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Reference Guides to National Architecture
David A. Hanser, Series Adviser

Greenwood Press
Westport, Connecticut • London

Library of Congress Cataloging-in-Publication Data

Castex, Jean.
Architecture of Italy / Jean Castex.
p. cm.—(Reference guides to national architecture, ISSN 1550–8315)
Includes bibliographical references and index.
ISBN 978–0–313–32086–6 (alk. paper)
1. Architecture—Italy. I. Title.
NA1111.C275 2008
720.945—dc22 2007035355

British Library Cataloguing in Publication Data is available.

Library of Congress Catalog Card Number: 2007035355
ISBN-13: 978–0–313–32086–6
ISSN: 1550–8315

First published in 2008

Greenwood Press, 88 Post Road West, Westport, CT 06881
An imprint of Greenwood Publishing Group, Inc.
www.greenwood.com

Printed in the United States of America

The paper used in this book complies with the Permanent Paper Standard issued by the National Information Standards Organization (Z39.48-1984).

10 9 8 7 6 5 4 3 2 1

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Preface

When David A. Hanser, series editor for the Greenwood Guides to National Architecture, asked me to write a book covering seventy-five of the most important architectural monuments in Italy as part of the series, I felt both pleasure and uneasiness. Much can be said about Italian architecture. It is a world in itself, and there are so many superb buildings. How could I reduce such a mass of information to simple and straightforward descriptions and to such a limited number of examples? Should I just comment on the best-known landmarks and ignore more ordinary but no less fascinating buildings, structures that often play a great role in the pleasure given by Italian architecture? An important decision, then, was the selection of buildings. I had to avoid being too passionate about certain periods, although, I confess I found the greatest delight in the Renaissance and Baroque periods. I tried to be fair with regions and chronological periods in Italy, but I also had to refuse a too broad distribution because buildings, in history, group themselves into a series of connected works of art, an understanding of which should be full of rewards. Limitations of space meant that two well-known buildings of the same kind and of the same period could not both be presented. I had to make a choice. The latest information, the latest criticism helped me in the selection. Of course, I had to rely not only on American and English books and essays but also on the most recent opinions presented by Italian researchers. The need to rely on recent debates to give a clear explanation of a building had often been the reason for choosing it.

When all the research was done and most of the writing completed, I felt I needed some corrections from a native English-speaking writer. A certain French logic and French ways of explaining would not totally fit an American or English reader. David Hanser proposed Janina Darling, author of another book in this series, *Architecture in Greece*. I feel grateful for the help she provided, and for the overall improvements she suggested.

Because architecture has a specialized vocabulary that is used to describe structures, details, and materials, a **Glossary** is included at the end of this book. It contains definitions for important terms that may, or may not, be fully explained in the entries. Words included in the Glossary are placed in *italics* the first time they appear in an entry. Frequently, the entry for a building includes comparison or reference to another structure included in this book. Where such a reference is made, the name of the building is indicated with **boldface** type when it appears for the first time.

Because Italy is in itself a world in architecture, I felt I had, in any case, to select with great care periods more difficult for the American reader to understand. If I had a chance to open eyes and minds, my own reward would be greater. Because I had to explain the characteristics of Baroque architecture, which a country like France (at least partially) ignores, I was pushed to greater efforts. Also such things as the notion of proportions typical of the Renaissance, which saw an image of the cosmos in a building's mathematics and geometry, needed to be clarified. Contemporary structural techniques also needed to be described, and their goals explained. When I sum up what I did during my own editing, I notice that eight items had played an invisible part in my comments. They should be a key for American readers to grasp my selection criteria and to discover a certain order of ideas, which, while mine, can be freely rearranged to make the book their own.

Architectural Landmarks

These architectural landmarks could be classified by the following periods and types:

1. **Antiquity, Greek, Etruscan, Roman:** The entries under this heading include a Greek Doric temple, the **Temple of Poseidon,** Paestum, 480–470 BCE; a large domed structure, typical of Roman building methods, the **Pantheon,** Rome, 118–125; a theater, originally Greek, later Roman, the **Theater of Taormina,** third century BCE; an arena, the **Colosseum,** Rome, 70–80; an entertainment complex, the **Baths of Caracalla,** Rome, 212–235; a basilica (a multipurpose hall), the **Roman Forum,** first century BCE; the late evolution of the basilica into an Early Christian church, **Sant' Apollinare in Classe,** Ravenna, consecrated in 549; and two domed structures of the late Roman period, the **Mausoleum of Constantina,** Rome, 337–350 and **San Vitale,** Ravenna, 526–548.
2. **Middle-Ages:** A Byzantine basilica, **Saint Mark's,** Venice, 1064–1094; a well-known "precinct," or complex of buildings, with the famous **Leaning Tower, Cathedral, Baptistry, and Campo Santo** at Pisa, 1064–1277; Cathedral churches, **Orvieto Cathedral,** 1290–1330 and **Milan Cathedral**, 1386 (its main altar consecrated in 1418).

3. **Renaissance:** Famous domes, **Dome of Santa Maria del Fiore,** Florence, 1420–1436; **Saint Peter's Dome, Rome**, 1505–1590; princely palaces (palazzi), **Ducal Palace, Urbino**, 1444–1482, as well as the **Palazzo del Te, Mantua**, 1524–1534, and the **Palazzo Farnese, Caprarola**, 1530–1575; and villas, the **Villa Rotonda, Vicenza**, 1567–1569, with decoration from around 1580.
4. **Nineteenth Century:** A large iron and glass gallery, **Galleria Vittorio Emmanuele**, Milan, 1863–1877.
5. **Twentieth Century:** An automobile plant, **Fiat Lingotto Plant**, Turin, 1915–1923; a skyscraper, **Velasca Tower**, Milan, 1956–1958; an exhibition hall, **Palace of Labor**, Turin, 1960–1961; and a museum of art, **Castelvecchio Museum of Art**, Verona, 1957–1964.

Components of the Antique City

Among the entries in this volume are a fortified city of the Etruscan period, **Augustus Gate**, Perugia, 2nd century BCE; and a good example of a Greek town, the **Ruins of the Greek City of Selinus (Selinunte)**, the "queen of colonies in Sicily," 651–250 BCE, which can also provide some elements for the history of the house. Urban planning and the meaning of Roman government can be derived from the entry on the **Forum** of Republican Rome from the first century BCE. For the Roman period, the entries can illustrate the differences between a large aristocratic residence in Pompeii (**House of the Faun**, 180 BCE–79 CE), and the densification of the city during the second century CE through social stratification and mixed building uses (**Horrea Epagathiana and Epaphroditiana, Ostia**).

Cultural and Political Changes

Buildings cannot be understood if the cultural, social, and political changes they cause or reflect are ignored. Thus, certain buildings were selected because they offer a clear picture of the society around them. The prosperity and the growth of the city had a powerful influence in the Etruscan period (**Augustus Gate**, Perugia), in the period of the Greek colony and rival of Carthage (**Ruins of the Greek City of Selinus**), and in Republican Rome (the **Roman Forum**). Strong internal and social oppositions threatened the peace of San Gimignano (**Casa Torre**), of Orvieto (**Orvieto Cathedral**, 1290–1330), and Perugia (**Palazzo dei Priori, Piazza Grande, Perugia**, 1300–1443). The power of Renaissance princes played a decisive role in Urbino (**Ducal Palace**, 1444–1482). The crisis of the Protestant Reformation obliged the Roman Catholic Church to reconsider its interior politics and its cultural goals (**Saint Peter's Dome**, Rome, 1505–1590; **Campidoglio**, 1538–1655). The Catholic Reformation was the period of self-reform for the Roman Catholic Church,

whose propaganda was expressed in the most advanced creations of the Baroque age (**Cornaro Chapel**, Rome, 1647–1652; **Sant' Andrea al Quirinale**, Rome, 1659–1670).

The unification of Italy (the Risorgimento movement) of the nineteenth century created a new kind of public space treated on a monumental scale, for example, a "caffè" (**Caffè Pedrocchi**, Padua, 1826–1842), or, in surprisingly huge monuments to celebrate the economic and financial success of a city like Novara (**San Gaudenzio**, 1841–1878). In scale, this "brick Eiffel Tower" had been anticipated by a gallery in Milan, ten years before it was finished. It opened to the vast middle-class crowds and contained a dome as big as the Renaissance dome of Saint Peter (**Galleria Vittorio Emmanuele**, 1863–1877). Contemporary architectural movements expressed the political conflicts and social rivalries of the twentieth century.

Decision Making by the Architect

Is it possible to penetrate the hidden side of architectural conception? Great attention should be paid to how the profession names the designers. In antiquity, "architects" may have been known by name, but this designation disappeared and the designer gradually took on the title of "master-mason" or cleric of the work, in charge of the main building decisions. This medieval system of building was based on the collaboration of different crafts. The birth of a new profession—architect—could be traced in the construction of the dome in Florence (**Dome of Santa Maria del Fiore**, 1420–1436). Most succeeding architects have so protected their talent that the historian must rely on isolated papers, on debates, on modern interviews in architectural magazines, and on elaborate research to know their decision-making process.

In any case, architects must achieve precise goals in a building, and these may orient the research. The proportions of the **Temple of Poseidon**, Paestum, 480–470 BCE, or of the Doric Temples of Selinunte (**Ruins of the Greek City of Selinus**) were a great challenge for the architects. Combining a classical Greek temple with a more Roman-appearing rotunda was the aim of Hadrian's architect for the **Pantheon** in Rome, 118–125. In designing the **Basilica of Saint Francis, Assisi**, a strong debate occurred between those who wanted to express the spirit of humility of the Franciscan order and those who wanted to communicate the sense of modernity brought by French Gothic builders. Designers of **Orvieto Cathedral**, 1290–1330, could not follow the bishop's choice of the Gothic style, which he could only realize by moving to Florence. **Milan Cathedral,** 1386 through the fifteenth century, proved a failure of the traditional methods of the Gothic masters. Because Renaissance architecture is sometimes difficult for the nonscholar to understand, time must be devoted to such three-dimensional architectural manifestos as the **Pazzi Chapel** of Florence, 1429–1459, a work of Filippo Brunelleschi, and, for the Renaissance

system of proportions, the **Cloisters of Santa Maria della Pace** in Rome, 1500–1504, a work by Donato Bramante. Baroque design strategies are discussed in two of Bernini's creations, the **Cornaro Chapel,** 1647–1652, and **Sant' Andrea al Quirinale,** 1659–1670, both in Rome. Contemporary architects belong to various movements or ideologies. Giovanni Michelucci (**Church of the Autostrada**, 1961–1971) was an expressionist architect. M. Aymonino and Aldo Rossi's interest in the history of the city could not prevent them from expressing their belief in the "modern" project, as it was opposed to the "traditional" city; their **Monte Amiata Housing** in Milan, 1967–1972, was a countermodel for the city of the future. Giancarlo de Carlo maintained an open-minded discussion with the future inhabitants in preparing his project for the **Collegio del Colle** in Urbino, 1962–1983. Carlo Scarpa's **Castelvecchio Museum of Art** in Verona, 1957–1964, explains clearly how he conceived of his creative method. As engineers also create new forms, Giuseppe Mengoni's conception of an iron and glass gallery (**Galleria Vittorio Emmanuele**, Milan, 1863–1877), Nervi's use of steel and concrete in the "modern Parthenon," the **Palace of Labor** in Turin, 1960–1961, or the sense of fluidity developed by Riccardo Morandi (**Viaduct of the Polcevera**, Genoa, 1961–1964) needed a detailed study.

Domestic Architecture

The history of the house is begins with a Greek house of the fourth or third centuries BCE (**Ruins of the Greek City of Selinus**) and an aristocratic home in Pompeii (**House of the Faun***).* A warehouse in the ancient port of Ostia is an example of Roman utilitarian design (**Horrea Epagathiana and Epaphroditiana**). For the Middle Ages, a house in a tower (**Casa Torre**, San Gimignano, twelfth century) is contrasted with a more welcoming merchant's house in Venice (**Ca d'Oro**, 1424–1437). The Renaissance arrangement of a large urban palazzo (palace) around a central courtyard can be grasped in the entry of the **Ducal Palace** of Urbino, 1444–1482, and that of large villas (**Villa Rotonda** of Vicenza, 1567–1580). A Neapolitan example of a large palace, arranged around an immense staircase, shows the eighteenth-century evolution of the residence (**Palazzo Sanfelice**, 1725–1728).

