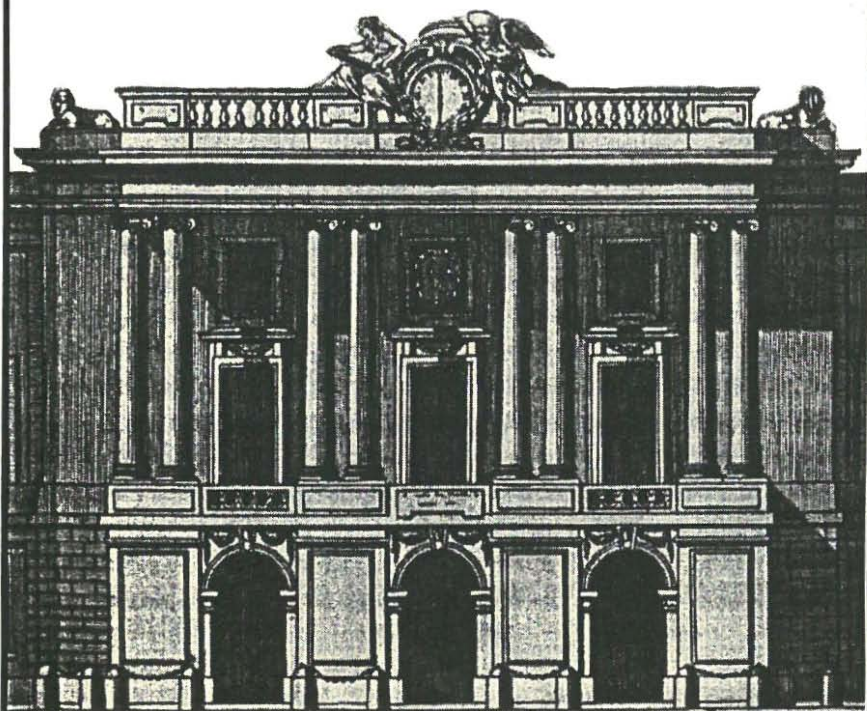


Just Look at the Pictures



Salles de Spectacles

*Book Illustrations of Theatre
Architecture and Scenic Design,
1513-1890*

Just Look at the Pictures:
Book Illustrations of
Theatre Architecture and
Scenic Design,
1513-1890

Gary Decker, Curator

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Special Collections Library
University of Michigan Library
Ann Arbor, Michigan

PREFACE

The Special Collections Library is pleased to draw on its rich collections in architecture, perspective, and theatre to mount this exhibit. Working with significant texts and book illustrations, the evolution of theatre architecture and scenic design from the sixteenth to the nineteenth centuries can be traced. The illustrations enhance the many editions of *De Architectura* by the Roman author Vitruvius Pollio as well as important works written during the later centuries by practicing architects and scenic design specialists. They range from simple woodcuts of the sixteenth century through spectacular copperplate engravings of the Baroque period to steel engravings of the nineteenth century. Many show the dependence by traditionalists and post-Baroque reformers upon Vitruvius, but others reveal a refined use of perspective, emerging nationalistic trends, and new forms including radical experiments in auditorium seating or scenic display.

The exhibit has been curated by University of Michigan Professor Gary Decker who has designed scenery or lighting for more than 100 theatre productions. In Michigan he has worked at the Gem, the Attic, the Birmingham, the Boarshead, and the Purple Rose theatres. He has designed scenery and exhibition display for many Fortune 500 corporations including AT&T, Little Caesar's, Lincoln-Mercury, Buick, and Oldsmobile. He has designed interiors or lighting for numerous commercial projects including On Stage—A Restaurant and the Elwood Grill, both in Detroit, the Fashion Cafe in New York City, and the Arndale Centre in Manchester, England. Professor Decker has been on the faculty of the University of Michigan Department of Theatre and Drama since 1984 and teaches undergraduate classes in design and production. Recent University of Michigan designs include scenery for *The Best People*, *Grand Hotel*, *The Magic Flute*, and *The Marriage of Figaro*. Mr. Decker explains his interest in theatre-related illustration and the title of this

exhibit when he says, "In twenty-five years of designing and teaching, I have spent ample time hidden in libraries, 'just looking at the pictures.'"

The Special Collections Library extends its appreciation to Professor Decker for sharing his expertise and enthusiasm with all of us who will have the opportunity to enjoy his exhibit. Thanks are also offered to library staff who have contributed to the mounting of the exhibit: Mark Chaffee, Veronica Woolridge, and Kathleen Dow.

Kathryn L. Beam
Curator, Humanities Collections
Special Collections Library

INTRODUCTION: Vitruvius and *De Architectura*

Marcus Vitruvius Pollio (ca. 90 - ca. 20 B.C.E.), a Roman architect and military engineer, is the author of the only architectural text to survive from antiquity. The ten books of *De Architectura* were probably written over the last thirty-five years of the author's life. Pliny the Elder (23 - 79 C.E.) cited the work in the bibliography of his *Natural History*, and there are further references to it in numerous writings from the third through the seventh centuries. The original manuscript with its ten illustrations has not survived.

Fortunately, the manuscript was copied many times throughout the middle ages. More than seventy complete manuscript copies exist, with twenty-two of them created before 1300. The oldest was written in the ninth century at Jarrow in Northumberland, copied from one brought there from Italy in the seventh century. Currently in the British Museum, the ninth-century copy is the source of at least ten other manuscripts, one being a copy that was known to be in the library at Cluny in medieval times. Most of these extant copies have no illustrations, and none has any theatre illustrations.

In Italy, references to *De Architectura* began in the mid-fourteenth century in the works of Petrarch and Boccaccio. Then in 1416 a complete copy without illustrations was discovered in the Swiss monastery of San Gallo by Poggio Bracciolini (1380-1459), a bibliophile, Greek scholar, master copyist, and general opportunist. In his position as Papal secretary, Bracciolini traveled Europe for almost fifty years in a systematic recovery of ancient texts. He heralded his find of the Vitruvius manuscript as a "rediscovery," although Vitruvius's text was already known in humanist circles. The date, nevertheless, marks the beginning of intensive textual study and explication. Bracciolini's find was brought to Rome (it is not known today which copy this was) and numerous manuscript copies were made. Forty-one manuscripts created in Italy in the fourteenth and fifteenth centu-

ries survive (including one by Raphael). Leonardo da Vinci, caught up in the spirit, created a "sketch showing the proportions of a human figure after Vitruvius" (ca. 1485, possibly when he was teaching himself to read Latin).

For Renaissance writers this work was the principal classical source available on architecture and theatre design. Vitruvius was cited almost as frequently on architecture as Aristotle was on philosophy. In 1535 the *Accademia della Virtù*, a society dedicated to the study of Vitruvius and surviving ancient Roman architecture, was founded in Rome. Even with all this study, many terms and techniques in common use in Vitruvius's lifetime were not clearly understood, and in later editions and translations editorial re-interpretation of information was the norm. Vitruvian ideas were expanded by Leon Battista Alberti, Francesco di Giorgio, Sebastiano Serlio, and Andrea Palladio. The section of his text on scenery had great influence on Renaissance stage designers.

