018, 6-14). The work of the technicians is often underestimated by a historiography that focuses more on theatre literature, acting and even the visual aspects, which are certainly due to the aforementioned work of the technicians, invisible to the spectators, relatively little documented and disappeared, just as many other objects of the theatre have disappeared (costumes, masks, everything made of perishable materials; Roussillon and Dickhault 2021). However, there have been many attempts to shed light on the material aspects of theatre-making, particularly through case studies.[3]

In the seventeenth century, the rediscovery of antiquity and the appropriation of experience from the fifteenth and sixteenth centuries, in the technical field seem to have favored a new, specifically scientific approach. Like the most important scientific discoveries,[4] mechanics gradually took its place in literature,[5] as a sign of the discipline's liberation from a *status* considered inferior. Between the sixteenth and seventeenth centuries there was no specialization for technical professions (architect, engineer, stage designer, stage technician), but every court was equipped with at least one State technician who – to quote Giuseppe Adami – "servono con la spada e

[3] See for example Tkaczyk 2016, 99-117. The article is about Giulio Parigi, a master of technological spin-offs, who for his part inherited an older legacy, but who – among others – had the merit of juggling theory and practice.

[4] Think of the satellites of Jupiter discovered by Galileo Galilei, the 'stars' of the Medici. See a letter from Camillo Giordani to his wife from Parma, which is kept in the Oliveriana Library in Pesaro (manuscript 926, 4).

[5] Think of Guidobaldo del Monte's praise of mechanics as a preface to his *Mechanicorum liber*. After the warning *Ai Lettori* in *Le Mechaniche dell'illustrissimo sig. Guido Ubaldo de' Marchesi del Monte, tradotto in volgare dal sig. Filippo Pigafetta*, Venezia, appresso Evangelista Duchino, 1615.

con la penna diversi principi europei" (Adami 2003, 11; stood with sword and pen in the service of various European princes).[6] At this time, these learned experts seem to have overcome both the purely antiquarian and intellectual approach of the humanists and pure practice, favoring a technical and scientific attitude.

Giovan Battista Aleotti, the builder of the Farnese Theatre, is a famous example of a State technician, a versatile talent who worked as a translator and theorist in the moments of interruption of the great civil, war, hydraulic engineering and land reclamation works. In the introduction to the fourth book of his treatise *Hidrologia*, he argues in favor of the need to be "dotto ed esperto nella Meccanica Natturale, il fondamento della quale sono la Geometria, l'Aritmetica e la Filosofia Naturale" (qtd in Raimondi 1998, 77; learned and versed in natural mechanics, based on geometry, arithmetic and natural philosophy). Aleotti also translated Heron's *Spiritali* (1589),[7] demonstrating both intellectual qualities and technical skills. He was also a cartographer and music theorist, further evidence of the knowledge of Vitruvius, who dealt with harmony and music in the fourth book of *De architectura*.[8] State technicians, aware of the political, social and economic importance of the mechanical discipline, recorded their knowledge in writing, thus transmitting those secrets which, for various reasons, remained the prerogative of the different construction sites. These adaptable experts also dealt with spectacular installations.

The court theatres were gradually equipped with a rich stage machinery, which was not only used in magnificent theatrical performances on occasions of great political importance, but also served as a kind of museum for visitors to the courts. The spectacular wonder was an instrument for demonstrating power and therefore, like buildings, military equipment or efficient hydraulic systems, had to do with politics. The scenic metamorphism was also the real attraction for the elite audience of the court theatre and was part of the horizon of expectations of those who were called upon to write descriptions to send to the rulers who could not be present. To understand the role of the mechanics also in the field of the stage, the expression 'dramaturgy of machines' used by Sara Mamone (2015) is eloquent to place the role of the mechanisms and their builders and operators – at least in this historical period – not only on an equal footing, but even above the dramaturgy itself.

[6] All translations, unless othweise indicated, are mine.

[7] The treatise is dedicated to Alfonso II d'Este. See Frabetti 2006, 35-65; Torlontano 1993, 123-60.