During the twentieth century, domestic architecture for the middle and lower classes became a characteristic activity for architects. The creation of a new type of urban residence (**Casa Rustici**, Milan, 1933–1936) illustrates the broad research for unprecedented solutions, with the **Villa Malaparte** on Capri, 1938–1942, representing a modern design full of reminiscences of the primitive past of Greek Mediterranean architecture. Three generations of housing estates were selected: **Tuscolano II Public Housing** in Rome, 1950–1954, was typical of post–World War II attitudes; **Monte Amiata Housing** in Milan, 1967–1972, indicates the tough debates of the late 1960s about the city

and its history; and the **Saffa Area Public Housing** in Venice, 1984–1987, shows the intelligent integration of a new housing development into an old urban fabric that respected Venetian traditions.

Landscape and Gardens

Landscape and architecture sometimes combine into a single unit. A sense of landscape was a fundamental element in creating a Greek city; the Acropolis of Selinus was positioned on a peninsula that offered a vast view of the sea (**Ruins of the Greek City of Selinus**) and the **Theater at Taormina** opened onto a symbolic landscape. Even in Rome, the **Baths of Caracalla,** 212–235, entertained the people within splendidly designed gardens. In commissioning the town square in Pienza, 1459–1462, Pope Pius II, who was fascinated by nature, ended the medieval tradition of a walled-in city by opening the square to wide vistas of distant mountains. A similar Renaissance love for gardens justifies the **Villa Lante Gardens** in Bagnaia, 1560–1600.

The **Palazzo Farnese** in Caprarola, 1530–1575, with its gardens and its "palazzina," imposes its order on a disrupted area and creates its own landscape. Andrea Palladio, in his **Villa Rotonda,** 1567–1580, imposed his powerful design on the hills around Vicenza. The Baroque period was rich in garden designs. For example, the **Garzoni Gardens** in Collodi, 1650–1690, were erected on a steep slope, and the **Isola Bella Gardens,** 1631–1671, were created as an artificial mountain on an island in the Lake Maggiore. The **Royal Hunting Lodge** at Stupinigi, 1729–1733, in the vicinity of Turin offered an unusual dialogue between architecture and a rearranged landscape of regional dimensions. Twentieth-century works tend to increase the importance of the landscape: the **Villa Malaparte** on Capri, 1938–1942, plays with the sunny stretches of the Mediterranean Sea. In Genoa, the **Viaduct of the Polcevera,** 1961–1964, is a freeway, conceived as a link along the Ligurian coast of the Mediterranean. In Urbino, the **Collegio del Colle,** 1962–1983, kept at a distance from the old city, provides a unique view of its silhouette against the mountains and hills of the Apennines.

Construction Techniques

Technical methods and innovations in construction and materials can play a great role in shaping a building. The skeleton of a Greek temple, made of columns and lintels (horizontal spanning elements), was based on the weight carried by the columns and the strength of the stone (**Temple of Poseidon**, Paestum). Romans developed audacious new techniques of wall building and vaulting, using brick, arches, and a type of concrete (**Pantheon**, Rome, 121–138). Construction techniques evolved from the Early Christian period to the Middle Ages from reinforcement of walls by transverse arches connected to

thickening of the walls to the erection of vaults; for example, **Sant Apollinare in Classe** in Ravenna, before 547, led to a safer construction at San Zeno in Verona, 1123–1135, and to Gothic constructions such as the **Basilica of Saint Francis** in Assisi, 1228–1253. The Renaissance architect Alberti introduced an economical system to cover the vast pilgrimage church of **Sant' Andrea** in Mantua, 1470–1485, which was inspired by an old Etruscan model described by Vitruvius. Brunelleschi found the solution to building the **Dome of Santa Maria del Fiore** in Florence, 1420–1436, by studying antique Roman and Byzantine precedents. In the nineteenth century, Antonelli's dome in Novara (**San Gaudenzio Dome**, 1841–1878) pushed brick building technique to unknown limits. Engineers had been working with new materials as Mengoni did with iron and glass (**Galleria Vittorio Emmanuele**, Milan); Nervi believed in the possibilities of large systems of vaulting in concrete and steel (**Palace of Labor**, Turin); and Morandi used the dynamic forms possible with prestressed concrete in the **Viaduct of the Polcevera**. For the **Renovation of the Old Harbor** of Genoa, 1988–1992, Renzo Piano used tent structures to give a new sense of fluidity.

Urban Design

A history of urban squares begins with San Gimignano (**Casa Torre**, twelfth century) and continues with the **Piazza del Campo** in Siena, 1284–1310, and the **Palazzo dei Priori and Piazza Grande** in Perugia, 1300–1443. Renaissance squares follow in the **Pienza town square,** 1459–1462, the **Piazza Ducale** in Vigevano, 1492–1494, the **Campidoglio (Capitoline Hill)** in Rome, 1538–1655, and **Saint Mark's Square** in Venice, 1511–1640. Baroque Rome adds a long sequence of squares, such as the **Colonnade of Saint Peter's,** 1656–1667, the new picturesque vision of the eighteenth century, the splendid **Spanish Steps,** 1723–1726, and the theatrical space of the **Trevi Fountain,** 1732–1762. Turin presents large urban squares as part of the Baroque extension of the city, the largest of which, built in the first third of the nineteenth century, was the **Piazza Vittorio Veneto**. Renzo Piano's solution for the **Renovation of the Old Harbor** of Genoa, 1988–1992, attempts to reconnect the city with the harbor by a festive piazza.

Urban design typically develops over time and with different scales. The famous **Saint Mark's Square** in Venice contains, in its apparent unity, four periods: the earliest organization begins at the end of the ninth century. There follow a Byzantine square (1172–1178), a Mannerist square (1511–1640), and finally the Napoleonic additions of the 1800s. The same was true also for the urban role played by the **Palazzo Vecchio** in Florence, 1298–1572, which was first built during the (limited) democracy of the Middle Ages but added to during the period of absolute power of the Medici princes. Planners' decisions can be discussed, both in past historical contexts and contemporary ones. The reconstructed Caprarola **Palazzo Farnese**, 1556–1575, was based

on the imposition of a new regular order on the disorder of the first settlement. The plan of **Tuscolano II** in Rome, 1950–1954, retained an optimistic conception of the city as a model, while the plan of **Monte Amiata Housing** in Milan, 1967–1972, came from an opposite view, and the architect was obliged to design a countermodel for the future. The scale of a project can vary from a lot for a single house, to a neighborhood, to an entire city, and even a region. History therefore is concerned with large-scale projects, both in the past (the **Ruins of the Greek City of Selinus**) and the present—the recent projects for the Ligurian Coast around Genoa (**Viaduct of the Polcevera**, **Renovation of the Old Harbor**).

Acknowledgments

A long and intimate relation with Italy is the background for this book. David A. Hanser, the editor of the present Greenwood series and a teaching colleague for more than thirty-five years, knew both about my interest in Italy and about some of my previous publications, including *Renaissance*, *Baroque*, *Classicisme*, over half of which deals with Italy. Originally published in French in 1990, it was republished in 2004, enlarged, and translated into Dutch and Spanish. Progress on the present work has been slow, due to my tasks as president of the Executive Council of the École Nationale Supérieure d'Architecture de Versailles (the National School of Architecture at Versailles), and I appreciate the great tolerance of Greenwood Press in this regard. Alejandro Lapunzina, the present director of the Exchange Program of the University of Illinois with the Versailles School of Architecture, was always helpful and supportive, and his previously published book in this same series, *Architecture in Spain* (2005), served as a model for me. Writing in English was not an easy task for me and Dr. Janina Darling, author of *Architecture in Greece* (2004), offered to give me the final help I needed. She corrected a French tendency to abstraction and simplified and emended the text so that it could be more easily understood by English-speaking people and the general public. She prepared the Glossary and added works in English to the Bibliography. David Hanser oversaw all this work and coordinated our efforts. The School of Architecture at Versailles' photographer Hélène Orlatti did a magnificent job preparing the illustrations for the book, most of them based on my own photographs. A large part of the text was typed by Marie Françoise Reuillon. Dr. Catherine Blain, who is associated with the Research Laboratory at Versailles, brought order to my work with a keen intelligence in presentation.

I can scarcely count the number of trips to Italy, which allowed me to visit Palladian houses, nor will I forget the hospitality of my host in Naples, the artist Luc Régis, who took me to Pompeii and introduced me to the Palazzo

Sanfelice in the Sanita district of Naples. Historical discussions that bore fruit in this book took place in international meetings and in informal encounters with my colleagues on the history faculty of the School of Versailles. A greater understanding of the value of the traditional urban fabric was given to me by two professors of the University of Florence, Giancarlo Cataldi and Gian Luigi Maffei, followers of Saverio Muratori's teaching. I have tried my best to follow this method of teaching the history of architecture: to have no preconceived ideas, to refer to the latest research and publications, and to consider and distinguish contradictory positions of historians.

Introduction

From the fifth-century BCE temples at Paestum (**Temple of Poseidon**), south of Naples, to the late twentieth-century (1988–1992) **Renovation of the Old Harbor** in Genoa, Italy is a treasure house of architectural landmarks. It seems to provide a complete history of architecture. Some of the best-preserved Greek temples anywhere are those built by Greek colonies in Sicily and Campania (Segesta and Paestum). Ancient Roman culture in Italy developed an architecture of which the *Hellenistic* cities of Turkey, Libya, and Tunisia were jealous. Early Christian architecture was at its best in Rome and Ravenna. Who can resist the light reflected by the Byzantine mosaics covering the *vaults* of San Marco in Venice? Those who believe that "Gothic architecture" is a French or German art form should look at the prosperous medieval Italian towns, such as Siena, with its spectacular urban "living room," the **Piazza del Campo**.

The Renaissance, starting in Florence by 1420, established Italy as the conceptual center of art and architecture for almost four centuries. Leading the Western world, Italy was developing a new sense of vision (central linear perspective) that led to new spatial conceptions in architecture. These conceptions were reacted to by the "Mannerists" after 1527 and developed, in the seventeenth century, into *Baroque* art and architecture, a most brilliant and bold period of creativity. Italy was writing the architectural history of the Western world. Travelers, painters, sculptors, and architects were, at one point, obliged to visit Italy and to take part in the Italian artistic debate to achieve artistic maturity. Prints and books on architectural theory and practice enhanced Italian influence from the sixteenth century on.

Italy's fight for political unity and economic change in the nineteenth century did not deter architects from going to Italy for their education. Beaux-Arts education in the United States and the opportunity for leisurely visits brought Americans in significant numbers to Italy, where they sketched,

painted, and wrote books and articles for newspapers showing how Italian architecture had affected them. Louis Kahn (1901–1974), architect of the Salk Institute in San Diego; of the Kimbell Art Museum in Fort Worth, Texas; and of the capital city of Dacca in Bangladesh, is an excellent example. He started his career with a classic "Grand Tour" in the eighteenth-century English tradition. In Italy from October 1928 to March 5, 1929, he sketched Venice, Florence, Spoleto, and the Amalfi coast (south of Naples). Especially in Rome, he discovered the severity of the architectural masses typical of his later work. He returned to Rome in 1950–1951 as a resident of the American Academy. Charcoal and pastel sketches of Tivoli, Siena, and Venice demonstrate the strength of his architectural compositions. George Nelson (1908–1986), an incredible creator of modern furniture and graphics, stayed at the American Academy in Rome from 1932 to 1934. This stay helped to restore Italian design production after 1955, bringing back to the United States the optimism Nelson missed in Milan. The American visitors strongly influenced the debate on modernity in Italy, but the Italian architects' sense of history in a nation that highly prizes culture encouraged positive attitudes in urban expansion, in which Italy continues to play a leadership role.