The first printed edition of 1486, published in Rome by Echarisus Seiber, edited by Joannas Sulpitus (Sulpizio da Verola), and with text in Latin, had no illustrations. The first fully illustrated edition, the 1511 Venice edition, was published by Giovanni Tacuino and edited by Fra Giovanni Giocondo. It had 136 woodcut illustrations by Giocondo. The text was soon translated into various vernacular languages: into Italian in 1521 by Cesare Cesariano, into French in 1547 published in Paris, into German in 1558 in Nuremberg, and into English (abridged) in 1669 by Robert Pricke. After the Bible, it was the most printed book in the seventeenth century. To date there have been at least fifty-five editions in Latin and sixty-eight in vernacular translations.

De Architectura is composed of ten books, arranged in a logical order. Book I defines the function of architecture and the training of the architect. Book II explains building materials such as timber, stone, and brick. Books III - VI deal with building types, discussing various temples and their orders, as well as public buildings, including the basilica, forum, senate building, theatre, and public bath. Book

VII suggests treatments for floors and walls, discussing their construction and decoration as well as the manufacture of pigments and dyes. Book VIII investigates water and its properties. Book IX is devoted to astrology, and Book X covers machines.

Of most interest for this study is Book V in which Vitruvius compares Greek and Roman theatre construction. It is almost the only source for ancient theatre architecture and staging principles. Chapter 3 deals with site selection, foundations, and acoustics. Chapter 4 is a discussion of Greek theories of harmonics. Chapter 5 describes the construction and placement of bronze and pottery sounding vessels to improve a theatre's acoustical qualities. Chapter 6 discusses Roman theatre construction. Vitruvius gives general rules for designing the stage, orchestra, and auditorium. These rules are based on principles of Euclidean geometry in matters of layout and proportion. The author states that the Roman theatre plan is determined by "inscribing four equilateral triangles, at equal distances apart, and touching the boundary lines of a circle." The location of the stage, the *scaena* (scenic back wall of the stage), the entrances to the stage, and the aisles in the auditorium are all determined by the points and sides of the triangles. He also describes the layout and ornament of the *scaena* and placement and use of *periaktoi*, triangular scenic units with different scenes painted on each face. The three types of plays each require a different style of scenery: "for tragedy—views delineated with columns, pediments, statues, and other objects suited to kings; for comedy—private dwellings, with balconies and views representing rows of windows in the manner of ordinary dwellings; for the pastoral (satyr plays)—a scene decorated with trees, caverns, mountains, and other rustic objects delineated in a landscape style." This section on scenery and scene shifting has had an impact to the present day. Chapter 7 is a discussion of the Greek theatre and how it differs from the Roman form: "Where the Roman has four triangles, the Greek has three squares.... This makes for a roomier orchestra, and the *scaena* set further back, as the art-

ists of the chorus perform in the orchestra, and not on the stage." He also describes the height of the stage and the size, location, and decoration of the *scaena*. Chapter 8 is a discussion of site acoustics and their impact on any theatre built on the site.

Vitruvius concludes his writings on theatre with the statement, "The drawings of the plans may be distinguished from each other by this difference, that theatres designed from squares are meant to be used by the Greeks, while Roman theatres are designed from equilateral triangles. Whoever is willing to follow these directions will be able to construct perfectly correct theatres." It is possible to look in the University of Michigan Library holdings and see twenty-four editions published over four centuries containing Vitruvius's Greek squares and Roman triangles.

In studying illustrations in printed editions of *De Architectura*, the clarification of the text through pictures is as varied in style, accuracy, and content as are the editors' interpretations and commentaries on the text. The early editions were scholarly, annotated translations and commentaries with modest woodcuts included (almost like footnotes) for clarification. In the next phase, the illustrations and text are of equal import, but the superb illustrations are what define the style of the edition. Then, a century later, a restrained archaeologically correct mood dictates a simpler, economical style of illustration. This is evident in the 1791 London edition. Nineteenth- and twentieth-century editions tend toward textual accuracy and uninteresting, academic illustrations.

CASE 1 — The Earliest Editions of *De Architectura*

Vitruvius Pollio. *Vitruvius iterum et Frontinus a Iocundo revisi repurgatique quantum ex collatione licuit.* Florence: Philippi de Giunta, 1513.

The earliest copy of Vitruvius in the University of Michigan Library collections is this one edited by Fra Giovanni Giocondo (1433-1515). Giocondo was one of the most unusual of the architect-humanists of the Renaissance. A respected structural engineer, he constructed numerous bridges, fortifications, and hydraulic works in Italy and France. Upon the death of Donato Bramante (see next item), Pope Leo X appointed him to oversee the difficult structural problems at St. Peter's.

This small format version of the Giovanni Tacuino 1511 Venice edition is both the first pocket edition of Vitruvius and the first pocket edition of any book on architecture. The illustrations are reduced from those made in 1511, cut by the Nicolini da Sabbio brothers.

Joseph Gwilt, a nineteenth-century architect and archaeologist, commented in 1826 on this edition: "It is extremely scarce and produced an enormous price at an auction in this country a few years since." The book is open to a woodcut attempting to explain the plan of a Roman theatre. It is so coarse, however, that almost no accurate information is provided. Note the area labeled *proscenium* or the space in front of the scene, a term that evolved into the modern English usage of the *proscenium arch*.

Vitruvius Pollio. *De Architectura Libri Dece traducti de latino in Vulgare affigurati.* Translated by C. Cesariano. Como: Gottardus de Ponte, 1521. Facsimile reprint, Bronx and London: Benjamin Blom, 1968.

This is the second illustrated edition and the first in Italian or any vernacular language. The commentary and translation are by Cesare di Lorenzo Cesariano (1483-1543), an architect, painter, and illustrator. He studied architecture with Donato Bramante in Milan, and somewhere also learned enough Latin to attempt this Italian translation. He never visited Rome and his comments reveal neither much knowl-

edge of Roman monuments nor a real understanding of Vitruvian theories. He took no further part in the commentary after Book IX, Chapter 6 due to a disagreement about money with the publishers. The translation was completed by Benedetto Giovio and Bono Mauro in an incomplete and inept manner; they also printed Cesariano's illustrations without the necessary labels and explanations.

Although imperfect, the edition is useful because it provides a Renaissance viewpoint on architecture. Cesariano's lack of understanding of the architecture of Vitruvius's time caused him to create fanciful illustrations that are a blending of Romanesque and Renaissance designs. He reveals what he thinks important about architecture in Renaissance Milan, and shows how North Italian architects developed a building style using available local sources.

Inaccuracies aside, this edition is one of the masterpieces of Renaissance book illustration. It has 117 woodcut illustrations (ten full-page, one of the smaller blocks a repeat). The designs for the plates are believed to be by a pupil of Leonardo da Vinci and many of the blocks were cut by Cesariano. The three plates showing plans and elevations of the cathedral in Milan are apparently the first measured representation of Gothic architecture in a printed book. Eleven of Cesariano's woodcuts appear later in the 1547 Paris edition.

The plate on display illustrates an inaccurate reconstruction of a Roman theatre exterior, an inaccurate interior view, an elevation of the *scaene frons*, and a plan view that provides no access doorways to the stage.

On loan from the Media Union Library.

Vitruvius Pollio. *M. Vitrovii De architectura libri decem....*
Florence: Philippi Iuntae, 1522.

This is a revised and corrected version of the 1513 Florence edition. It was published in Florence by Giunta after the death of Fra Giovanni Giocondo. The illustration is a Greek theatre plan which has no basis in fact.