[8] A treatise on music entitled *Della musica necessaria a quegli architetti che si dilettano di fabricare machine hidrauliche* is preserved in the British Library in London. See at least Fabbri 1998, 189-94.

3. Theatre Machines at the Opening Performance of the Farnese Theatre in Parma

An emblematic case of the use of machines is the opera-tournament *Mercurio e Marte*, the opening performance of the Farnese Theatre in Parma.[9] Although this performance was quite innovative, much of the ancient stage technology was retained. The Farnese Theatre was inaugurated in 1628, ten years after its construction,[10] as part of an important ceremony of political and dynastic significance: the alliance between the Farnese family and the Tuscan Medici family. After the magnificent triumphal entry of Margherita, daughter of Cosimo II de' Medici and new bride of the Duke Odoardo Farnese, into Parma, the public spectacle left room for private entertainment. Most of the festivities took place in the Pilotta Palace, between the new and stable court theatre and the temporary theatre built for the occasion in the adjacent courtyard of the church of San Pietro Martire. The composite festivities consisted of banquets, dances and performances, culminated in *Mercurio e Marte*, written by Claudio Achillini and set to music by Claudio Monteverdi, with scenes and machinery by Aleotti and Francesco Guitti. The aim of the patrons was to surprise the audience with marvelous machines.

In addition to the treatises and descriptions, the study of stage machinery finds a valuable ally in the iconographic sources. Unfortunately, most of the sources available to us have nothing to do with the construction site[11] and show the scenes not from the point of view of the professionals but from that of the spectators: the mechanisms of the machines are obscured by decorative elements, especially clouds.[12] It is also difficult to determine which of the surviving pictorial documents are directly related to *Mercurio e Marte*. Elena Povoledo (1959, 49-55) attributes the machine drawings preserved in the State Archives of Parma to Guitti. Regardless of this attribution, it is plausible to imagine similar devices on the Farnese stage.

There are many machines that crossed the scene of 1628; it is possible to obtain a list by comparing some literary documents, three of which are kept

[9] The bibliography on the Farnese Theatre is also very rich. I refer to my doctoral thesis and the accompanying biography.

[10] After the construction of the theatre in 1618 on the occasion of the hoped-for visit of Cosimo II de' Medici, with whom Duke Farnese was seeking an alliance, the theatre was opened in 1628 on the occasion of the wedding between Odoardo Farnese and Margherita of Tuscany.

[11] Girolamo Seriacopi's *Memoriale* (1589), for example, sheds light on the material and practical aspects of theatre-making and Mediceo Theatre of the Uffizi, a construction site teeming with professionals, see Testaverde 1991. A similar atmosphere can be imagined at the construction site of the Farnese Theatre in Parma.

[12] I have consulted pictorial documents preserved in the Palatina Library in Parma (manuscript 3708) and in the State Archives of Parma (*Mappe e disegni*).

in the State Archives of Parma and the State Archives of Ferrara.[13] The first machine that crossed the maritime scene at the beginning of the performance was the chariot carrying Aurora, "la quale, al calar della cortina, sorge dal mare, sovra un bellissimo carro, e canta la felicità de i presenti, in virtù delle serenissime nozze" (qtd in Solerti 1969, 485-6; who, when the curtain falls, rises from the sea on a beautiful chariot and sings of the happiness of those present thanks to the happy wedding). This chariot was pulled by a winged horse, emerged from under the stage and crossed the scene diagonally. As Aurora ascended, a mechanism consisting of ten groups of clouds was in action on stage (Adami 2003, 150-1, 156). Nicola Sabbatini also describes similar cloud machines, from chapter forty-two to chapter forty-nine of his treatise *Pratica di fabricar scene, e machine ne' teatri* (1638).[14] The cloud, a functional element for the staging, as it was suitable for concealing the scenic mechanisms, is a symbol of the Baroque spectacle, but also – together with the winch – of the long tradition of scenic machinery founded by craftsmen such as Brunelleschi.