Greek Colonies in Italy (Seventh to Third Centuries BCE)

In the period called pre-Roman, from the ninth to the third centuries BCE, vast ethnic and cultural changes influenced the development of civilization and the slow passage from agricultural villages to the rise of cities. A plurality of independent peoples inhabited the Italian peninsula. The Etruscans occupied the modern regions of Tuscany, Umbria, and northern Latium, while the Latins settled in Rome and its surrounding countryside. Italic peoples, speaking an Umbrian-Sabellic language, inhabited the central spine of Italy, and other groups, such as the Ligurians and Veneti, occupied the areas around Genoa and Venice. The Sicels were the original inhabitants of the island of Sicily.

The mainland Greek city-states, although politically contentious, were culturally and economically more organized than the indigenous Italian societies. In the eighth century BCE, the Greek city-states began sending settlers west to establish colonies along the Gulf of Tarento, in Sicily, and on the Tyrrhenian coast of Italy as far north as Naples and Cuma. Although not tied politically to the communities in mainland Greece, the colonies shared a common cultural, religious, linguistic, and artistic heritage. After having developed for more than a century, and as a result of the economic and political superiority that resulted from Greek victories against the Persians and Carthaginians, the Greek colonies had a brilliant *Classical* Age (480–323 BCE). One of the colonial cities, Syracuse in Sicily, which was founded in 734 BCE and became a conurbation collecting several nearby settlements, was protected by a seventeen-and-a-half-mile-long wall. Corinthian colonists took over the

island of Ortygia, which had formerly been occupied by Sicels or Phoenicians. To exert its power as the major Greek colony in Sicily, Syracuse had to fight not only against its main opponent Carthage but also against Athens. Internal political struggles resulted in periods of tyranny alternating with periods of democracy. The greatest period of prosperity was during the reigns of the tyrants Gelon, from 491 to 478 BCE, and his successor Hieron. The hard-won battle against Athens in 414 BCE marked the beginning of a period of expansion for the city.

Greek colonists used a strict rectilinear organization for their city plans, which strongly influenced the indigenous Italians, including the Romans. The Greeks, who chose naturally defensive sites for their cities—cliffs or summits of hills—also rapidly developed remarkable defensive works, designed by the best architects, to protect them. The "Castello Eurialo" in Syracuse, built by the tyrant Dionysius I to defend the city against the Carthaginians in 402–397 BCE, is a splendid example of Greek military work.

The Greek colonial cities in Italy were no more a political unity than the mainland city-states and should be treated individually. Naples, for example, was founded by Greeks in two successive periods. Parthenope was set up on a peninsula facing the Castel dell'Ovo, in the seventh and sixth centuries before the Christian era and then abandoned in favor of Neapolis (New City), which was developed a mile and a half to the east. Its regular plan contained an agora, the main political center, and the acropolis, or "high city," within the fabric of the city. The plan of the Greek city can still be seen underlying the street pattern in the area of modern Naples called Spaccanapoli. Paestum, or Poseidonia, fifty miles to the south of Naples, is a relatively well-preserved Greek colonial city that contains three temples. The principal structure, known as the **Temple of Poseidon** (c. 450 BCE), is an outstanding example of a Greek *Doric* temple. It seems likely that the architect took his inspiration from one of the most important Doric works in continental Greece, the temple of Zeus in Olympia (468–456 BCE). Its honey-colored stone and its archaic boldness but subtle proportions make it a pleasure for the eye. Paestum's fate was to be conquered about 420 BCE, by the Lucanians. Excavations and a few written documents suggest that the Lucanians had begun a long process of infiltration at least three decades before this and that the final battle just confirmed the process. Clearly, the two cultures had begun to merge, anticipating the process of "Romanization" around 272 BCE.

The **Theater at Taormina** in Sicily is an excellent example of a Greek theater from the Classical period. Syracuse's theater was among the first in the colonies to adapt to performances coming from Attic Greece and to build in stone those elements originally constructed of wood. When the Romans invaded, their different culture meant significant transformations to the Greek theater.

The city of Akgragas, modern Agrigento, founded in the sixth century BCE, may have had as many as 70,000 inhabitants with another 130,000 in the surrounding countryside. Except for the acropolis, raised on top of a ridge, the

plan of the city, like the others, was laid out according to the strict rules of orthogonal regularity. Like the Temple of Poseidon in Paestum, the Temple of Concord (430–420 BCE) shows Classical influence. The quality of its execution and the coherency of its proportions demonstrate how Greek architects repeated conventional forms rather than inventing new ones.

The city of **Selinus** (Selinunte, on the southern coast of Sicily), founded around 650 BCE, was known as the queen of Greek colonies. Its regular plan, its fortifications, its urban fabric with fourth- and third-century houses, its seven temples from the Classical period of Greek architecture, deserve a long study. The entry on Selinus in this volume will help to explain what a Greek colonial city was like. Selinus's prestige was its downfall; its increasing territory and the annexation of Segesta, still famous for its temple, which was never damaged by earthquakes, made Selinus a threat to Carthage, which destroyed it in 409 BCE. Selinus survived under Roman rule only as a small "vicus" (village) around its famous temples.

Etruscan and Italic Architecture (900 to 50 BCE)

Most of our knowledge of pre-Roman Italy is based on Etruscan or Italic necropolises, cities of the dead, built next to cities of the living, which reproduced their main characteristics and cultural values. For example, the necropolis of Cerveteri, twenty-five miles west of Rome, was built of round or conical tumuli (mounds) of earth, inside of which was a tomb that recreated the main elements of an Etruscan house. Some of the tombs were also hollowed out of tufa cliffs, onto which was attached an architectural façade. Most of the Etruscan religious buildings, even as late as 300–50 BCE, were built of perishable material such as wood and brick. Only the foundations and elements of rich terra-cotta decorations remain, and these are used to speculatively restore the temples' appearance. Etruscans favored forms not characteristic of classical Greece. For example, they used *Tuscan columns*, a kind of "pre-Doric" design, not one of the canonical Greek *orders*, but one that the Romans recognized. Instead of copying the classical Greek temple, they started to erect *arches* in masonry and to combine them into *domes*, inspired by their circular huts. Etruscans had prepared the basis for Roman architecture, opening the potentialities of rich solutions in *concrete*, brick, and stone vaulting. The **Augustus Gate** at **Perugia** (Umbria), with its bold forms, is a good expression of Etruscan architecture. Perugia, a city in an area of interesting rural and urban development, was defended by a 9,500-foot-long fortification wall with eight gates. The Augusts Gate is one of two that remain in good condition.

Roman Architecture

It was only after 191 BCE that most of the Italian peninsula, including the Po Valley up to the Alps and the islands of Sicily, Sardinia, and Corsica, was

united under the political domination of Rome. From their city's legendary founding by Romulus in 753 BCE, the Romans, a local power, gradually assimilated the techniques and forms of the Etruscans, a neighboring, dominant culture, and the Geek colonists, who had established thriving cities in Sicily and southern Italy. Romans were "apt and docile pupils" (Brown 1967, 12) but also better than the surrounding cultures at organization in all its aspects: community, ritual, administration, and forms of construction. By the beginning of the fifth century BCE, native Italian cultures, Etruscans as well as Romans, had to face, but could also profit from, several large colonies of Phoenicians (from Carthage, in present day Tunisia) and Greeks from the Greek mainland. Indeed, much of the coast of the Gulf of Tarento and the shores of the Tyrrhenian Sea up to Naples as well as most of Sicily had been turned into rich and prosperous lands by the Greek settlements. These centers of Greek culture spread that culture into "barbarian lands"—Greeks called anyone not Greek a barbarian—but also started to incorporate indigenous societies. Rome's major adversary, however, was Carthage, not the mainland Greek city-states, which had only tenuous ties with the Greek cities in Italy. Carthage's expansion threatened Rome. It had subjugated much of North Africa by the third century BCE; and parts of Sicily, Sardinia, and Spain were Carthaginian dependencies. Rome fought three wars, known as the Punic Wars, against Carthage, the first lasting from 265 to 241 BCE, the second from 218 to 201 BCE, and the third, which resulted in the final destruction of Carthage, from 149 to 146 BCE.

During the two centuries before the Christian era, Roman architecture found a revolutionary inspiration in Hellenistic Greek architecture. Before 133 BCE, by the time the Romans had subdued Greece and the eastern shore of the Aegean Sea, they had adopted the Greek systems of architecture, which they had come to admire. Rome now used Greece as "an inspiring teacher" (Brown 1967, 19) but, at the same time, developed construction techniques known but hardly used by Hellenistic architects. These techniques—the arch, the *barrel vault*, and a type of concrete—brought them limitless architectural possibilities. There was, as Frank Brown has said, an initial period of "self-discovery, and self awareness" in which the temple acquired new forms. The rectangular mass of the older Roman temples achieved a new lightness by adopting the orders used in the Greek temples—the Doric, *Ionic*, or *Corinthian*.

Roman architects' understanding of the constructive possibilities of the arch and the barrel vault radically changed architecture (such as temples and large *porticoes* called "stoas"), which had been based on the post-and-*lintel* system (a system of vertical columns and horizontal beams). The new system of arches and vaulting, which reduced the size of the stones needed for construction and thus the difficulty of transporting materials, could also make better use of unskilled labor. Romans mixed stone with layers of brick and cemented them with large quantities of mortar. This practice made walls and vaults more uniform and solid, and it permitted the creation of large, bold vaults that could cover large spans and consequently offered incredible possibilities for the size and forms of buildings.

Romans used these technological advances above all for huge entertainment buildings, especially the public baths used for public hygiene but also for recreation. They (e.g., the **Baths of Caracalla**) could be immense, with colossal vaulted rooms. However, to roof large rectangular spaces such as the *basilica*, often used as a law court (see **Forum Romanum**), Roman architects preferred large timber *trusses*. Divided into a central space (a *nave*) and two side *aisles* and connected by porticoes, basilicas were typically found in the government and public celebration area, which was central to any Roman city and which expressed the strength of the Roman government and law. During the second and the first centuries before the Christian era, the Romans rebuilt and expanded the **Forum** in the capital city, which had been built in late Republican times before Rome became capital of an empire. The Forum was an "inaugural" space, dedicated to public assembly, but also a consecrated area and a place to predict the future by the observation of birds' movements and other ritualistic practices. Because so many buildings and open spaces for assembly—temples, basilicas, places for commerce, arenas for gladiators' games, and debating rooms for senators—were eventually crowded into the area, the Forum became a dense urban pattern. Absolute regularity of the interiors of buildings was balanced by a surprising adaptation of their exteriors to a scattered arrangement of buildings and open areas. In their splendor, the buildings of ancient Rome continue to fascinate.

Most of the Roman buildings selected for this volume were built during the so-called High Empire, the years from 50 to 250 CE. During this period, the Roman world expanded to encompass the lands around the Mediterranean Sea, north to Germany, and west to England, an area surprising in its homogeneity under the Roman Empire. Astonishingly, during this period, Rome was capable of bringing to all citizens of the Empire peace, security, and a sense of spiritual and physical order. Rome had fulfilled its ambitions, and her architects had to prove a corresponding superiority and virtuosity in building and planning. Romans usually considered the massive concrete construction too unrefined to leave exposed and consequently covered walls with painted plaster or marble veneers. The lavish decoration better demonstrated the superiority of Roman civilization. The names of some of the architects are known. Emperor Nero (54–68) used the talents of Severus and Celer, who were perhaps landscape designers, for his formidable urban residence in Rome, the Domus Aurea (Golden House). Emperor Domitian (80–96) had Raberius design the stateroom where he received homage from his subjects. Apollodorus of Damascus came from the eastern Mediterranean and worked for the Emperor Trajan (98–117) in his forum and markets during the period 106–113. Decrianus or Apollodorus are supposed to have carried out the wishes of the Emperor Hadrian (117–138) in the construction of **Hadrian's Villa** (125–135 CE).