Vitruvius Pollio. *M. Vitrovii Pollionis De architectura libri decem....* Lyon: Ioan. Tornaesium, 1552.

Jean de Tournes (1504-1564), one of the greatest of sixteenth-century French printers known for his scholarship, excellence of design, elegant arabesque woodcut borders, and floriated initials, first printed Vitruvius with this edition of 1552. Guillaume Philandrier (1505-1565), a student of Serlio (see Case 5) with a knowledge of theatre design, supervised the edition himself, using the Giunta text which he collated with several manuscripts. The numerous woodblock illustrations by Bernard Salomon (1508-61) are better than any preceding edition, although there are none pertaining to theatre. Inspired by the elegant Mannerist art of the Fontainebleau School, Salomon designed and engraved numerous plates for booksellers in Lyon, including editions of Aesop's *Fables* and Ovid's *Metamorphoses*. These became models of form for engravers working in Lyon and his style was widely copied. Salomon also designed and painted scenery for various civic celebrations in Lyon. This edition was published later in 1557 in Venice by J. Ziletus and in 1586 in Lyon, again by De Tournes.

Shown is a portrait of Philandrier presented in one of De Tournes's distinctive borders.

CASE 2 — Further Editions of Vitruvius

Vitruvius Pollio. *I dieci libri dell' architettura di M. Vitruvio.* Translated and with comments by Daniel Barbaro. Revised and expanded edition. Venice: Francesco de Franceschi, 1567.

The second edition of Daniel Barbaro's Italian translation (first published in 1556 in Venice) seems to have followed the text of Philandrier's 1552 edition. The translator Barbaro was one of the sixteenth century's most original scholars on antiquity. He was the first editor of Vitruvius to undertake a systematic investigation of Roman ruins before embarking on his editorial task. He also edited Aristotle and wrote *La pratica della prospettiva*, a book on perspective that included a section on stage scenery. With his interest in perspective, he noted that Vitruvius was influential in creating a use of illusionistic setting on the inner stage behind the facade. Vitruvius's theory argued that perspective settings should all tend toward the same vanishing point.

This edition is complete with 125 illustrations, some of them folding. The woodcut initials are by Golito and the woodblocks were cut by Chrieger. The majority of the woodcuts are reduced copies from the 1556 edition. They are of particular note since they were designed by the architect Andrea Palladio, who designed Barbaro's Villa Maser near Asolo and who later published *I Quattro Libri dell' Architettura*, a landmark in Renaissance architectural writing.

Of the five illustrations on theatre, the one shown presents an elevation view of a Roman theatre stage wall (*scaene frons*). Palladio recalled this facade for his design of the Teatro Olimpico in Vicenza. Completed in 1585, it was the meeting hall for the *Accademia degli Olimpici*, a group of Venetian nobility dedicated to the study of ancient Greece and Rome. It was only occasionally used for the presentation of plays, but Palladio clearly intended it as an indoor re-creation of an antique Roman theatre. This landmark, al-

ready a tourist attraction by 1700, is the oldest extant theatre building in Europe, and is cited in almost every modern-era treatise on theatre architecture. See also Case 3.

Vitruvius Pollio. *I dieci libri dell' architettura....* Translated by Daniel Barbaro. Venice: Francesco de Franceschi, 1584.

A later edition of Barbaro's 1556 Italian translation with the same plates by Palladio as were included in his 1567 edition. This illustration shows a section of a Roman theatre (see also Case 3).

Vitruvius Pollio. *The Architecture of M. Vitruvius Pollio.* Translated by W. Newton. London: Printed for James Newton, 1791.

This first complete English language edition of *De Architectura* was translated by William Newton (1735-90), a practicing architect with an interest in the neoclassical style. Newton visited Rome in 1766 and completed his translation in 1771. He included an historical list of previous editions and a ten-page biography of Vitruvius. In footnotes for Book V, Newton presents a discussion of his own ideas on contemporary theatre design with several illustrations of a rather traditional English-style theatre.

The translation was published as a large folio edition in two volumes with 117 figures on forty-five plates. The plate on display shows a section of a contemporary theatre design advocating a return to a Roman style auditorium.

CASE 3 — Perrault's Edition of Vitruvius

Vitruvius Pollio. *Les dix livres d'architecture de Vitruve, corrigez et traduits nouvellement en françois, avec des notes & des figures*. Translated by Claude Perrault. Paris: J. B. Coignard, 1673.

This French translation of *De Architectura* was prepared by the polymath Claude Perrault (1613-1688). Perrault was by profession a physician, but was interested in a wide range of subjects. He was a member of the Academie des Sciences and published the *Essais de Physique* from 1680-88. As an architect he is known to have worked on designs for the eastern facade of the Louvre and designed the Observatory in Paris in 1669.

Perrault was the first translator of Vitruvius who was a brilliant, classical scholar and an informed architect. In 1674 he published *Epitome*, a reduction of Vitruvius into a statement on architectural taste that anticipates numerous books written in the eighteenth century. He created controversy in rejecting the belief that the rules of proportion were the cause of beauty; he felt that they could not arbitrarily be fixed.

This publication is the first edition of Vitruvius to be illustrated with copperplate engravings created by Tournier and I. Grignun. It is, without doubt, the most beautiful edition ever published. It was the standard French text for more than a century and is still respected and referred to today. In 1674 Coignard also published an abridged edition using the same plates.

On display are the following plates (all from Book 5):

- Plate XLV: Plan of a Greek Theatre
- Plate XLIII: Roman Theatre Section
(see also Case 2, second item)
- Plate XLIV: Roman Scene Elevation
(see also Case 2, first item)

CASE 4 — Perrault's Edition of Vitruvius

Vitruvius Pollio. *Les dix livres d'architecture de Vitruve, corrigez et traduits nouvellement en françois, avec des notes & des figures*. Translated by Claude Perrault. Paris: J. B. Coignard, 1673.

More plates from this elegant publication include:

- Book 3, Plate XIII: Ionic Order
- Book 5, Plate XLVII: Doric Order
- Book 4, Plate XXXVI: Corinthian Order
- Book 4, Plate XXXV: Corinthian Tholos

On loan from the Fine Arts Library.

CASE 5 — Renaissance Architects Influenced by Vitruvius

Access to *De Architectura* provided Renaissance authors a model that could be followed for their own writing on architecture and theatrical design. Indeed, the fact that Vitruvius was a practicing architect inspired Alberti, Serlio, Palladio, and other architects to publish. The humanist-architect was a well-respected member of society and the books they wrote were purchased by wealthy laymen. The interest in classical architecture encouraged an in-depth study of antiquities and started a mania for collecting these books that has not yet subsided. Cases 5 and 6 contain books written by Renaissance architects explaining theatrical practice. It must be noted that scenic design had not yet evolved into a separate profession and architects were, therefore, expected to create both theatres and scenic designs for their patrons.

Leon Battista Alberti (1404-1472). *L'architettura....* Venice: Francesco de Franceschi, 1565.

Alberti, a Roman Catholic priest, studied Latin and Greek at Padua and law at the University of Bologna but had no formal training in architecture or painting. Nevertheless, he possessed a combination of knowledge, intelligence, and curiosity almost unique among architects. He approached the arts as intellectual disciplines, believing that the study of ancient architectural remains would provide a base for new design. He was the first in modern times to attempt to sort out ancient decorative orders and to codify the principles of design.