Back on the Farnese stage, after Aurora, during the performance of *Mercurio e Marte*, the audience witnessed the action of more than twenty allegorical machines, which are listed both in the archival documents mentioned above and in the laudatory document written by the chronicler Marcello Buttigli (1629): the Zodiac machine with the Golden Age, Discord and the Furies, Mercury, Mars, Venus, Apollo, the Muses, Juno, Berecinzia (i.e. Cybele), Proserpina, Pluto, Bellona, Saturn, Neptune, finally Jupiter and the Consistory of the Gods. The gods and allegories usually enter the scene accompanied by real machines and in three ways: either in the clouds or on a chariot (a flying chariot, a spaceship floating on an artificial sea) or on

[13] The documents preserved in the State Archives of Parma are: *Indicazioni per il movimento delle macchine sceniche* (Notes for the movement of the stage machinery), attributed to the Farnese officer Fabio Scotti, see Adami 2003, 174; *Scene che si devono movere, e mutare, nella nova Invent.ne degli Intermezzi* (Scenes that must move, and change, during the reinvention of the interludes); *Ristretto del Torneo del quale si potrà cavar lumi, e cognizioni sufficiente per cominciare a dispor le machine* (Brief description of the tournament that allows you to understand how the construction of the machines works). The last two seem to be unpublished. In the State Archives of Ferrara is preserved: *Argomento e ristretto del torneo* (Topic and shortlist of the tournament) by Ippolito Bentivoglio, qtd in Lombardi 1909, 15-8. Another useful document is *Composizione di Claudio Achillini per l'apertura del Teatro Farnese, 1628, Mercurio e Marte, ristretto del torneo* (Composition by Claudio Achillini for the opening of the Farnese Theatre, 1628, Mercury and Mars, short list of the tournament), qtd in Solerti 1969, 485-6.

[14] The first printed edition of Sabbatini's treatise (1638) is preserved in the Oliveriana Library in Pesaro.

the back of an animal (winged horses, hippogriffs, water monsters). Some figures 'flew' on their own, supported by special devices. Beyond the form, we imagine a prop on which the performer sat or was secured standing, covered by the shape of a chariot or an animal or by boards cut into the shape of a cloud. The clouds performed horizontal, vertical, diagonal or transversal movements and could rotate around themselves. The machines could also fill the empty space on the stage between the stage floor and the attic, cross the stage floor or the waves of the sea (in this case the sources speak of shells, boats or ships). These machines, which were set up on the stage of the Farnese Theatre for the opening performance, refer to the machines described by Vitruvius, which are designed to move loads:

> Machina est continens e materia coniunctio maximas ad onerum motus habens virtutes. Ea movetur ex arte circulorum rotundationibus, quam Graeci kyklike kinesis appellant. Est autem unum genus scansorium quod graece akrobatikon dicitur, alterum spirabile quod apud eos pneumatikon appellatur, terium tractorium, id autem Graeci baroulkon vocitant. Scansorium autem est cum machinae ita fuerunt conlocatae ut ad alitudinem tignis statutis et transversariis conligatis sine periculo scandatur ad apparatus spectationem. At spirabile, cum spiritus et expressionibus inpulsus et plaga est vocesque organicos exprimuntur. Tractorium vero cum onera machinis pertrahuntur ut ad alitudinem sublate conlocentur. (Vitr. *De arch.* 10.1)

> [A machine is a structured set of wooden elements that is very effective for moving loads. It is operated by circular rotations, according to the principle that the Greeks call *kyklike kinesis*. There is a first type of climbing, called *akrobatikon* in Greek; a second, pneumatic, called *pneumatikon* by the Greeks; a third, tractor-like, called *baroulkon* in Greek. The climbing type occurs when the machines are constructed so that they can be safely climbed by means of vertically fixed beams and crossbars that connect them, in order to monitor the operations from above; the pneumatic type, when the machine is made to vibrate both by its emissions under pressure and by a shock, producing mechanical noises; then there is the tractor type, where the loads are pulled by the machine in order to lift it and place it high up.]