Four large buildings can represent the different Roman building types in Italy. Most of the four were taken as models and reproduced elsewhere in the Roman provinces. The **Colosseum** (72–80 CE), although the nickname was

derived from a fifteen-story statue near the *amphitheater*, was indeed "colossal" in its dimensions, the largest such building constructed by the Romans for their "games" and is as remarkable for the financial organization behind it as it is for the solution of its technical requirements. The **Pantheon** (118–125 CE) explains the creativity of the Romans in mixing elements of architecture; the Corinthian temple façade leads to a huge dome whose volume is so large it could contain a sphere fourteen stories tall. Its stability and pure geometrical proportions, an image of the cosmos, were a proud symbol for the Romans. **Hadrian's Villa** (125–135 CE) was the development of an imperial villa on an immense scale that was inspired by reminiscences of places he had seen in his travels as emperor. The Baths of Caracalla demonstrate, as previously noted, the formidable importance of entertainment in ancient Rome, with sports fields surrounding the mass of the bathing establishment, which were all surrounded by a splendid garden setting.

This volume includes three examples of urban architecture: a Greek third-century house from **Selinus** was selected to show the pre-Roman dwelling; a large house, the **House of the Faun**, from Pompeii represents an upper-class Roman house with two courtyards and a garden in a city of one- and two-story buildings; and the **Horrea Epagathiana and Epaphroditiana,** an "*insula*," a multistory warehouse building in Ostia, Rome's port city, is an example of high-density building design, typical of both Rome and Ostia.

Early Christian Architecture (300–800 CE)

In 313, Emperor Constantine legalized Christianity, and in 392 the emperor Theodosius adopted Christianity as the official religion for the Roman Empire. Before this period, Christians had no specific buildings constructed for their rites, in part to be less conspicuous and avoid persecution. In third-century Rome, services were held in modest rooms, for example, at the back of a shop; but as the religion grew, Christians began to meet in private homes. The "house church" ("Domus Ecclesiae") gradually increased in size, sometimes filling an entire block. With Constantine giving Christianity official standing, these house churches were replaced, sometimes on the same site, by dedicated buildings, "aulae ecclesiae," based on the Roman basilica, a building type that provided a large meeting room and was specifically associated with none of the pagan religions. With Christianity came a total rupture with the Roman pagan tradition of numerous gods "residing" in a temple. Christians believed that God the Father could only be contained in the minds of baptized Christians, whose bodies became "the temple of God." A basilica was Christianized in two different ways: it could be named a church-monument (ecclesia-basilica) or a basilica for the Church (basilica-ecclesia).

Rome and Ravenna, along with Milan and a few other cities, saw the construction of a great number of early Christian monuments. South of the walls of Rome, Saint Paul's Basilica, which was founded in 386 by Emperor Valentinian II

and finished around 440, became the model of the Christian basilica: a central nave with two aisles on each side, wood trusses supporting a roof and a wood ceiling, and a *vaulted apse* terminating the nave. The church of Santa Sabina, erected after the sack of Rome by Aleric in 414, remains as a well-proportioned and carefully decorated example from the fifth century. To memorialize martyrs and important religious figures and events, *centrally planned* buildings (buildings symmetrical around at least two axes and focused on the center of the plan) were erected. The **Mausoleum of Constantina** (337–350) in Rome, a circular building that was constructed around the tomb of the daughter of Constantine (although she was never a martyr) is characteristic of these *martyria*.

Ravenna, which became the capital of the Western Roman Empire when it was divided in two, played a great role in the sixth century. Some of the basilican churches there (the cathedral), like Saint Paul's in Rome, had five aisles (a central nave and two aisles and each side of it) while others had only three (e.g., San Giovanni Evangelista, 425; Sant' Apollinare Nuovo, 519; and the harbor church of **Sant' Apollinare in Classe,** 549). A cruciform mausoleum was built for Galla Placidia, mother of Emperor Valentinian III and a circular one for Theodoric, who died in 526. Baptisteries were also built on a central plan: the Baptistery of the Orthodox, the cathedral baptistery (first quarter of the fifth century), and the Arian Baptistery (c. 500). Architectural creativity in Ravenna was expanded in the construction of the church of **San Vitale,** started in 526. Large *bays* open onto an *ambulatory* around an octagonal space from which opens a *choir* splendidly decorated with mosaics that cover all surfaces and comprise a unique decorative scheme. These mosaics are related to the art of Byzantium (Constantinople, present-day Istanbul). They represent the court of the Eastern Emperor Justinian and his wife Theodora. San Vitale's mosaics are especially interesting since so much of the mosaic decoration in Constantinople was destroyed during the so-called Iconoclastic Controversy (the war against images).

Romanesque Architecture (800–1250)

Early Christian architecture is characterized by two main building types: the rectangular basilica (**Sant' Apollinare in Classe**, Ravenna) and the centralized rotunda (**Mausoleum of Constantina**, Rome). This typology became standard for Christian architecture and was modified mostly through foreign influences. Resistance to that modification was strong; slowly, buildings became more stable, and there was a tendency toward a more rational division into *bays* (units of building, typically demarcated by vertical supports), but these developments were partial and incomplete. A kind of regionalism distinguished Italian churches of one area from those of another during the Romanesque period.

In Lombardy, in northern Italy, types of contractors or master builders, in effect proto-architects called *Maestri Comacini* (or *Magistri Comacini*) were able to introduce and spread a specific style of architecture. Trained by a guild in Como, they were responsible for the significance of the several churches they built between 815 and 1000 in Milan, Verona, and Como. These "Gallic" masons excelled in wall construction but were less able in vaulting. In southern Italy, "the two Sicilies," which included Naples and Apulia, became a place of conflicting interests and influences. A region that had been dominated by the Eastern Roman Empire and by Muslims was conquered by bands of soldiers from Normandy (in France) at the same time the Normans crossed the channel to conquer England (1046–1066). Norman churches, therefore, exist in Apulia in large numbers, extending from Bari (San Nicolas, from 1089 to 1098 with later embellishment after 1132) along the coastline to Molfetta, Trani, and Barletta. In Sicily, *Byzantine*, Muslim, and Norman architecture mixed in a surprising and fruitful complexity. Muslims supplied the conventions for court architecture. Lavish residences like la Zisa and la Cuba in Palermo (built before 1180), combined bold vaulting techniques with a splendid arrangement of fountains, canals, and basins, typical of the Eastern taste for gardens. Churches such as the cathedral of Cefalù (1131–1148 and later) or the **Palatine Chapel** in the Norman Palace at Palermo (1130–1140) express a total synthesis of the Byzantine and Fatimid with the Western (Norman and *Cluniac*). In the Palatine Chapel, stalactite ceilings are paired with Byzantine mosaics in a spatial arrangement typical of the Normans. **Monreale Cathedral**, in the vicinity of Palermo (1174–1182), must be the "climax of Sicilian Romanesque architecture" (Conant 1974, 359), but here the styles are in pure juxtaposition, which is successful for the decoration but contributes little to structural innovation. All the architecture of Sicily bathes in the brilliant sunshine, "glowing with warmth" (Conant 1974, 354).

Byzantine architects and craftsmen were largely responsible for the **Basilica of San Marco** in Venice (1064–1094). Strong maritime and trade connections with the Eastern (Byzantine) Empire explain why and how the Venetians could borrow from Byzantine churches such as Saint John the Evangelist at Ephesus (now in Turkey). The "cross of domes" (five domes on a *Greek cross* plan) of San Marco had no successors in Italy except the church of Saint Anthony in Padua (Il Santo), which was begun nearly two centuries later (1231) and contains a cross of six domes—the nave is longer than the *transepts* (the side arms of the cross) and so has two domes instead of one.

Early Christian architecture continued to exert a powerful influence and to limit the spatial imagination of architects to simple basilicas. In Rome, the rebuilding of San Clemente (finished in 1130) repeats the Constantinian character of the fifth-century church. A *baldacchino* (a canopy-like structure) covers the altar, and the celebrant officiates facing the worshippers. A "schola cantorum," with desks for scriptural readings and seats for the canonical office (dating from 872), was inserted between the *choir* and the place reserved for

worshippers in the nave. This strong tradition of moving the altar forward explains the splendid Romanesque church of San Miniato in Florence (finished in 1062), which resembles the early Christian prototypes except for the choir, which was raised on a *crypt*.

The victory of the Pisans over the Saracens brought a period of prosperity to Pisa. **Pisa Cathedral** combined three basilicas, two of them forming the transepts, the arms of the cross plan. The aisles, doubled in the nave, are *groin-vaulted*, but a wooden ceiling covers the main central vessel of the nave.

A confusing process of dividing a basilica into bays had been started in northern Italy in the Po Valley. Dividing the nave into square bays and the side aisles into squares a quarter as large offered a decisive advance in regularity. However, this process of rationalizing the plan did not proceed in chronological order. **San Zeno Maggiore** in Verona (main parts built 1123–1135) was less progressive in that respect than the cathedral of Modena (started 1099) or even the church of San Ambrogio in Milan (started in 1080). Regular bay division was unlikely to have been planned in Verona, but it was consistent in Modena and even more consistent in Milan. The vaulting of these churches came later; there is no vault in Verona, and San Ambrogio was vaulted only around 1117. Vaults were added in Modena much later in 1437–1446.

The centralized type of plan flourished in baptisteries. In Florence, the baptistery of San Giovanni (consecrated in 1059) is a strict octagonal building, whose foundations were erected on a Late Antique building. The great circular **Pisa Baptistry** (1152–1265) next to the cathedral supports a conical central vault with a double ring of galleries. With the addition of the great **Pisan belfry** (the Leaning Tower), the group of three buildings in Pisa revived the classical theme of the Roman Forum in a sort of sanctified landscape, which retains its religious consecration. Parma (1196) positioned its baptistery to the southwest of its cathedral. The Parmese sculptor Antelami expressed the pride for such monumental baptisteries by recalling the time when the bishop used to baptize numerous catechumens there at Easter.

Gothic Architecture (1200–1480)

Italians developed their own national Gothic styles in the fourteenth century. Previously, monasteries like Fossanova or Casamari (both south of Rome) borrowed the French way of building with pointed arches from the Cistercian order between 1187 and 1203. The new mendicant orders—those that relied on charity and whose members had, at the beginning at least, no personal belongings—such as the Grey Friars (Franciscans) and Black Friars (Dominicans), desired a more public-oriented worship than the older orders. They were also open to liturgical changes and thus to a form of church inspired by French Gothic builders. An example of this new type of Gothic church is **Saint Francesco,** in Assisi (1228, finished around 1253). It mixes genuine

French Gothic features with essentially solid walls that look Romanesque and were ready to be covered by *frescoes*.

The sense of independence that free, communal states such as Orvieto, Florence, or Siena had was based on the celebration of political virtue and on a civic fight for self-government. Orvieto after 1279 was typical of these states in its strong opposition to "modern" (i.e., "Gothic") ideas as opposed to continuing a tradition influenced by Roman antiquity. The façade of Orvieto's cathedral gave an open expression to religious faith that was instructive and interesting for the majority of the population. Using every possible means of expression, it achieved its splendor by a revetment of mosaics. Parallels can be drawn between the cathedral façade of **Orvieto** and Siena (constructed at the beginning of the fourteenth century).

The Anjou dynasty, whose origins were French, held important positions in the area around Naples, where French builders erected important churches, such as the one for the Clarissan order (1313–1340). They also added the choir to San Lorenzo Maggiore, with its typical ambulatory (a corridor around the choir) and seven chapels, all of which were designed in the French Gothic manner.

Florence Cathedral (Santa Maria del Fiore) typifies Italians' hesitations about the Gothic style. They could borrow individual elements, but revised them according to local values and styles that were based on Roman and Early Christian traditions. As an expression of civic pride, the architect Arnolfo di Cambio wanted to build a cathedral large enough for 30,000 worshippers. He started the building in 1296, beginning a construction period that would last 150 years, until Brunelleschi completed its dome. Francesco Talenti, in 1355, increased the size of Arnolfo's plan, creating large square bays sixty-three feet long. This resulted in a most "ungothic" church. For comparison, the bays of Amiens Cathedral, one of the largest Gothic churches in France, are only twenty-five feet long. *Ribbed groin vaults* in Florence Cathedral, with two pointed arches crossing in the middle of a bay, were Gothic as were the overall dimensions, but the proportions of the church were classical. An intense debate that took place in 1366–1367 altered the cathedral's future. The church would defer to Roman antiquity, and in 1368, a large brick model was made that all future builders had to respect. In effect, Brunelleschi's dome was designed fifty years before he took command of its construction. As Frankl and Crossley wrote, Talenti's decision had led, "not to purer Gothic style," but to the Brunelleschian Renaissance (Frankl and Crossley 2000, 213).