Alberti's manuscript of *De re aedificatoria* (*About Architecture*) was written in Ciceronian Latin and presented to Pope Nicholas V in 1452. The first person since Vitruvius to write a work solely about architecture, Alberti approached his subject with the insights of a practicing architect even though he intended his work to be read by humanists, not craftsmen. It was to be a modern clarification of the ideas of Vitruvius, although Alberti's focus was on rules of design, rather than technicalities of construction. His readers would learn how to judge a building, not how to build it. He organized it around the Vitruvian concepts of *Utilitas*, *Firmitas*, and *Venustas* (function, structure, and design). Alberti believed that the beauty of a building is determined by a combination of *Numeros* (number), *Finito* (proportion), and *Collocatio* (arrangement) to achieve a *Concinnitas* (balanced whole). A great deal of the text deals with defining and explaining the five orders of Roman architecture. In Book VIII, Chapter 7, "Of the Adorning of Theatres," Alberti states that the auditorium ought to be semicircular, with a colonnade around the top, and the stage should be an architectural set-piece with rows of columns, one above the other.

The manuscript was first published in Florence in 1485, thirteen years after Alberti's death, by his brother Bernardo. Intended to be read aloud, it had no illustrations. The first Italian translation, by Pietro Lauro, was printed in

1546. In 1550 Venetian publisher Cosimo Bartoli printed the first illustrated edition, with text in Italian. The first English translation was published in London in 1726. This Venetian publication of 1565 is open to one of many illustrations, this one depicting a section and elevation of a Roman theatre.

Sebastiano Serlio (1475-1554). *Il primo [-secondo] libro d'architettura. Le I [-II] livre d'architecture.* Paris: J. Barbe, 1540-47.

Serlio was the first architectural author to write in a language other than academic Latin, and the first author in the modern era to write about stage scenery. Born in 1475, Serlio worked in Bologna, Rome, and Paris. His first teacher was his father, a painter of ornament. In 1514 he traveled to Rome and studied with painter, scene designer, and architect Baldassare Peruzzi. Serlio probably acquired his knowledge of perspective and theatre scenery by assisting Peruzzi on various commissions. He also studied classical ruins in Rome, Venice, and Dalmatia, making many measured drawings. Peruzzi left his own extensive drawings of classical ruins to Serlio, and these notebooks became the basis for Serlio's later writing.

Like Alberti, Serlio had a knowledge of Vitruvius, a broad awareness of classical ruins, and a wide knowledge of contemporary architectural practice. His was the first book on architecture that had a practical rather than a merely theoretical aim, and it established a means by which architects could be trained in Vitruvian subjects. Serlio states the need for architects to have a firm grasp of geometrical principles. He comments on the complexity of perspective and includes the first formal codification of the five classical orders. His goal seems to have been to reconcile the text of *De Architectura* with the ancient ruins he had studied.

Around 1525, at age fifty, he began writing the first of his books. Entitled *Regole Generali di Architettura* and pub-

lished in Venice in 1537, it concerned the five orders of architecture. This book eventually became Book IV in his planned set of seven. It was an immediate success, and further editions were printed in 1539, 1540, and 1544. Book III, on the ancient monuments of the Roman Empire, was published in 1540, also in Venice. It was the first publication with drawings and descriptions of the remains of classical architecture, and became an important supplement to Vitruvius. In 1541 Serlio moved to France and became "*premier peintre et architecte du Roi*." Books I, II, and V were written in Paris as Serlio was working on the new palace of Fontainebleau. Books I and II concern geometry, perspective, and the rules of proportion, and were published by Jean Martin in Paris in 1545, with the text in both French and Italian. Book V, containing twelve temple designs, was published, again bilingually, in Paris in 1547.

In 1548, at age seventy-three, Serlio lost his post as court architect and moved to Lyon. In 1550 a Mantuan art dealer and antiquarian, Jacapo Strada, finding Serlio impoverished (despite the widespread success of *D'Architettura* in unauthorized versions), purchased the manuscript and drawings for Book VII, a text discussing problems an architect might encounter, such as amending an earlier facade or dealing with an irregular site. Strada published it in 1575, twenty years after Serlio's death. Book VI, the designs of habitations from hut to palace, was never published and exists only in two manuscript copies.

In 1584, the Venetian printer Francesco de Franceschi published Books I-V and VII along with a separate book Serlio had written in 1551 entitled *Extraordinary Book of Doors*, a collection of fifty engravings of Mannerist doorways. He entitled the seven books, *Tutte l'opere d'architettura*. It was a major success and was quickly translated into several other languages, including English in 1611. The English had been aware of Serlio before this time, however. Inigo Jones possessed a much-annotated Italian edition that influenced him greatly and classical motifs appear in English architecture from 1600 onward.

Large portions of Book I are devoted to theatrical design. Serlio surveys current (and outmoded) scenic practice in Italy. Like Vitruvius he describes three different types of scenes: comic—ordinary houses with one for a courtesan in the foreground; tragic—using lofty spaces fitting of royalty; and pastoral—rustic setting with trees, groves, and cottages. Included are woodcut illustrations of each type of scene, as well as instructions and illustrations for creating a temporary theatre in a banqueting hall or courtyard. He built such a theatre in Venice in the 1530s. In true Vitruvian style the auditorium is semi-circular. The stage is divided into two parts, a wide, shallow acting area and a sloping area for the placement of painted perspective scenery. The vanishing point was located beyond the back wall. This model was to be used by court architects throughout Europe for almost 100 years. Lighting and effects are also treated.

The copy of *D'Architettura* on display is assembled from first and early editions of the first five books. All of the texts are in Italian and French except for Book IV which is in French only. The books were bound together perhaps sometime in the eighteenth century. The woodcut by Serlio illustrating a "Scena Comica" is the first illustration ever published specifically showing scenery for a comedy. This design closely resembles a pen and ink drawing in the Uffizi Gallery by Peruzzi of his scenery for the comedy *La Calandria*, a production Serlio may have worked on under Peruzzi's tutelage.

These single loose pages of illustrations showing a plan and section of a temporary theatre are from Book II of the 1584 Venice edition of Serlio's *Tutte l'opere d'architettura*. As with the "Scena Comica," these woodcuts are also the first illustrations ever published showing a plan and section of a contemporary theatre.

On loan from a private collector.

Sebastiano Serlio (1475-1554). *Tercero y quarto libro de architectura de Sebastian Serlio Bolognes.* Translated by Francisco de Villalpando. Toledo: Juan de Ayala, 1563.

This translation of Serlio's text for Books III and IV into Spanish was made by Francisco de Villalpando. The book is open to plate twenty-eight from Book III on the ancient monuments of the Roman Empire, illustrating a "Theatre Antique."

CASE 6 — The Second Generation of Renaissance Architects/Scene Designers/Authors

Vincenzo Scamozzi (1522-1616). *L'idea della Architettura Universale.* Venice: Author, 1615.

Born in Venice, the only child in a wealthy family, Scamozzi was a classically educated "gentleman artist" of independent means. He was a member of the intellectual elite, rather than "a mere practitioner of architectural craft." As an architect and scene designer, Scamozzi had many commissions in Rome, Florence, Bologna, and Venice. Of particular interest were the perspective scenes for the Teatro Olimpico (completed by him after Palladio's death) and the Teatro all'Antico in Sabbionetta in 1588, a theatre he considered to be "Roman" in design. Strongly influenced by Palladio (whom he assisted on the Teatro Olimpico), he was the last of the Renaissance architects advocating a strict classicism, and his book, *L'idea della architettura universale*, was written at the end of the era. Its mass of turgid prose contains few new ideas and had little lasting significance for future architects. Book IV, on the orders of architecture, is the most successful, and actually became a handbook for

architects and craftsmen for more than a century. His work in the theatre had an influence on Inigo Jones, who attended theatrical performances in Italy with scenery designed by Scamozzi.