When Vitruvius speaks of the 'climbing type' to supervise the work from above, he is referring to the building site, but we can also imagine a crane, which we find both in mechanical engineering and in architecture, but also in a simplified and smaller version in the theatre. This is the so-called *deus ex machina*. Pollux also speaks of suspension machines: "Machina vero, Deos exhibet, Heroes illos aerios" (Poll. *Onom.* 4.19.2, qtd in Marotti 1974, 88-90; The machine, on the other hand, introduces the gods, the heroes of the air).

The workers' letters reveal various information about the work on the construction site of the Farnese Theatre. On 18 December 1627 all the

machines in the hall were tested: "con l'asistenza della sud.ta Sereniss.ma e del Sig.r Magiordomo, ma se restasse sodisfata non lo so perché andò via avanti noi uscimo di scena, e veramente se vi fu qualche imperfetione fu scusabile, per non vi essere la quantità d'uomini che bisognava disposti a suoi luoghi" (with the help of the aforementioned Duchess and the Master Butler, but whether she was satisfied I do not know, for she left before we left the scene, and if there was any imperfection, it was excusable, for there was not the requisite number of men for the maneuver).[15] And as Vitruvius already stated, the operation of machines required a certain number of machinists: "Inter machinas et organa id videtur esse iscrimen quod machinae pluribus operis ac vi maiore coguntur effectus habere" (Vitr. *De arch.* 10.1; The difference between machines and organs seems to be that the machines are forced to achieve results with more labor and greater force). Not forgetting the scenic changes that showed different landscapes, from the sea to the forest scene, to the two usual poles of hell and paradise, which proved that the Farnese Theatre had an equipped attic and under-stage.

4. The Ancients and Their Mechanics

The numerous references to antiquity in the treatises on stage sets published in the seventeenth century – only think of the anonymous *Il corago* (after 1628-*ante* 1637)[16] or the aforementioned *Pratica* – stimulate reflection on the rediscovery of ancient mechanics. Among the topics treated in Vitruvius' *De architectura*, I would like to emphasize the mechanical discipline. In the tenth book of his work, Vitruvius defines the term 'machine' with these words: "Machina est continens e materia coniunctio maximas ad onerum motus habens virtutes" (Vitr, *De arch.* 10.1; A machine is an assembly of materials whose main function is to move loads). The various parts that make up the machine are assembled in such a way that they move loads and are driven by circular rotations. There are three types of machines: 'climbing' machines, to supervise the work on the construction site from above; 'pneumatic' machines, to generate sounds; 'trattorias', to pull and lift weights. Another classification distinguishes between 'mechanical' and 'instrumental' systems. The former require the intervention of numerous workers, for the latter the skillful touch of a single operator is sufficient (ibid.).

The works of the ancients, alongside Vitruvius, Heron of Alexandria (first century AD) and Julius Pollux (second century AD), represent a

[15] Letter from Francesco Mazzi to Enzo Bentivoglio from Parma (19 December 1627). Preserved in the Ariostea Library in Ferrara (*Collezione Antonelli*, manuscript 6609, qtd in Lavin 1964, 141-2).

[16] The manuscript of *Il corago* is kept in the Estense Library in Moderna.

wealth of knowledge that has been passed down through the centuries. The construction of machines, the lifting of weights, the mastery of the laws of statics and the balance between forces are problems that are also on the agenda in the works of artists such as Leonardo, Brunelleschi or Francesco di Giorgio Martini, who were active in both the technical and theatrical fields between the fifteenth and sixteenth centuries. Vitruvius, Heron and Pollux, for their part, relied on *veteres architecti* such as Archimedes and Euclid. The fact that these names appear in seventeenth-century treatises on scenography and stagecraft is evidence of the above-mentioned transfer of mechanical knowledge. *Il corago* reports entire chapters from Pollux's *Onomasticon* translated into the vernacular:

> Dux vero est senex, pilorum coronam circa caput habens, incurbus, lata facie praeditus, et supercilium attollit dextrum. Decrepitus praeterea, barbam promissam habens, et vibrans, pilorum corona capite cinctus; barbatus est, et non attollit supercilia, sed aspect ignavior videtur. (Poll. *Onom.* 4.19.5, qtd in Marotti 1974, 77)

> Dux: era un vecchio che tra i capelli li facevono intorno al capo corona, curvo, di faccia larga et il ciglio destro più alto del sinistro. Decrepitus: aveva la barba lunga e la dimenava intorno come fanno molti vecchi decrepiti, aveva intorno al capo ancor lui i capelli che gli facevono corona, teneva le ciglia basse et era d'aspetto più vile. (An. *Il cor.* 20)

> [Dux was an old man who wore a crown around his head, curved, with a broad face and the right eyelash higher than the left. Decrepitus had a long beard, which he waved like many old men, he also had hair that formed a crown, he kept his eyelashes low and had a rather ugly appearance.]

Sabbatini, like Hero, recommends that the machines should be well lubricated so that they run better (Her. *Aut.* 1.1.1-4, qtd in Di Pasquale 2003, 4-5; Sabb. *Prat.* 31, 42, 44, 46). The same necessity arose on 24 October 1627 in the Farnese Theatre when Francesco Guitti wrote: "La scena traggicha resta d'insaponarla che è accomodatta" (The tragic scene must be soaped, it is already finished).[17]

These are just a few of the many examples that illustrate the wide dissemination and knowledge of classical works in the Renaissance, not only as an intellectual exercise, but also as new scientific knowledge.[18] There were

[17] Letter from Francesco Guitti to Enzo Bentivoglio from Parma (24 October 1627). Preserved in the Ariostea Library in Ferrara (manuscript 660, qtd in Lavin 1964, 124-5).

[18] Edited by Hilario-Perez, Simon and Thébaud-Sorger in 2016, this volume is an attempt to bring together the history of science and that of technology, two similar disciplines that are often kept at a distance due to the marginalized position of the 'applied sciences' as technology.

different positions in this respect: on the one hand, literary figures such as Francesco Petrarca were concerned with marking the boundary between 'liberal arts' and 'useful arts': "Mechanice res tuas age, oro te; cura, si potes; si minus, interface; et precium posce, cum occideris . . . Quid te autem non ausurum rear, qui rethoricam medicine subicias, sacrilegio inaudito, ancille dominam, mechanice liberalem?" (Petr. *Invect.*, qtd in Ricci 1950, 20; Labor thou, mechanic, please; if thou canst, take care of thyself; otherwise kill and atone for thy crime . . . But how dare you, with unprecedented sacrilege, subordinate medicine to theoretics, the mistress to the servant, a liberal art to a mechanical art?). On the other hand, a versatile artist like Leonardo Da Vinci recognized the value of experience and practical skills: "La sperienza non falla mai, ma sol fallano i nostri giudizi, promettendosi di lei cose che non sono in sua potestà. A torto si lamentan li omini della isperienza, la quale con somme rampogne, quella accusano esser fallace" (Leon. *Scritti*, qtd in Marinoni 1974, 65; Experience never makes mistakes, only our judgements make mistakes, because experience promises things that are not in its power. People complain wrongly about experience and accuse it of being wrong with great invective).

As far as the purely technical aspects are concerned – which then fall into the realm of theatre – the *Onomasticon* of Pollux is particularly interesting. One chapter of the work (4.19.5) deals with the *pars theatri* (the parts of the theatre), including some machines such as the *ekkyklêma*, which shows the secret events that took place in the houses; the hanging machine or crane to make gods, heroes and other figures fly; the *scalae Charoniae* (staircase of Charon) to lift the shadows of the deceaseds; and finally the portcullis doors to let out a river or something similar. Pollux further writes that on both sides of the scene there are devices to which the *versatiles machinae*, alias *periáktoi*, are attached:

> Apud utranque vero duarum ianuarum, quae in media scena sunt, etiam aliae duae sunt. Utrumque una, ad quas versatiles machinae compactae sunt: dextra quidem ea, quae extra urbem sunt repraesentans; sinitra vero ea, quae ex urbe ducit, maxime quae ex portu, et Deos inducit marinos, et alia omnia, quae graviora existentia, machina ferre nequit. (Poll. *Onom.* 4.19.2, qtd in Marotti 1974, 88-90)
>
> [On either side of the two doors in the center of the scene there are two more. Different fixtures are attached to both: the one on the right represents the outside of the city, the one on the left the harbor area and brings the sea gods, the sailors and all the other things that are heavier and that the chariots cannot carry.]

These were rotating prisms that could change the visible scene. They were already described by Vitruvius as triangular, moving machines with ornamental fields:

> Ipsae autem scaenae suas habent rationes explicitas ita uti mediae valvae ornatus habeant aulae regiae, dextra ac sinistra hospitalia, secundum autem spatia ad ornatus comparata, quae loca Graeci periaktoi dicunt ab eo quod machinae sunt in his locis versatiles trigonos habentes in singular tres species ornationis, quae cum aut fabularum mutations sunt futurae seu deorum adventus cum tonitribus repentinis ea versentur mutentque speciem ornationis in frontes. (Vitr. *De arch.* 1.5.6-7)
>
> [And the scenes themselves have their own explicit grounds, so that the central flap has the decorations of the royal court, to the right and left the *hospitalia* and the second rooms in relation to the decorations the Greeks describe as versatile triangles, which have three kinds of ornament in particular, which, when there are future changes in the stories or when the gods come with sudden thunders, rotate and change the appearance of the ornaments on the fronts.]

The *periáktoi* were activated simultaneously with a machine that produced sudden thunder. It consisted of a series of wineskins placed at the back under the scene and filled with pebbles that were pressed onto copper utensils. Centuries later, Sabbatini illustrates similar devices, also to prevent the sound of the machines from becoming too obvious:

> si sogliono usare in queste diversi artificij, come sarebbe che qualche persona confidente messa a bello studio nell'ultimo della sala, la quale, osservando il tempo che si dovranno tramutare le scene, mostri di far rumore con altra persona d'accordo, o veramente (ma potrebbe essere occasione di notabilissimo disturbo) fingere la ruvina o rompimento di qualche trave degli scaloni, overo con un tocco di tromba, tamburo o d'altro instromento, deviare gli astanti dalla vista delle scene, et in quel tempo fare la detta operazione dello sparimento, senza che nissuno se ne aveda. (Sabb. *Prat.* 1)
>
> [It is customary to use these various tricks, e.g. a trustworthy person who is in a secluded part of the stage and who, alert to the moment when the scenes have to be changed, makes noises in unison with another person, or (but this could be very disturbing) feigns the destruction or breaking of a beam of the staircase, or distracts the audience from the scenes with a trumpet, drum or other instrument and at that moment performs the above-mentioned scene-change operation so that no one notices it.]

In addition to the machines, the Farnese Theatre also owned painted screens that were used for scene changes. These were flat sliding panels, four on each

side, which protruded from the sides of the stage and allowed three scene changes thanks to the synchronized movements of the stagehands. When assessing these scene changes, we must take into account the testimony of Giulio Inghirami, a Medici envoy in 1628, who sent a letter to Florence for the occasion, writing: "le scene erano benissimo intese e dipinte, tuttavia nel mutarle che facevasi andavano assai adagio" (the scenes were very well painted, but they changed very slowly).[19] The slow change involved the revelation of the trick, so the audience was obviously not very surprised. The *perίaktoi* alias *scaena versilis* or *versatilis* are subject to a rotating movement on a pivot (manually or by turning a rudder) and must not be confused with the so-called *scaena ductilis*, i.e. those flat panels that are pulled at the ends and moved in a groove (sometimes they can be equipped with wheels) to reveal another scene that was previously hidden behind the flat screen that was in front of it and that showed the previous scenography. The invention of these flat screens in more recent times was attributed to seventeenth-century stage technicians, but it is actually a device that was already in use in antiquity. A passage from Servius' *Commentarii* testifies to this: "scaena quae fiebat aut versilis erat aut ductilis erat; versilis tum erat, cum subito tota machinis quibusdam convertebatur et aliam picturae faciem ostendebat. Ductilis tum cum tabulates huc atque illuc species picturae nudabatur interior" (qtd in Thilo 1961, 275-6; the scene was made 'versatile' or 'ductile'; 'versatile' was when, thanks to some machinery, everything suddenly changed, and a different scene was shown. 'Ductile' when the panels were pulled to one side and the hidden scene became visible from that side).