When cities such as Bologna and Milan were the patrons of cathedrals, they tended to commission overly large churches that took centuries to finish because of the expense. **Milan Cathedral**, which was begun in 1386, was still incomplete in 1572. The debates surrounding its construction offer good insights into the way Gothic builders planned their churches. French master-masons, a group of the best-trained German (or Czech) master builders, and local designers argued about every aspect of the church. Some of them lacked

experience, which pushed the debates to an abstract level of theory, making reasonable (and practical) choices difficult. As at Siena, the overall geometric form and the structure of the cathedral were covered by superficial decoration. San Francesco at Siena, a Grey Friars' church (1326–1475), was conceived as a protest against such a luxury. In form, it is simple, but its mass towers above the city and indicates disarray in the Franciscans' precepts of modesty and poverty.

Studying Italian medieval cities gives new insights into the changing concepts of the city, starting in the twelfth century. Groups of merchants in prosperous cities demonstrated their financial success with tower houses (**Casa Torre, San Gimignano).** These towers and those of Perugia created a sort of skyscraper skyline. Battles for a relatively democratic government versus aristocratic power endangered these towers. Civil rights, rather than aristocratic privilege, had to be defended by the commune as, for example, in urban planning schemes in Perugia, Siena, or in Florence; and daring municipal seats of government were built, some of them of outstanding beauty, such as the **Palazzo Vecchio** in Florence and the Palazzo Pubblico in Siena, which overlooks the **Piazza del Campo**. The case of Venice, a city literally married to the sea, is unusual. Its civic piazza, **Saint Mark's Square**, was progressively planned, with **Saint Mark's Basilica** giving it a Byzantine look before 1500. Taking its inspiration from the Doge's Palace, the Grand Canal façade of the **Ca d'Oro** (1424–1437) gives a sense of fluctuating chromaticism, in part the result of the reflection of colors from the surface of the canal water. It helps us to understand the visual miracle of Venice. The Ca d'Oro shows the evolution of the merchant's house from San Gimignano to Venice, from the twelfth to the fifteenth centuries.

The Renaissance, the New Architectural Manner (1420–1520)

Implicit in their choice of the word Renaissance (French for "rebirth") by nineteenth-century scholars is their conviction of the idea of progress in art, the origin of which they found in Florence, about 1420. The concept of progress could also be applied to other periods, for example, the "Carolingian renaissance" (ninth century) and the Italian trecento (fourteenth century) renaissance that revolved around Giotto and Petrarch. Although they never called it the Renaissance, artists in Florence between 1420 and 1440 felt that a great change was taking place in art. Of course, this change had a long preparation. There were precedents for the new architecture of Filippo Brunelleschi (1377–1446), the new painting approach of Masaccio (1401–1427/1429) or Piero della Francesca (c. 1410–1492), and the kinds of sculpture being created by Donatello (c. 1386–1466), but all the Renaissance artists participated in a revolution in vision, a new way of representing depth in art called "central linear perspective."

Perspective drawings do not express the symbolic importance of bodies, as was the case with medieval art in which relative size indicated importance, but rather their location in space as perceived by the human eye. Late medieval painters had been experimenting with this "accurate" visual representation, but they lacked the technical experiments and mathematical background of Brunelleschi and his colleagues. Their change of vision can be compared with that of the Cubist painters in the early twentieth century. The Cubists no longer looked at an object from one stationary point of view like the Renaissance artists, but rather looked at, around, above, and under it at the same time. Renaissance people in Florence between 1420 and 1440 had to face the same problems of seeing things in a new way that we face with art after the Cubist painters. In both cases, the Renaissance and the Cubist periods, architectural concepts had to change with new ways of seeing. Similar changes occurred in all fields of expression, including music. Brunelleschi's triumph in constructing the **Florence Cathedral Dome** was celebrated, for example, by an anthem composed by Guillaume Dufay, a Belgian chapel-master (March 25, 1436). Florentines were convinced that a radical renewal of all forms of art was taking place.

The "rebirth" of architecture was accompanied in Florence by the birth of a new profession. The architect was no longer the builder, the mason, or the carpenter, but rather the one who designed a project and was able to communicate his intentions through a detailed description in drawings on paper. The architect's only responsibility became the design of the building, and the builder had no choice but to execute that design. The erection of the dome of Florence Cathedral (1420–1436) tells the story of the rising prestige and personality of the architect. Faced by a difficult situation caused by the decisions described earlier in the Introduction, Brunelleschi emerged from a group of artists as the assured technical master for the construction of one of the largest domes ever built. Spanning 138 feet and rising to 285 feet above the ground (about the height of a twenty-five-story skyscraper), there was no medieval precedent for Brunelleschi to examine. Rather, he was inspired by the careful study of ancient domes. He had to develop new machines and kinds of elevators and cranes to carry the stone, bricks, and mortar to the dome. Strong opposition to his ideas and techniques pushed him to battle forcefully and to exert his preeminence as an architect.

Encouraged by his colleagues, a group of sculptors and painters in Florence, Brunelleschi was involved in the quest to develop central linear perspective. He saw Late Gothic builders as confused, a situation clearly visible in the debates about **Milan Cathedral**, and he thought that architectural clarity and renewal could come only from a careful study of classical antiquity. Using the perspective techniques he developed to document antique references—columns, *pediments*, and domes and other vaults—he built early examples of the new architecture in Florence from 1419 to the end of his life in 1446. The sacristy and church of San Lorenzo, the church of Santo Spirito, and the

Pazzi Chapel were demonstrations of a three-dimensional application of his theories and set new standards of church design.

In addition to Brunelleschi, a man of incredible talents and capacities, Leon Battista Alberti (1404–1472), was involved in a double task of renewing antiquity, and wanting to expound the ideas of architecture and perspective. He decided first to comment on a book that had been found in 1414 in the *abbey* of Saint Gall, Switzerland. It was written by the ancient Roman Vitruvius during the first century BCE and its contents had been largely forgotten outside of monasteries. Alberti then decided to write a book giving his own "model of thinking" on architecture, what we call architectural theory today, based on this ancient work. Alberti's book, *De Re Aedificatoria*, was written between 1447 and 1452 and presented to the humanist pope Nicolas V. Both Vitruvius and Alberti's books explain what is meant by architecture, how it should be considered, what its goals are, and how they are to be achieved. For the next five centuries, they would be central to discussions of architectural thought and practice. Architecture should bring harmony (called "concinnitas") and rely on proper building techniques, on accommodating social uses and functions (called "commoditas"), and above all communicate a sense of beauty based on good proportions. Good proportions reflect the basic order of the universe. The ancient orders were based on those formal proportions and offered a means to achieve beauty.

Alberti experimented with these concepts, but he cared more for the ideas behind the design than for their execution with which he was impatient. He often abandoned supervision of construction to assistants. The outstanding examples of Alberti's ideas are the Malatesta Temple in Rimini (1450–1468), a central-plan church in Mantua (San Sebastiano, started 1459 and never finished), the plan of **Piazza Pio II** in Pienza (1459–1462) for Pope Pius II, and two churches based on ancient Roman buildings (**Sant' Andrea** in Mantua and the rotunda of Santissima Annunziata in Florence, started in 1471 and never finished). Alberti died in 1472.

The new architectural manner spread to different humanist centers such as Pienza (in southern Tuscany), Urbino (a hill city, not far from the Adriatic coast), Ferrara (on the Po River), and Mantua. Prince Frederico di Montefeltro, who ruled Urbino, was the archetypal humanist leader of the period. His activity as a "condotierre," a mercenary commander, responded to the military demands in a period of instability throughout Italy. But he was also a political leader, a competent scholar, and a lover of art. Federico was able to transform his small capital city of Urbino into a sort of ideal city that represented his goals for government, celebration of the city, and intellectual brilliance. His **Ducal Palace** (1444–1482), a city within the city, demonstrated not only more care for the interiors than the exterior but also an amazing sense of relation with the mountainous landscape all around. Ferrara's expansion (1492–1516), which tripled the surface of the medieval city, is the main example of urban design based on the new building types already defined in Florence for the palazzo and churches. Mantua was, between 1460 and 1550,

the leading center of humanist design, with activity by Alberti; the painter Mantegna (1431–1506), who used his painting to open the walls and vault in the Camera degli Sposi (1471–1476); and later, the talented Mannerist Giulio Romano (from 1525 to 1550).

Local resistance, for example in Lombardy, was slowing the spread of this new architecture, which was considered to be too intellectual and sometimes too difficult to understand. However, even there, in northern Italy, people such as Leonardo da Vinci (1452–1519) and Donato Bramante (1444–1514) were strong advocates. Their tremendous work on the central-plan church, the basilica, and the urban square, or piazza, treated as a forum prepared the way for the second part of Renaissance architecture, centered in Rome from 1500 to 1525. Leonardo da Vinci explored the central-plan church in his manuscripts (c. 1490). Along with Bramante and other architects, he was involved in the immense cathedral of Pavia (started in 1488 but largely incomplete). For this building, an enormous octagonal dome was combined with a basilican church deriving from Brunelleschi's Santo Spirito in Florence. Bramante experimented with the connection between a dome and a barrel-vaulted nave in Santa Maria delle Grazie, Milan, after 1492, and with a large forum-like piazza in Vigevano (**Piazza Ducale**, from 1492).

The French army's occupation of Milan on September 6, 1499, changed the future of architecture. Bramante took refuge in Rome where, for the remainder of his life (until 1514), he used his early experiments in Lombardy around Milan as the basis from which he developed his mature, or "grand," manner. Between 1500 and 1504, he built for Cardinal Oliviero Carafa, who was fond of art and antiques, the *Cloister* of **Santa Maria della Pace**. In the two levels of the square cloister, using the strictest proportional rules accepted by Renaissance theorists, he combined four orders in a composition of columns, *pilasters*, arches, and *entablatures* in one of the most splendid Renaissance achievements.

Bramante created a "studio" of his former assistants in Milan and gifted young Roman architects, including Peruzzi, Antonio da Sangallo the Younger, Sansovino, Giulio Romano, and his favorite and successor, Raphael (1483–1520). The discussions and intense arguments that developed within the studio raised the level of the architecture it produced. A sense of space and an accurate archaeological basis for details, building types, ornament, and painted decoration were all included in a comprehensive manner. A period of perfect works of art and architecture known as the High Renaissance suddenly came into existence. Bramante's greatest opportunity came from Pope Julius II (1503–1513), who had selected the name of Julius to be compared to Julius Cesar. He thought of himself as the heir of the Roman emperors and wanted to reestablish Rome as a world capital, as it had been in antiquity. Julius commissioned Bramante to design a new Saint Peter's Basilica to be the largest church in the world (1505–1514) and to expand the Vatican palace through the 900-foot-long Belvedere Courtyard. It was to combine a "forum," a theater, and a garden. His design for the Piazza Ducale in Vigevano and the plan of antique

Roman circuses (places to run horses) helped Bramante and his studio to formulate its design. Financial and political problems were not in Julius's favor, and Bramante's projects for Saint Peter's and the Belvedere Court (which was much altered by Pope Sixtus V) had to wait ninety years to be finished. For the church of **Santa Maria della Consolazione** (begun in 1508–1509) at Todi, however, Bramante was able to realize a centralized plan. In its simplicity, it refers to designs by da Vinci.

The capacity to imagine and build, and the creativity in Bramante and Raphael's studio, contrasted sharply with the political disillusionment of the period. In 1517, the papacy was confronted with the beginnings of Martin Luther's Reformation and the political uncertainty following it. Architects during the most brilliant Roman architectural period of the Renaissance had to confront difficult questions. Bramante perhaps attempted too much, more than he could achieve.