The most useful of Scamozzi's writings in *L'idea della architettura universale* were on architectural orders. This woodcut illustrates Tuscan, Doric, Ionic, Composite, and Corinthian columns.

Nicolas Sabbattini (ca. 1575-1654). *Pratique pour fabriquer scènes et machines de théâtre.* Translated from Italian by Marie and Renee Canavaggia. Neuchâtel: Füssli, 1942.

Sabbattini was an architect and engineer. His book, originally entitled *Practica di Fabricar Scene e Machine ne' Teatri* and published in Ravenna in 1638, documents Italian stage practice in the late sixteenth and early seventeenth centuries. A native of Pesaro, Sabbattini was court architect to the Duke of Urbino. Among his many projects, he designed the Teatro del Sole in Pesaro in 1637 (probably a temporary theatre), and also supervised the installation of its equipment and scenery.

Sabbattini's "Practica" was the first book written exclusively about theatre design, stage scenery, and stage machinery. With eighty-nine wood cut illustrations within the text, it was an invaluable handbook for architects who needed to build theatres and outfit them with scenery and stage machines. Book I treats theatre construction, audience arrangement, scenery construction and painting (especially perspective), and lighting effects. Book II treats the special scenic needs of the intermezzi, the often elaborate entertainment performed between the acts of a play. He discusses shifting scenery using Serlian two-sided wings, *periaktoi*, and shutters. He also describes hell scenes with fire effects and many other stage effects.

The copy here is open to a woodcut illustration show-

ing a method of dimming candle light on stage.

Joseph Furttentbach (1591-1667). *Architectura recreationis*. Augsburg: Johann Schultes, 1640.

Born in Southern Germany, Furttentbach went to Florence in 1608 and studied with Buonalmi and Giulio Parigi at the same time Inigo Jones was there. Like Jones, he was a general architect with an interest in theatre design. Also like Jones, he returned to his native country and brought Italian theatrical practice with him. Back in Germany after ten years in Italy he had a successful and prosperous career as Ulm city architect and engineer. He built a theatre in Ulm in 1640, with a double *periaktoi* stage and elaborate lighting and rigging effects to accomplish *a-vista* scene changes. Hardly a trace of his architectural work survives.

Furttentbach was an ambitious writer who published numerous works including *Architectura civilis* (1628) which includes information on stage scenery and perspective and *Architectura recreationis* (1640) which describes the ideal theatre. His interest in complex mechanical scenery was the foundation for Germanic staging traditions that continue to this day. His works are important as they document, in great detail, the technology of scenic design and stage effects as practiced in early seventeenth-century Europe.

Plate twenty-one of *Architectura recreationis* illustrates two scenes for comedy, "A Street of Houses" and "A Pleasure Garden." An English translation for Furttentbach's text concerning these plates is as follows:

I acknowledge that far more famous and expert architects, especially in Italy, understand far more the concerns of stage decoration than I.

At the same time, these masters are not willing to communicate the details of their records, or go to the cost of copper plates, and still others, and these the

most prominent masters, are not willing to take the pains to prepare such things for print.

When the curtain has fallen down, then the first scene, as shown here, representing a street built of stately houses, stands before the eye of the spectator. When the first act of the play is brought to an end, the corners of the houses swing from each other, the back wall is divided, and the scene suddenly changes to a beautiful garden—all this so rapidly that none of the spectators, no matter how keenly he looked at the stage, can see how it is done.

Joseph Furttentbach (1591-1667). *Mannhaffter Kunst-Spiegel....* Augsburg: J. Schultes, 1663.

Another significant work by Furttentbach is *Mannhaffter Kunst-Spiegel* (1663) which includes the specifications for the theatre he built at Ulm. It was the first civic theatre in Germany. In the section, "Architectura civilis," Furttentbach proposed a design for a banqueting hall (Schawspil-Saal) with four stages and a turntable in the center. The hall (78' wide) could be used as a theatre in a traditional manner or diners could be seated on the turntable which would be turned between courses of the meal to view the different stages.

CASE 7 — Italian Neoclassical Books on Theatre Construction

Count Enea Arnaldi (b. 1716). *Idea di un teatro nelle principali sue parti simile à teatri antichi all' uso moderno....* Vicenza: A. Veronese, 1762.

In this book Arnaldi advocates the idea of a theatre similar to an ancient one, with semi-circular seating conforming to the doctrines of Vitruvius. There are six plates illustrating an odd historical theatre with one set. Shown here is plate number one, the floor plan of a theatre strongly influenced by Palladio's Teatro Olimpico and earlier Roman form. Note the narrow proscenium opening and the large forestage where the actors would perform.

Francesco Milizia (1725-1798). *Del teatro.* Venice: Giambattista Pasquali, 1773.

Francesco Milizia was the most influential and prolific Italian architectural writer in the eighteenth century. He was a consistent advocate of new anti-baroque, neoclassical ideas. Educated in Padua and Naples on the "axis of the enlightenment," he moved to Rome in 1761 where he developed his interest in architecture. Independently wealthy, he carried on a controversial career as a critic and theorist. Strongly influenced by Vitruvian ideas, Milizia proclaimed that architecture was "the bond of a civilized society." He elaborated on Vitruvius's classification of building features, and applied them to building types such as court houses, hospitals, and libraries. His method became binding in the nineteenth century. Among his numerous books, the most important is *Principi di architettura civile* published in 1791.

In *Del teatro* Milizia proposes the ideal theatre. His text was provocative in that he castigated Romans for their neglect of the ancient Theatre of Marcellus. He advocates doing away with the traditional baroque horseshoe-shaped auditorium with its tiers of boxes, replacing it with a semi-circular auditorium (the ancient Roman form) with greatly improved audience sightlines and seating for all classes of people in proximity. The social implications of a theatre without the seating hierarchy dictated by boxes, pit, and upper gallery were not supported by the establishment.

Of the six plates included with this text, plate five shows various section plans.

CASE 8 — Books on Perspective from the Baroque Period

Painters and architects continued to develop and refine the techniques of perspective. In the Baroque era artistic specialization became the norm and painting and architecture became separate professions. Scene design specialists began to appear. These designers tended to be from the painter/muralist tradition rather than the architect/designer tradition.

During this period, the chief form of theatrical production in Europe was opera. Unlike the playwright, who usually followed Aristotle's dictum of unity, the opera librettist could employ a multitude of locales, and generally did. The more scenery the better. Stage decoration, therefore, developed from the architectural (i.e., the Serlian-angled wing or Furttenbach's *periaktoi*—both difficult to shift quickly from one scene to another and very limiting in the number of scenes available) to the painterly (i.e., the flat wing—easy to shift from scene to scene, allowing as many as twenty different scenes in one production).

Baroque scenic artists designed scenery for courtly theatrical and operatic productions, often in conjunction with the births, marriages, or coronations of the royal household. The productions were extravagant, and involved great sums of money and long planning and production periods. Competition between courts for the best composers, singers, designers, and painters was very keen. Books that give detailed instruction on creating complex perspective stage scenery were a boon to scenic designers and Baroque scenery is extraordinary in its exuberant use of perspective and magical *a vista* changes.