The authors of seventeenth-century treatises refer not only to ancient sources when writing their works, but also to their predecessors and masters. In his *Il secondo libro di Perspettiva* (1545), Sebastiano Serlio refers to the descent of the figures from the attic to flights and changes of scene (qtd in Marotti 1974, 196-8). In the *Commentarii* to *Le due regole della prospettiva pratica* (1583), Giacomo Barozzi da Vignola describes two wits placed at the sides of the scene, which we recognize as *perίaktoi*. While acknowledging the debt owed to the ancients, the anonymous author of *Il corago* emphasizes the personality of Bernardo Buontalenti (Medici technician), "primo inventore di mutare le scene con i triangoli e di tante alter machine" (An. *Il cor.* 20; the first inventor of the scene change with *perίaktoi* and many other machines), thus explaining his loyalty to the Medici family.[20] In fact, the *perίaktoi*

[19] Letter from Giulio Inghirami to Archduchess Maria Maddalena of Austria from Parma (14 December 1628). Preserved in the State Archives of Florence (*Mediceo del principato*, file 6075), also transcribed with some inaccuracies by Minucci del Rosso 1885, 562-4.

[20] For the transmission of the secrets of the trade from master to pupil at the Medici court, consider the thread that links the Sangallo family, Vasari, Buontalenti and the

certainly predated Buontalenti in a performance organized by Giorgio Vasari at the same Medici court in 1569 (Mazzoni 2003, 208). In his preface, Nicola Sabbatini refers instead to Guidobaldo del Monte, demonstrating his relationship with the court and the school of stagecraft in the Marche:[21] "Se brami nondimeno vedere la più fine Teorica di questa Pratica, ricorri all'Archimede d'Italia, e leggi il sesto libro della Prospettiva dell'Illustrissimo sig. Guido Ubaldo dei marchesi del Monte, di cui si gloria l'autore l'esserne stato buon discepolo" (Sabb. *Prat.*; If you want to see the best theory of this practice, read the sixth book of the perspective of the illustrious Mr Guido Ubaldo Marquis del Monte, Archimedes of Italy, of whom the author boasts of having been a good student).

In summary, the opening performance of the Farnese Theatre is just one case among many whose study try to demonstrate the convergence of a new performative tendency (which also draws to the great machine spectacle also as an 'allegory' of courtly power) and ancient practices passed down from master to pupil, but also learned and appropriated by sixteenth- and seventeenth-century treatise writers on the basis of surviving ancient texts, as the basis for a new technical-scientific interest that strongly influenced the history of theatre.

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Parigi family. See at least Fabbri, Garbero Zorzi and Petrioli Tofani 1975; Mamone 2015, 17-43 and 2016, 389-416.

[21] The Marquis del Monte was educated at the court of Urbino and was the protagonist of the scientific research promoted by the Duchy della Rovere. He was a translator and author of treatises: *Mechanicorum liber* (1577), *In duos Archimedis aequeponderantium* (1588), *Perspectivae libri sex* (1600). The praise of mechanics as the premise of his *Mechanicorum liber* – a reference work for architects, engineers, mathematicians, stage technicians and treatise writers – is a sign of the liberation of the mechanical discipline from an inferior *status*. See at least Becchi, Bertoloni Meli and Gamba 2013.

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