Mannerism or the Crisis of the Renaissance (1520–1630)

After the period of intense architectural renewal called the High Renaissance, architects at the turn of the sixteenth century in Rome became so self-assertive, especially in the studios of Bramante and Raphael, that a time of crisis was not far ahead. In May 1527, the Sack of Rome by the troops of Holy Roman Emperor Charles V, ruined all hopes of artistic supremacy in a city that shortly before was convinced it was to be the leader of the world. This was a violent setback for the power of the popes. The Reformation demanded their dismissal, and the heavy destruction in Rome showed the illusoriness of the foundations of the previous optimism. The lives and goals of artists were endangered, and instead of working together and debating in a collective studio, they had to face isolation. Most of the Roman architects had to find refuge elsewhere. All of them had to develop a new manner of working. Abandoning working as a group, they responded to individual inspiration and began to trust their imagination. Most of them had to confront rebellion, ostentation, or passion, as a new behavior. A rage to create (called "terribilita") transformed their mentality. They were looking for a "style," or for what seemed stylish, thus a "manner." Mannerism (called "maniera" in Italian) aimed at difficulty, but at the same time, self-control was required as well as a sense of nonchalance conceived as a special quality that was called in Italian "sprezattura." These attitudes define the Mannerist artist, but also the aristocrat as described by Castiglione in his book *Cortegiano* (*The Courtier*, 1528).

Although they were two different and distinct personalities, Gulio Pippi (1482–1546) and Michelangelo (1475–1564) are typical of the Mannerist approach. They stopped trusting the rules adopted by Renaissance architects and felt that all aspects of art should be open for discussion. They wanted to get to basics: What is a window? What is a column? Is there any need for regularity? What does spontaneity mean? Giulio Pippi was called Giulio

Romano because he was born and educated in Rome, in Bramante and Raphael's studio. He was the first to escape Rome in 1524 when he went to Mantua. Responding to great artistic demands, he recreated a studio there to work mainly on the duke's urban palace, the cathedral, and the suburban **Palazzo del Te**. For a cynical and libertine court, he affected occult and bizarre attitudes. He used Bramante's architectural principles in a provocative way, sometimes stressing disharmony and unbalanced combinations. His language could be compared with the open creativity of Elizabethan poetry in England by its intemperance and its grammatical errors.

Michelangelo's destiny was a continuous battle between two opposed elements: self-doubt and a strong desire to create. One fought against the other as if neither could win. As a sculptor, many of his works remain unfinished, impossible to complete. As an architect, he destroyed his sketches to eliminate evidence of the pain of creation. None of his buildings was finished at his death: the **Laurentian Library** in Florence (1524–1559); the **Capitoline Hill** (Piazza del Campidoglio, 1538–1655), and even the dome of **Saint Peter's**, which was started in 1547 but only finished by Giacomo della Porta in 1590. The scope of these three monuments expresses the unusual capacities of Michelangelo and to understand them will require a discussion of their constituent elements: the problem of column and wall in the Laurentian Library; the trapezoidal shape of the piazza in the Campidoglio; the connection between the dome and the body of the church at Saint Peter's. Michelangelo acted as a sculptor, believing in the plastic qualities of masses and on powerful gestures. He was always questioning.

Relations with political or ecclesiastical powers offered, by contrast, an opportunity to express the difficulty of bringing order to a disorganized building, landscape, city, or garden. With his antinatural strategy, Vignola (1507–1573) changed the plan of the town and *villa* at **Caprarola** for Cardinal Alessandro Farnese the Younger. He transformed a rugged site by his obsession with the geometry of a pentagonal palace, incorporating triangles for the piazza, squares in the gardens, and a 2,500-foot-long straight street carried on bridges to organize the town. The arrangement of the gardens and the palazzina above the palace showed the same formal rigidity in the gardens of **Villa Lante** in Bagnaia, which Vignola created around 1560–1600. The strictness of the plan offered a base for the imaginative play of water features. In Florence, Giorgio Vasari (1511–1574) brought order to the medieval **Palazzo Vecchio**. Court ceremonies in honor of the Medici princes affirmed the grand duke's absolutist power. His bureaucracy required new offices—the Uffizi—which were created on both sides of a new street that opened onto the Arno River. Architects like Bernardo Buontalenti (1523–1608) were also involved in Medici glorification. Inspired by Michelangelo, Buontalenti provided a flexible staircase to reach the altar of Santa Trinita (today in Santo Stefano), Florence. He rebuilt villas (villa Petraia), improved gardens, and added a grotto to the famous Boboli gardens in Florence. As a stage designer, he reorganized the court theater, performing "intermezzi" that used a system of stage

mechanics that had a strong influence on the British architect Inigo Jones (1573–1652) who designed sets for King Charles I.

Andrea Palladio (1508–1580) would appear to have been only a provincial architect since he built only in Venice and the Vicenza area, but he was a man of worldwide importance. He came from modest origins, originally a simple mason called Andrea di Pietro della Gondola. An aristocrat, Giangiorgio Trissino, discovered him and renamed him Palladio in 1538 because of his architectural talent. He accompanied Trissino to Rome, discussing intellectual matters with him and making measured drawings of ancient buildings. He also copied some of Bramante's original documents. Palladio was involved in all the important problems of Renaissance architecture. In 1556, he provided the illustrations for Daniele Barbaro's translation of and commentary on Vitruvius's first-century-BCE book on architecture.

The main interest for Vicenza's aristocrats was to improve their domination over both the city, where they had their own palaces, and over the country. Rural residences combined a villa for the owner with all the facilities necessary for working a large agricultural estate and storing the produce. The estate was designed to facilitate irrigation of the croplands and transportation of goods by canals with a comprehensive organization of poplar hedges and vineyards. Organizing the villa and "barchesse" (dependencies) became a simple exercise in varying schematic building arrangements. In the end, Palladio designed more than thirty villas, scattered on the mainland across from Venice, especially around Vicenza. A process of "variation on a theme" connected Palladio's villa designs with music theory, which was well developed in Venice. Musical rules of proportion, the openness of the villa toward the landscape, and the use of columned temple-front porches clearly identify Palladio's villa architecture. He also designed about eighteen palaces in the cities of Vicenza and Verona and in smaller towns as well as major churches in Venice.

Palladio's world reputation is ultimately based on his *The Four Books of Architecture*, which was first published in 1570. Starting with the knowledge he had developed through the study of ancient principles and buildings, he presented a selection of his own works to show how they could be models to be imitated or adapted to different cultural areas. In eighteenth-century England, Palladio's designs inspired many aristocratic villas scattered on a new landscape of picturesque gardens. He was also imitated in eastern Europe, both in Poland and Russia, and his book convinced American settlers to build Palladian villas surrounded by the flourishing nature of the New World. Monticello, the famous home of Thomas Jefferson, a cultivated amateur architect who became president of the United States in 1801, was of strict Palladian ancestry. With the help of Benjamin Latrobe, Jefferson used Palladian principles to incorporate a large "villa" and dependencies in his design for the University of Virginia at Charlottesville (1817–1826). Here the landscape became the dominant feature of the columned pavilions facing the Rotunda; Jefferson was also remembering the elusive charm of the seventeenth-century landscape paintings of Claude Lorrain.

Baroque Architecture (1630–1770)

The term "*baroque*" was originally used to describe a period considered to be artistically decadent, an age to be thought of with disgust. Most scholars before 1930 did not hesitate to consider the period a childish caricature of an exhausted art form that was focused on artistic ugliness. "Baroque" could be used to describe parts of all sorts of historical periods: Roman Imperial architecture was baroque as was Perpendicular Gothic in England and *Flamboyant* Gothic in France. It was generally accepted that Renaissance art lost its strength in the seventeenth century, especially around Naples, Rome, and Turin, when artistic decay set in. However, an evolution of art from a formative period of great classical beauty to Baroque decadence seemed oversimplified, and scholars reached the point where antipathy toward the seventeenth century became weaker. To obey certain artistic rules, as had been the case in the Renaissance, was considered timid behavior when compared with the creative boldness and artistic contestation called Baroque.

Italian Baroque art and architecture is sometimes difficult for American Protestants to grasp. If the capital city of Baroque is taken to be Rome, the Baroque can only be understood as an expression of the Catholic Reformation. However, Baroque spread to Protestant countries such as northern Germany (Dresden), the Netherlands, and England (Wren's churches) in the seventeenth and eighteenth centuries. Baroque was a frame of mind, connected to political attitudes, morals, and artistic goals, that was more or less convincing in different countries. France, for instance, has a "soft" Baroque in comparison to Italy. The high point of the renewed power of the popes in Rome, which led them to artistic domination, was the reigns of Urban VIII (1623–1644) and Alexander VII (1655–1667), both of them known for their powerful grasp of their office and as architectural dilettanti. Around them, a group of fascinating creators happened to be born at the very end of sixteenth century: the painter and architect Pietro da Cortona (1594–1669); the sculptor who combined all sorts of talents, Gianlorenzo Bernini (1598–1680); and the most imaginative architect of them all, Francesco Borromini (1599–1667). All of them, with the help of others, renewed the "imago urbis," the image of the city of Rome, which became the model for all capital cities, being itself the caput mundi, the head of the civilized world.

For a deeper understanding of the Baroque world, personal opinions should be temporarily left behind in an attempt to understand the thinking of seventeenth-century opinion makers. Although this sort of historical process can be difficult, it is the only way to grasp more profoundly the mental attitudes of the time.

Baroque architects transformed the image of the city. Baroque urban design conveys a thorough sympathy for the city in its monumental or residential areas, whether in its totality or in hidden, intimate parts. A Baroque design never destroys; on the contrary, it helps to reveal all the potential of the city. Bernini's designs for **Saint Peter's *Colonnade* and Piazza** in Rome (1656–1667)

celebrate the union of the city with the church of Saint Peter. The large oval piazza, surrounded by its great colonnade, is an intermediate space that links a monument (the church) to the public space (the borgo and streets surrounding it). Borromini's last work, the façade of **San Carlo alle Quattro Fontane** (1664–1667), which was finished by his nephew in 1676, is "urbanely active," creating a characteristically Baroque undulating movement. Nicolo Salvi's world-famous **Trevi Fountain** in Rome (1732–1751, finished in 1762) uses Bernini's sculptural conceptions to create a huge fountain in an opera-like plaza.

Remodeling a city also meant a capacity to transform the urban fabric. In Naples, Ferdinando Sanfelice (1675–1748) used a new sense of scenography—theatrical set design—in his own residence, playing with intricacies and surprises (**Palazzo Sanfelice,** Naples). The same scenography explains the charm of the ten steep terraces of the **Isola Bella Gardens** (1650–1690), looking as if they were a long boat at anchor in Lake Maggiore (1631–1671) in northern Italy. Gardens, squares, residences, and monuments all could be touched by Baroque imagination and sparkle with beauty, as in the **Garzoni Gardens** in Collodi. As the Baroque style spread northward to Piedmont, it revealed more connections not only with perspective but also with discoveries in seventeenth-century optics and mathematics. Guarino Guarini's (1624–1680) **Santissima Sindone**, the Chapel of the Holy Shroud, Turin, was the work of a gifted mathematician, a reader of Sir Isaac Newton and his concept of integral calculus. Guarini's admirer and follower, Bernardo Vittone (1702–1770), was able to lighten—in two senses—the structure of a building, as he did in the **Confraternity of San Bernardino** in Chieri (1740–1744). "Eyes" of light and little cells of space between structural ribs brought luminescence to a church as if blind matter had been removed. Vittone led the way, followed by Alessandro Antonelli a century later in Novara, where he started what would become a "brick Eiffel Tower" of 327 feet (the dome of the church of **San Gaudenzio,** 1841–1878).

Behind the capacity to change the city, behind scientific approaches to change art, a more complex attitude defines the Roman Baroque. Refusing to separate painting, sculpture, and architecture, Baroque artists such as Bernini started a process called "bel composto." Incorrectly translated as "a beautiful whole," it is based on the shifting among three arts: painting disappears into sculpture and sculpture disappears into architecture to produce a "montage," a synthesis of the arts. All the intermediate positions are stressed. Three examples have been selected for this book to discuss "bel composto." The interior of Borromini's **San Carlo alle Quattro Fontane** (1638–1641) introduces certain aspects, but Bernini's Ecstasy of Saint Teresa in the **Cornaro Chapel** of Santa Maria della Vittoria (1647–1652), and his church of Jesuit novitiates in Rome, **Sant' Andrea al Quirinale** (1659–1670), demonstrate the outstanding complexity of the term. Psychological and spiritual reactions of Baroque worshippers must be taken into account, and the extensive religious propaganda organized by the Roman Catholic Church needs to be explained.