Giulio Troili (1613-1685). *Paradossi per praticare la prospettiva senza saperla.* Bologna: Gioseffo Longhi, 1683.

Born in Spilamberto, Troili worked in Rome before settling in Bologna in 1653. As painter to the Bolognese Senate he prepared frescoes and designed scenery and decorations for public festivals. He created scenery for Ranuccio II Farnese, 6th Duke of Parma at the Teatro Farnese. Built in 1618, it is the world's oldest extant theatre with a proscenium arch. He published *Paradossi per praticare la prospettiva* in Bologna in 1672. It is the first book on perspective that deals with painting scenery for the flat wing stage, and also is the first to consider oblique wings, including as well an explanation of painting architectural scenes in one-point perspective. He omits coverage of the outmoded *periaktoi* employed by Furttenbach.

As the title indicates, the volume is a practical handbook for scenic designers and painters, and following his instructions a skilled painter could create views in perspective. It is divided into two parts, the second containing two sections devoted to scene design. Troili's fundamental ideas were elaborated on by other architects, including Pozzo and Fernando Galli-Bibiena (a student of Troili).

This 1683 edition is open to figures showing a layout with a raked stage floor (Figure 1) and a theatre stage with sightlines and a perspective layout with the vanishing point at letter 'O' (Figure 2).

Andrea Pozzo (1642-1709). *Perspectivae pictorum atq[ue] architectorum....* Augsburg: Jeremias Wolff, 1706-09.

A painter and architect, Pozzo was born in Trent, where he received training as a painter. He traveled to Milan in 1671, becoming a Jesuit lay brother. He worked as a perspective painter and muralist in Rome from 1681 until 1702 when he was ordered to Vienna to work in the court of Em-

peror Leopold I, where he spent the remaining years of his life. He gained wide acclaim for his festival scenery and decorations, especially for festivals and *teatra sacra* at the Church of the Gesù in Rome. These designs are featured in his book on perspective, which was first published in Rome in 1693 and dedicated to Leopold I.

Pozzo was the first writer to present exact step-by-step procedures using the rules of perspective for transfer of scenic designs onto flat wing surfaces. He recommends that "wings be high and used so unobtrusively that the audience be unaware of how they create the illusion of stage space." Pozzo's most important innovation is the depiction of round architectural structures on flat wing scenery. Containing 118 engraved illustrations, this book was a major vehicle for spreading the Italian Baroque style throughout Europe. It was quickly translated into French (1700), German (1706), English (1707), Flemish (1709), and Chinese (prior to 1737).

In this German-Latin edition of 1706, figure forty-two shows how to lay out perspective on flat wings.

Andrea Pozzo (1642-1709). *Rules and Examples of Perspective Proper for Painters and Architects, etc.* London: Printed for J. Senex and R. Gosling, etc., 1707.

The first English language edition translated by John James from the Italian, this book was the first printed in England showing a drawing of an auditorium with five tiers of boxes. Figure seventy-two illustrates how to lay out perspective on oblique wings.

On loan from the Media Union Library.

CASE 9 — Further Baroque Works on Perspective

Giuseppe Galli da Bibiena (1696-1757). *Architettura, e prospettive*. Augusta [Vienna?]: Sotto la Direzione di Andrea Pfeffel, 1740.

Headquartered in Bologna, the three generations of the Galli da Bibiena family were an artistic dynasty that designed scenery in Italy and northern Europe from the 1680s to the 1780s. Their work survives in hundreds of drawings and engravings as well as several extant theatres. Shown here is a book of designs by Giuseppe Galli da Bibiena, who worked mainly in the courts of northern Europe. A masterpiece, this book contains fifty-four large copperplate engravings by Andreas Pfeffel that document some of the author's major theatre work from his earliest years as his father's assistant through his emergence as the major scenic designer of his era. He designed scenery not only for theatrical presentations, but also devoted a large portion of his career to creating scenic backgrounds for state occasions, including weddings, baptisms, and coronations. During his career he designed scenery for more than thirty royal funerals. He is credited with using translucent scenery (i.e., the scrim) for the first time in Europe for a production of *L'asilo d'amore* at Linz in 1732.

The scene shown is a copperplate engraving commemorating scenery created for a courtly event. It shows a Bibiena family trademark, a scene '*per angolo*,' that uniquely breaks from past practice with its distinctive off-center vanishing point. The background parts of the scenery were painted canvas backdrops, while the foreground pieces were made from three dimensional pieces of wood and plaster. The perspective illusion could only be maintained if the performers stayed well enough away from the painted backdrops. In viewing commemorative engravings like these, one must keep in mind that they were created after the fact

to glorify the occasion and the scale is, therefore, often drastically inflated for effect.

Jean Dubreuil (1602-1670). *La perspective pratique*. Paris: Melchior Tavernier et F. L'Anglois, dit Chartres, 1642-49.

The son of the academic printer, Antoine Dubreuil, Jean Dubreuil worked as a printer before entering the Jesuit order. He is best remembered for this book on perspective. Although it has a heavy emphasis on the design of decoration for religious festivals, it was very useful for artists and went through a great many editions and translations. Many of his theatrical illustrations are outdated and do not reflect the innovations brought to France by the Italian designer Giacomo Torelli, then working in Paris.

Jean Dubreuil (1602-1670). *The Practice of Perspective; or, An Easy Method of Representing Natural Objects According to the Rules of Art*. 3d edition. London: Printed for Thomas Bowles, 1749.

This third edition of Dubreuil's text on perspective is an English translation by E. Chambers. It is illustrated with nearly the same 150 copperplate engravings as the original 1642 French edition. The illustrations in both of these editions demonstrate the layout of arched colonnades in perspective.

CASE 10

Lorenzo Capponi (b. 1733). *Pianta e spaccato del nuovo Teatro di Bologna*. Bologna: L. dalla Volpe impressore dell' Instituto delle Scienze, 1771.

This book documents the Teatro Communale built in Bologna in 1763 by Antonio Galli Bibiena (1700-74). The younger brother to Giuseppe (see Case 9), Antonio is remembered for designing more theatres than any other architect in the eighteenth century. Having created theatres and stage scenery for the courts of northern Europe for more than thirty years, Antonio returned to his native Italy and was soon commissioned by the senate in Bologna to build this theatre for the city.

It is a wonderful example of the fully evolved Italian Baroque theatre form. As a municipal theatre it required no royal box, and the bell shaped auditorium has more fluidity of movement and decorative unity than were usually achieved. It demonstrates a compactness of plan and restrained ornamentation typical of theatres designed by Antonio. The theatre opened on May 14, 1763 with a performance of Gluck's *Il trofino di Clelia*. It quickly became the most important theatre in the city. An 1871 performance of *Lohengrin* marked the first performance of Wagner in Italy. The theatre underwent substantial modifications in the nineteenth century, was gutted by fire in 1931, and was severely damaged by allied bombing in 1944. It was rebuilt in 1946, and a major restoration took place in 1980-81. It has one of the most splendid interiors of any theatre in Italy, and presents one of Italy's more interesting opera seasons.

The copperplates are engraved by Lorenzo Capponi. One can assume that this commemorative book was an important document in the 1980-81 restoration. On display are Plate 4, an auditorium section, and Plate 5, a proscenium elevation.