The church became a place to see the invisible and spiritual, more than a place of physical presence. A discussion of the rise of opera in the seventeenth century would help to explain Baroque strategies, whether one was Protestant or Catholic. The same sense of illusion applies. Like Baroque opera, which combines scenography, sound, and poetry, Baroque architecture combines all works of art. The drive to combine the arts to represent a spiritual state pushed all the Baroque architects, not just Bernini, to an unusually advanced position in art.

Venice and Turin embraced new attitudes and developed a novel sense of urban or landscape scenery. Longhena (1598–1682) created the double-dome silhouette of the church of **Santa Maria della Salute** on the edge of the Grand Canal. He was inspired by Palladio's neighboring churches of Il Redentore and San Giorgio Maggiore from the previous century. In **Stupinigi,** for the Royal Hunting Lodge, Philippo Juvarra (1678–1736) was able to combine a variety of Baroque inventions with the sense of the beauty of French geometrical gardens in offering a dialogue between architecture and rearranged nature. Working on two other royal residences, the castle of Rivoli and the castle and stables of Venaria Reale, as well as on the basilica of the Superga, on a hill towering above Turin, he was constantly involved, after 1715, with an extensive organization of the landscape.

Neoclassical and Eclectic (1770–1900)

After the architectural excitement of Italian Baroque, the Neoclassical and Eclectic period that follows requires a different approach to understand its importance. During this period, the Roman Catholic Church suffered a series of setbacks, including movements of laicization, especially during the French Revolution at the end of the eighteenth century and in Italy during the Napoleonic occupation at the beginning of the nineteenth century. Prosperity in the late eighteenth century reinforced the power of the middle class and reduced that of the church. Large cities suggest the strength of Italy. In 1789, Italy had six cities with more than 100,000 inhabitants and six others with 50,000 to 100,000 inhabitants. Urban growth meant that the creation of new buildings to house contemporary activities, the creation of new urban circulation patterns, and innovation in domestic architecture took precedence over monuments and monumental urban compositions.

Changes in taste in the second part of the eighteenth century reduced the dominance of the Baroque but could not suppress it. In Italy, both Baroque and Enlightenment architecture can be associated with great creativity, but the return to the rules of classical art and a new aesthetic sense that involved both simplification and economy opened a period called Neoclassicism after 1770. Except for Sardinia and Sicily, Italy was partly unified for nine years (1805–1814) through the Napoleonic conquest. The French Empire extended as far as Rome. A Kingdom of Italy, with its capital in Milan, and a Kingdom

of Naples advanced the ideals of liberty against the conservative feudal tradition. The reestablishment of former monarchies after 1814 did not interrupt a long process of architectural evolution, so that the Neoclassical period extended without interruption into the late 1850s.

Along with the changes in society came new types of buildings, including museums, theaters, libraries, administrative seats, and places for public entertainment. From 1755 to 1822, architects Michelangelo Simonetti, Pietro Camporese, and Raffaello Stern designed impressive new neoclassical galleries to house the Vatican's collection of antiquities. Giuseppe Piermarini (1734–1808), who controlled all the architecture in Milan, designed the most famous of lyric theaters in Italy, the Teatro alla Scala (1776–1778). The **Theater of San Carlo** in Naples was extended with a new façade in 1810 and entirely rebuilt after it burned 1816 by Antonio Niccolini (1772–1850). Giuseppe Jappelli (1783–1852), a brilliant creator, changed the spirit and the traditional meaning of a monument. His **Caffè Pedrocchi** in Padua (1826–1842) was a place of social intercourse and entertainment that took the place of monuments (churches, palaces) in a country involved in its fight for political unification. Situated at a main crossroads of the city, its impressive interiors were eclectic, that is, a mixture of styles: partly Egyptian, partly Neoclassical, and partly Gothic. The process of changing the preference for the kind of place for holding social activities, entertainments, and leisure promenades came from decisions handed down by the French administration. In Rome, Giuseppe Valadier proposed, in 1793, a grand plan for the Piazza del Popolo. Approved in 1813, his plans were begun only in 1820 and included ramps and carriageways leading to the Pincio Gardens on top of the hill above the square. In Milan, public-spirited projects were planned in 1801. Antolini (1753–1841) designed the Foro Buonaparte at the scale of ancient Roman precedents; the Arena, laid out between 1805 and 1807 and completed late in 1824 by Luigi Canonica (1764–1844) still survives.

With the change in aesthetic sense and scholarly analysis of ancient Roman architecture, the **Pantheon** of Rome became a fashionable prototype. A rotunda preceded by a Roman temple front was the ultimate reference both for Fernando Bonsignore's Church of the Gran Madre de Dio in Turin (planned in 1818 and begun in 1827; see **Piazza Vittorio Veneto**) and for the mausoleum of the famous sculptor Antonio Canova in Possagno (Veneto, 1819–1833). Developments in urban design included the insertion of regular monumental piazzas, mostly on the edge of the ancient cities. In Naples, next to the royal palace and opening to the grand view of the Gulf of Naples, the Foro Murat (named for a French general who was king of Naples) was established in 1808. When the Bourbon king returned, the Foro was renamed Ferdinando for Ferdinand I, King of the Two Sicilies. In the center of a vast elliptical colonnade, a dynastic chapel was built, inspired, as might be expected, by the Roman Pantheon. It was finished in 1831. Trieste improved its Grand Canal in 1756 with P. di Nobile's church resembling the Pantheon, Sant' Antonio Nuovo (1825–1849).

Turin, when its walls were demolished to provide space for a ring of boulevards, created four entrance-squares of large dimensions (over 1,000 feet long, on average). Two of them were Neoclassical: on the north side, the Porto Palazzo, opening onto the road to Milan (the plan of the architect, Lombardi, was designed in 1818 and realized in 1826–1830); on the east side, opening to the Po River and the magnificent landscape of the Monferatto Hills, the **Piazza Vittorio Veneto** (or Piazza Po) by the architect G. Frizzi (1825–1830). Two were Eclectic, built in 1861 before or at the time Turin became the capital of Italy. (The capital was transferred to Florence in 1865 and finally to Rome in 1870.) The first of the Eclectic piazzas, the Piazza Carlo Felice by the architect Promis, was established in front of the railway station (1850–1851). The second, the overdesigned Piazza Statuto on the west side, by the architect Bollati, faced the Alps and was built by the English-financed Italian Building Society (1864–1865).

The turn toward Eclecticism was contemporary with a strong interest in advanced structures. Iron and "vitrified" bricks, both materials used in buildings from previous generations, were improved to give incomparable possibilities. Alessandro Antonelli (1798–1888), an accomplished exponent of neoclassical architecture, developed a frame of arches, counterweights, and disconnected brick walls to push the dome of **San Gaudenzio** in Novara to the height of 327 feet, which, with the addition of a *lantern*, reached 400. In Turin, he was even bolder. The Mole Antonelliana—originally a Jewish temple—is a double-skin envelope of great beauty enclosing an enormous space, easily comparable (although it is made of bricks) to the metallic Eiffel Tower of 1889. Construction of the Mole was started in 1862; it reached a height of 345 feet in 1888, and, with a thin steeple, it towers 535 feet above the pavement, about as tall as a fifty-story skyscraper! A figure of a winged genius was installed at the top in February 1888, nine months before Antonelli's death, but the age of iron surpassed Antonelli's capabilities. Beginning with the idea of a commercial *arcade* that would be monumental enough to house social activities, the **Vittorio Emmanuele *Gallery* in Milan**, built by Giuseppe Mengoni (1829–1877), rivals the greatest railway stations in England. Included in a renewal project of Milan's city center, it found a rival in Naples, the Galleria Umberto I (Emmanuelle Rocco, 1887–1890), which also reorganizes the central point of the city of Naples in front of the Theater of San Carlo and opposite the Foro Ferdinando.

Contemporary Debates: The Goals of Recent Architecture (1900–2000)

When, in 1870, Rome became the capital of Italy, the city of the popes grew rapidly. What was produced since 1914, although "impressively monumental," is of relatively slight interest. According to Henry-Russell Hitchcock, the pretentious Monument to Victor–Emmanuel II on the Piazza Venezia in

Rome (1884–1911) illustrated "the final breakdown of the old standards of Romantic Classicism" (Hitchcock 1977, 209). The twentieth century began with a necessary period of rethinking architectural principles. Art Nouveau bloomed late in Italy, and Raimondo d'Aronco (1857–1932) was influenced by late Baroque; the Milanese Giuseppe Sommaruga (1867–1917) favored rich interiors and spatial intricacies. Futurism was more radical. Its leading architect was Antonio Sant'Elia (1888–1916), who is known from his splendid drawings, in which he rejected all links with the past. Futurism opened the way to a movement called "Architettura razionale" (Rationalist Architecture), an Italian version of the International Style.

Some of the Milanese students in architecture—Terragni, Libera for a while, Figini, and Pollini—made up the Group of Seven ("Gruppo 7") and followed the French Modernist Le Corbusier. Their goal was to reconstruct the architectural culture of Italy. "Gruppo 7" believed in a new aesthetic inspired by the machine. Their creed contained four coherences: coherency in function, coherency in building, coherency for hygiene, and coherency in environmental control. Terragni's master works include the Casa del Fascio in Como (1932–1936), a typical expression of "Mediterraneita" in its rigorous abstraction; the **Casa Rustici** in Milan (1933–1935), recalling the "perilous design" favored by Terragni; and the Sant'Elia School in Como (1936–1937), in which Terragni went beyond modern requirements in approaching a "lyrical functionalism." Adalberto Libera (1903–1963), moving from Milan to Rome, was a brilliant exponent of the Rationalist School. He designed the plan of the cliff-top **Villa Malaparte** on the island of Capri for Curzio Malaparte. In the meantime, he designed a huge arch for the Fascist exhibition E 42 in Rome, spanning 660 feet. It inspired Eero Saarinen's Gateway Arch in Saint Louis, Missouri, designed in 1948. As an open-minded creator, he was inspired by Moroccan houses when he designed the horizontal residential unit of **Tuscolano II** in Rome (1950–1954).

Postwar debates could not avoid strong criticism of the link between the Rationalist School and the Fascist Movement. Italy was breathing a new air of freedom, and architecture needed much fresh air. "Constructing with words" opened a period of extensive discussions. An unusual number of architectural magazines involved all the important architects: *Casabella* directed for a time by Gregotti; *Contropiano*, more radical, with the historian Manfredo Tafuri; *Domus*, under the guidance of E. N. Rogers; *L'Architettura-cronaca e storia* (*Architecture*, *Chronicles*, *and History*), directed by Bruno Zevi. *Lotus*, *Rassegna*, *Urbanistica* (on town planning), and *Zodiac* all demonstrate how tough the debate was in Italy after 1950. The task of producing decent houses for the Italians was the main concern of the Fanfani Law of 1949, which created the INA-Casa that lasted until 1963. Solving the problem of the house without using industrial techniques was the aim of Libera and Saverio Muratori at **Tuscolano II** in a suburb of Rome (1950–1954). Rebuilding areas damaged by the war needed much competency. Next to the **Castelvecchio Museum** in Verona, the reconstruction of the medieval bridge, which had fallen into the

River Adige, followed the methods of postwar rebuilding: "com'era, dov'era" (the way it was, the way it should be), which meant that traditional ways of building were to be used.

Since Italy was so full of debates, discussions, and sharp oppositions, the architecture of the second half of the twentieth century could hardly be summarized by only two attitudes. Italian architects were leaders in rejecting the International Style. They fought for new forms, they showed their inventiveness, and they rediscovered the sense of memory. However, in a country of such a highly cultured past, the sense of the city and the presence of history obliged certain architects to be skilled interpreters of the past. To build inside an old city has been a major task of Italian architects.