CASE 11 — Eighteenth-century French Publications

In the eighteenth century a great many books were published on the subject of theatre architecture. These tend to be of two types. The first, written by traditionalists, re-enforced the architectural status quo of the horseshoe-shaped auditorium with rows of private boxes and a proscenium-arch stage. The advantage of this form was its ability to seat a large audience in proximity to the stage. This camp also published numerous commemorative books featuring completed projects. The second type were texts written by architects advocating some new form, perhaps a radical departure in auditorium seating or scenic display. In the second half of the century, with architectural neo-classicism in vogue, Vitruvius and the Roman theatre form were often revisited. Many advocated a semi-circular auditorium, the elimination of rows of boxes, or unusual stages. Some of the less radical of these types were even built as small court theatres. A stunning example was built in 1781 by Palmstedt inside a turret at Gripsholm Castle, Sweden. This fundamental debate over theatre form (often nationalistic and generational in tone) has been rabidly carried on in print to the present day.

André Jacob Roubo (1739-1791). *Traité de la construction des théâtres et des machines théâtrales ... premiere partie*. Paris: Chez Cellot & Jombert fils jeune, 1777.

Trained as an architect and engraver, Roubo referred to himself as a master carpenter. His writing offers no new insights, but it does provide historians a model of contemporary practice. He claims to consider the work of the architect, decorator, machinist, and carpenter in his discussion. He offers a brief history of theatre architecture and describes modern theatres in France and Italy, favorably treating the

Italian ones. He then offers his design for a multi-use structure (*Salle de Spectacle*) for the performance of plays, operas, and ballet before the general public. He gives a detailed description of the proposed building, comparing it favorably to the extant Comédie Française. His discussion includes the movement of spectators, fire safety, and commercial practicality (unusual on the Continent at this time where state subsidy was the norm). He stresses that his design is derived from the ancients. It is clearly a book written by an architect trying to get an important commission.

There are ten large engravings: Plate 1 presents plans of historical theatres; Plate 2 illustrates the plan and section of the Comédie Française; and Plates 3-10 document a project for a modern theatre with a semi-circular auditorium in the Vitruvian mode. Shown is Plate 8 depicting a section of an auditorium similar to the Roman theatre section in the 1673 French edition of Vitruvius (see Case 3).

Suite du Recueil de Planches sur les sciences et les arts. Paris: C. J. Panckoucke, 1777.

The *Encyclopédie ou Dictionnaire raisonné des sciences, des arts et des métiers, par une Société de Gens de lettres* was published between 1751 and 1772 under the direction of Denis Diderot (1713-1784), with seventeen volumes of text and eleven volumes of plates. Contributors included the most prominent experts of the day who collaborated on the goal of assembling and disseminating in clear, accessible prose the fruits of all accumulated knowledge and learning. Containing 72,000 articles written by more than 140 contributors, the *Encyclopédie* was a massive reference work for the arts and sciences, as well as a "machine de guerre" which served to propagate Enlightenment ideas. The first seven volumes were issued, one per year, from 1751 to 1757. Distribution of the ten remaining volumes took place in 1766. The volumes of plates were released at the rate of roughly

one per year from 1761 to 1772. The original estimate of 600 plates soon proved to be insufficient and coordination of the text and the plates became very difficult. In some cases, the authors were able to consult the completed images while writing their articles and to give precise references to the pertinent plate and figure numbers. In other cases, the plates were drawn long after the completion of the articles, and sometimes there is very little correlation between the two. In its original printing, about 4,000 copies were made.

The impact of the *Encyclopédie* was enormous, not only in its original edition, but also in multiple reprintings in smaller formats and in later adaptations. It was hailed, and also persecuted, as the sum of modern knowledge and as a monument to the progress of reason in the eighteenth century. Through its attempt to classify learning and to open all domains of human activity to its readers, the *Encyclopédie* gave expression to many of the most important intellectual and social developments of its time.

Nine plates in this 1777 supplemental volume to Diderot's *Encyclopédie* illustrate a proposed new theatre for comedy with a circular (Vitruvian) auditorium and a stage with three proscenium vistas, a la the Teatro Olimpico. This project was designed and engraved by Professor Gabriel Pierre Martin Dumont (1720-1790). Trained as an architect, Dumont won the Prix de Rome in 1731 and studied at the French Academy in Rome from 1742-6. In 1750 he traveled to Paestum and made measured drawings of the excavations. Upon his return to Paris he undertook commissions as an architect, but devoted his time to publishing collections of engravings of his own architectural drawings. He visited and made extensive documentary drawings of theatres all over Europe which he published between 1763 and 1774. He thought the Italian theatre design superior to all others. The project theatre illustrated here revisits the late Renaissance form of Serlio and Palladio in his Teatro Olimpico. It is a form also advocated by Charles Nicolas Cochin (see Case 13).

CASE 12 — Plates from the Encyclopédie

Encyclopédie, ou Dictionnaire raisonné des sciences, des arts et des métiers, par une Société de Gens de lettres. Paris: Briasson [etc.] 1751-65 [i.e., Genève: C. J. Panckoucke, G. Cramer et S. de Tournes, 1772-74].

In the tenth volume of plates of Diderot's *Encyclopédie*, there are thirty-one illustrating theatre architecture, including scale drawings of theatres at Lyon, Metz, Montpellier, Moreau's Opera, Palais-Royal Salle de Machines, and d'Orbay's Théâtre Français. The plates were engraved by Gabriel Dumont (see Case 11), an architect who also contributed plans for a project concert hall and a theatre.

Additionally there are forty-nine plates designed and engraved by architect M. Radel under the direction of M. Giraud, machinist at the Paris Opera. Illustrating stage machines and scene shifting techniques, they represent the then current French technology. Scenic designers still used the Baroque style side wings and backdrops, painted in perspective, but they also incorporated very complex mechanical means to facilitate the *a vista* (i.e., in view) methods of changing scenery. Nowhere were the scene shifting machines more complex than in France.

Two plates from this volume are shown here:

Plate XXV Figure 1: the construction of the traps and sloats that close the stage floor, and Figure 2: the construction of the counter weights used to move scenery.

Plate XVII: a transverse elevation of a grid and access corridors of the stage showing details of the drum used for operating the curtain.

On loan from a private collector.

CASE 13 — French and English Books on Theatre Construction

Charles Nicolas Cochin (1715-1790). *Projet d'une Salle de Spectacle pour un théâtre de comédie.* London and Paris: C.-A. Jombert, 1765.

Cochin, an engraver, draughtsman, and art theorist, studied drawing at the *Académie Royale*. A prestigious illustrator well connected in the book trade, Cochin illustrated more than 200 books, including the frontispiece for Diderot's *Encyclopédie*. In 1737 he was appointed to the position of court artist to Louis XV. He designed many royal theatrical festivals and created commemorative drawings and engravings of all court celebrations including births, weddings, and funerals. He traveled to Italy in 1749-51 as advisor to the Marquis de Marigny. As a critic, Cochin saw himself as an educator of the public, and through his numerous writings he was a very influential voice of the French *Académie*.

As part of his responsibilities to the crown, Cochin also designed and engraved an architectural project for a court theatre, *Projet d'une salle*. In it Cochin states that most theatres are too elongated "so that the boxes at the back of the auditorium, which are best for seeing the spectacle, those for which the scenery and the acting are arranged, are too far away to be able to see and hear distinctly." He proposed an elliptical auditorium that faced the stage the long way and a wide stage with three proscenium arches. Each proscenium was in front of a separate stage house complete with perspective scenery. It seems very impractical, and Cochin was never able to see it built. However, Cosimo Morelli built a theatre at Imola in 1779 that was strongly influenced by Cochin's ideas. It was more of a curiosity than a workable playhouse, and the form did not appear again except as a twentieth-century experiment at the University of Wisconsin.

Pierre Patte (1723-1814). *Essai sur l'architecture théâtrale; ou, De l'ordonnance la plus avantageuse à une salle de spectacles, relativement aux principes de l'optique & de l'acoustique.* Paris: Moutard, 1782.

Pierre Patte was an academic theoretician rather than a practicing architect. Born in Paris, he studied at the Academy of Architecture from 1745 to 1749. He traveled to Italy, England, and Germany and designed some minor public and private buildings. Only an adequate designer, Patte admitted to being more interested in structure and technical matters than decoration. He felt ornament and proportion were matters of taste and were not to be defined rationally. He was to have a profound impact as an author, however, publishing numerous works on urban planning and architectural theory and criticism.

Essai sur l'architecture théâtrale is an historical examination of theatre architecture and Patte offers his readers a wide range of theatres for study. He discusses acoustics and fireproof construction. He evaluates the various auditorium forms, summarizes current literature on the subject, and concludes that "the ellipse alone reunites all the advantages desired for a playhouse." He objects to Cochin and thought English playhouses were substandard, not meriting discussion. Patte's writings were to have great influence over the theatre designs of Victor Louis.

Plate 1 illustrates a floor plan showing an elliptically shaped auditorium that exhibits the best acoustics and sightlines. Other engravings in this book display floor plans of a Roman Theatre, the Olimpico, the Farnese, and theatres in Turin and Naples, as well as ten eighteenth-century theatres.

Victor Louis (1731-1800). *Salle de Spectacle de Bordeaux.* Paris: Author, 1782.

Victor Louis, famous in his lifetime for his touchy and rebellious temperament, was one of the most successful architects of his age. Born in Paris, he studied architecture at the French Academy in Rome from 1756-59. Of the five major French theatres he designed between 1780 and 1790, the Grand Théâtre de Bordeaux is the most impressive and innovative. Bordeaux, the wealthiest of all French ports, was in need of a new civic theatre and Louis received the commission in 1772. Construction began in 1774, but the project was plagued with financial difficulties. The theatre was finally completed in 1780, at a cost of more than 270,000 Pounds Sterling, and gave Bordeaux the grandest of all eighteenth-century European theatres.

The success of the design lies in the union of new decorative styles with neoclassical (Vitruvian) architectural forms. In the auditorium, Louis supported the galleries with fewer and heavier posts reaching in an uninterrupted line from the floor to the cornice. The columns were tied together by horizontal beams at each gallery level, and the gallery fronts were cantilevered out beyond the line of the columns. This allowed the boxes to be larger, improved the sightlines, and gave the auditorium a monumental feeling. The top gallery was placed above the cornice in the pendentives of the domed ceiling, an arrangement that was soon duplicated in numerous other new theatres. The building of this theatre, its public square, and the other buildings surrounding it made Bordeaux a show-place in late eighteenth-century France.

Louis published this book to document and commemorate the building of this important civic theatre building which is still in use today. There are ten pages of text and twenty-two large beautiful copperplate engravings by P. G. Berthault. Shown are two views of the interior, one of the seating and one of the stage.

George Saunders (1762-1839). *A Treatise on Theatres*. London: Author, 1790.

This first English language book on theatre design mentions Patte and other previous design writers. Saunders, an architect who also worked as a scene painter, considers optics, phonics, the production of sound by the voice, acoustics, and acoustical properties of building materials and surface finishes. He also discusses the difference in auditorium requirements for opera houses and play houses, comments on Greek and Roman theatres (citing Vitruvius), and includes a Greek and Roman theatre plan in his plates. He concludes with a discussion and illustrations of his ideas for the ideals in the design of a dramatic theatre and an opera house, both using a circular auditorium plan.

Plate 13 illustrates Saunders' proposed design for an opera house. It has a proscenium opening forty-three feet wide and a classical semi-circular plan auditorium with two galleries seating 2,817 patrons. To Saunders this arrangement would be "the most analogous to the antique that is possible."

Benjamin Dean Wyatt (1775-1850). *Observations on the Design for the Theatre Royal, Drury Lane, as executed in the year 1812; Accompanied by Plans, Elevation, & Sections of the Same*. London: J. Taylor, 1813.

This is another commemorative book, published with eighteen plates and written by an architect explaining, defending, and documenting his Drury Lane Theatre. Wyatt's design was influenced by the theories of Saunders, copying his auditorium plan almost exactly, but adding two more balconies. Completed in 1812, the theatre was designed "in a manner so beautifully proportioned and so elegantly appointed that it charmed and impressed all who saw it." The auditorium seated 2,600.

The new proscenium was a magnificent triumphal arch, but it was so grand that the audiences took exception to it and the actors complained. Wyatt did not include proscenium doors, always a fixture in the English theatre, and the actors rebelled at this attempt to thrust them back behind the proscenium. One of the first of many modifications was to add doors back into the arch. The acoustics were very poor (so much for Saunders' acoustical theories) and the theatre interior was remodeled completely in 1822 by Samuel Beazley. This was Wyatt's only theatre design. Other commissions included several residences for the Duke of Wellington. In 1833 he became bankrupt and he died in obscurity.

Plate 9 presents a "Longitudinal Section through the Theatre, Saloon, etc."

CASE 14 — Nineteenth-Century French Theatres

Edwin O. Sachs (1870-1919). *Stage Construction: Examples of Modern Stages Selected from Playhouses recently erected in Europe with Descriptive and Critical Text*. London: B. T. Batsford, 1898.

Born in London, Sachs studied architecture at University College School and the Prussian Royal Academy in Berlin. He began his architectural practice in London in 1892. In 1896 he published the three-volume *Modern Opera Houses and Theatres*, a reference for architects and engineers which contains descriptions and detailed drawings of approximately fifty theatres built in the last quarter of the nineteenth century throughout Europe.

One of the major theatres Sachs describes is the National Opera House in Paris, completed in 1874 by Charles Garnier. The last of the grand neo-baroque stage houses, it was the final statement of French "clockwork" theatre tech-

nology and was technically obsolete within a few years of opening. All the stage structure and machinery was fabricated in wood, despite the fact that the rest of the building used cast and wrought iron structure throughout. The stage equipment was designed to shift flat painted wings and drops and was almost unchanged from that illustrated in the *Encyclopédie* more than 100 years earlier (see Cases 11 and 12). This outmoded technology combined with a lack of backstage storage space and no convenient access to the stage from the exterior made the opera house unable to handle the three-dimensional scenery that was the standard by the turn of the century. Although no longer the principal opera theatre in Paris, it is still one of the most beautiful theatres in Europe.

Displayed from this supplement volume are plates showing construction details for the National Opera House in Paris. Figures 30 and 31 depict a transverse section of the stage and a plan of the stage floor and Figure 33 offers further details. The outmoded equipment and small stagehouse create problems in this theatre to the present day. Large-scale opera production in Paris has shifted to the new Opera de Bastille.

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