An influential movement in Milan, in which E. N. Rogers took part, initiated an interest in the symbolic value of memory and its social importance as well as in functional requirements. Accused of revisionism because he was not a strict functionalist, Rogers was able to translate tradition in terms of modernity in the **Velasca Tower** in Milan (1956–1958). It is a skyscraper 330 feet tall and looks much like a medieval tower above the roofs of the city. Giovanni Michelucci selected an organic version of modernity for the **Church of the Autostrada** (1961–1971) west of Florence. The church is a gesture in space of great fluidity and is considered a summit in postwar Italian architecture. A field of criticism, which received the name of Team X in 1956, opposed some aspects of Le Corbusier's architecture and theory but, strangely enough, favored the "brutalist" quality of his postwar architecture. Giancarlo di Carlo (1919–2004) was a member of Team X. Working mainly, but not only, in Urbino, he praised the complexity of the old city, its expressiveness, and the social life it contained. Building both within and without the city, he favored a village-like concrete residential complex as his main tool for expressing his ideals (**Collegio del Colle,** 1962–1972).

Recent architectural developments have expanded and widened references, have become more broadly creative, and have begun to express themselves at the scale of the landscape, or at least of the region around the site. Vittorio Gregotti has been interested in large regional plans of strict geometry. Renzo Piano is a world-famous architect. His main works are the National Centre of Art and Culture, the Centre Pompidou in Paris (1971–1978), and the International Airport of Kansai in Osaka, Japan (1988–1994). He has designed many art galleries in the United States, among which are the Menil Collection Museum in Houston (1982–1986), the Nasher Sculpture Center in Dallas (1999–2003), and the extension of the Art Institute of Chicago (1999–2004). In Italy, he realized the handsome auditoriums of the Music Park in Rome (1994–2002), and, in 2000–2002, he remodeled the 1915–1923 **Fiat Lingotto Plant** in Turin. He changed the relation between the city of Genoa and its old harbor, turning it gallantly into a festive piazza (**Renovation of the Old Harbor,** 1988–2001).

Engineering skills are not far behind those of contemporary Italian architecture. Pier Luigi Nervi (1891–1979) was an engineer of worldwide reputation;

he designed the Bus Station in Manhattan, near the George Washington Bridge (1960–1962). His **Palace of Labor** in Turin took the nickname "Concrete Parthenon." Ricardo Morandi (1902–1989) erected the 3,600-foot-long freeway **Viaduct of the Polcevera** in Genoa (1961–1964) using a subtle sense of dynamism and trusting the lightness of an *isostatic* scheme. His work is typical of the construction of the freeway network that modernized Italy.

The study of urban form started anew when Saverio Muratori (1910–1973) published his books on Venice (1960) and Rome (1963). His approach was based on an "absolute historicism," that is, he identified history as a continuous process. After him, building in old cities offered many more challenges. Total agreement with Muratori's positions could not be reached, although many architects faithfully used his urban form studies. The group called "La Tendenza," led by the urban historian and architect Aldo Rossi and the architect Carlo Aymonino, did not follow Muratori all the way. For them, a project should also be influenced by modern precedents. Le Corbusier's Radiant City, especially the Unité d'Habitation (1946–1952) in Marseilles, was their reference. However, they transformed it to develop better spaces for social life, according to the positions of Team X, for the **Monte Amiata Housing** Scheme of Gallaratese Milan (1967–1972). Gregotti, after much debate, produced for Venice, in the **Saffa Area** in Canareggio (1984–1987), a model of houses totally integrated into the traditional urban fabric. To take history as a tool for creation was Carlo Scarpa's ambition when he renovated the **Castelvecchio Museum of Art** in Verona (1957–1964). In a process of superposed layering, he revealed his approach: He was both contemporary and respectful of the past and based his decisions on profound historical knowledge and slow, careful execution. He was prudent and bold—and deeply human.

Architecture of Italy

AUGUSTUS GATE, PERUGIA

Style: Etruscan
Date: Second Century BCE
Architect: Unknown

The hill town of Perusia was one of the twelve lucumonies, or city-states, that formed the Etruscan League, which dominated much of Italy from the sixth to the third centuries BCE. Known today as Perugia, it is still girdled by a massive circuit of ancient Etruscan walls that are 30 feet tall, 9,500 feet long, and are built of large blocks of travertine, many measuring more than 4 feet by 2 feet, that are set without mortar. The walls provided a strong defense for the center of the ancient settlement that covered approximately one quarter of a square mile spread out over three hills. As the town expanded in the Middle Ages, a second wall was built sometime in the thirteenth century CE to incorporate the suburbs that had sprung up on the neighboring hills.

A defensive rampart as large as the Etruscan wall is evidence for the origin and prosperity of Perusia in antiquity. Prehistoric remains indicate an early settlement of Umbrian people, who moved up from the valleys to the more easily defended hilltops. But significant urban development did not occur until the arrival of the Etruscans in the sixth century BCE. Taking advantage of the intersection of two roads—oriented in the directions of the compass—to facilitate transportation and communication, the Etruscans built their town in a strategic position overlooking the Tiber River and the surrounding plain from an elevation of more than 1,000 feet.

The agricultural bounty of the land on the shores of Lake Trasimeno, below the fortified city, was a major factor in the prosperity of Perusia. The surveillance afforded by the site, the huge surrounding wall, and the exploitation of other lines of natural defense ensured security at a time when the other Etruscan city-states, such as neighboring Chiusi, were being overrun by their Roman enemies.

During the civil wars of the first century, Lucius Antonius and Fulvia, the brother and the wife of Mark Antony, took refuge in Perusia. Following the famous siege and eventual victory of their enemy Augustus Caesar in 40, the

city was destroyed. Only its massive circuit walls and three temples (dedicated to Juno, Vulcan, and an unidentified deity) survived. Augustus rebuilt the city and made it a Roman colony called AUGUSTA PERUSIA, a name that appears in an inscription over an entrance to the city, which is now known as the Augustus Gate.

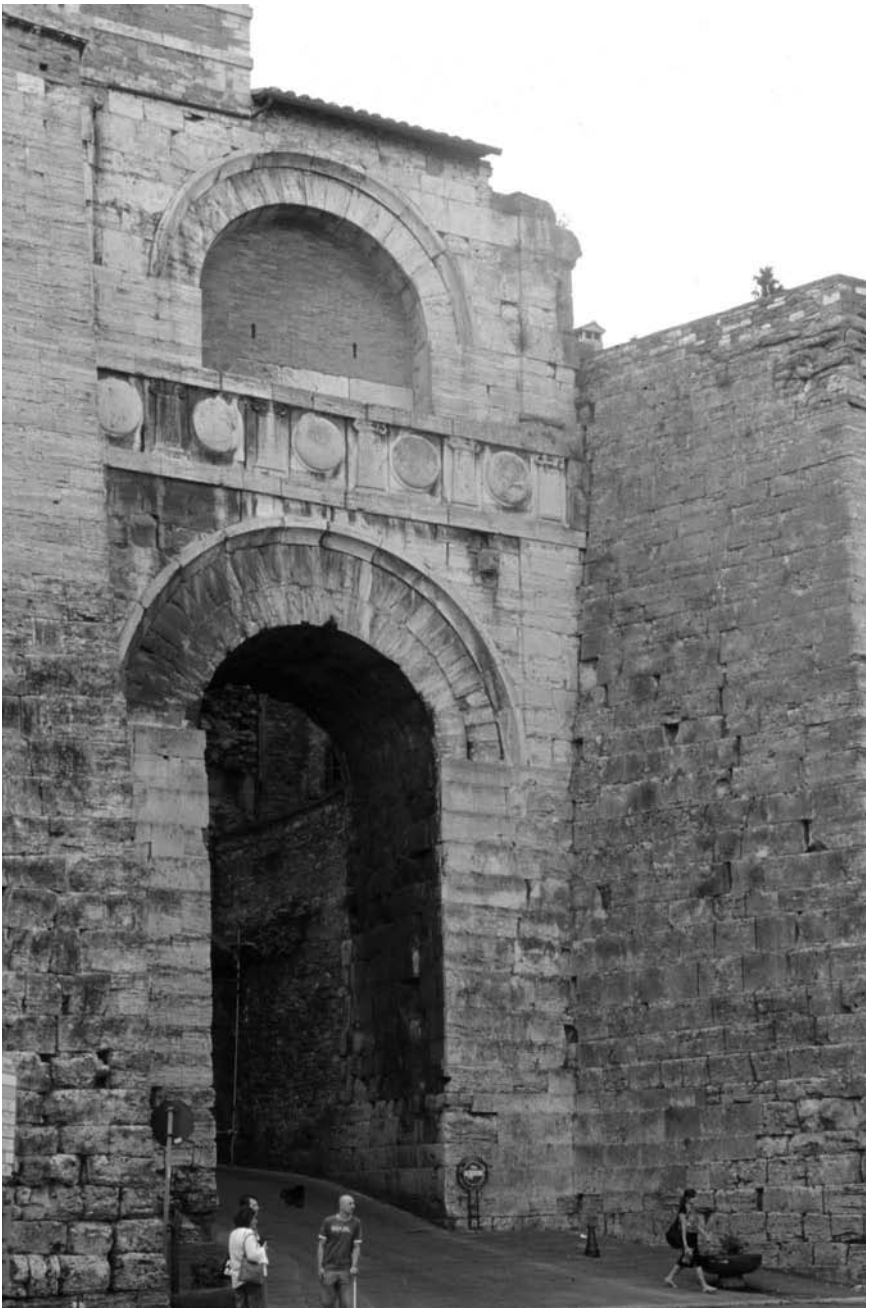
The Etruscan walls that survived Augustus contained eight large gates and three small openings. Four of the gates marked the intersections where the four main streets of the town join the four hillcrest roads. Only two of the Etruscan gates survive: the Porta Marzia, to the south, now incorporated into the base of a fortress built by Antonio da Sangallo the Elder in the sixteenth century and the Augustus Gate (Porta Augusta), to the north. Both gates are very impressive entries into the city because of their large dimensions and their positions at the top of steep roads.

The Augustus Gate is the better preserved and shows the Etruscan style of building quite clearly. Its architectural and archaeological importance is tremendous because it is one of the few surviving examples of Etruscan building practice and represents one of the earliest uses in Italy of an arch constructed with *voussoirs*, which will become so characteristic of Roman architecture.

Two large towers of trapezoidal shape flank the arch, which is extended into a semicircular *barrel vault*, more than 30 feet high, that covers the interior passage way into the city. The arch springs from vertical supports, called jambs, built of large rectangular stone blocks on either side of the passage. Two courses of voussoirs, precisely cut wedge-shaped stone blocks placed next to one another without mortar, form the semicircular shape of the arch. The voussoirs are held in a state of compression and are locked in by the *keystone*, the voussoir at the very top of the arch. Remove the keystone and the arch will collapse.

Above the arch is an ornamental *frieze*, or horizontal design, that may indicate the influence of Greek architecture on Etruscan designs. Horizontal moldings frame the frieze, which is divided into a pattern loosely resembling the division of the frieze on a Doric temple. Six vertical bands alternate with five large round forms that most likely represent shields. The vertical bands have grooves cut into them so that they resemble the *triglyphs* in the Doric frieze. The shields are centered in nearly square panels that correspond to the *metopes* of a Greek temple frieze.

Above the lower arch is a second, smaller voussoir arch, now filled in, that is flanked by *pilasters* (flat column-like strips). With the addition of this second story, the Augustus Gate reaches a height of more than 60 feet. The powerful aspect of this city gate, with its massive cut stone construction and simple geometric forms is impressive even today and provides a perfect example of Etruscan engineering and design. Although somewhat obscured by later additions, especially the Renaissance *loggia* on the left, the Augustus Gate remains as a testament to the power and wealth of the Etruscan culture before it was absorbed and nearly obliterated by Rome.



Augustus Gate, Perugia. An Etruscan double voussoir arch (2nd century BCE).

Further Reading

Boethius, Axel. *Etruscan and Early Roman Architecture*. 2nd ed. New Haven, CT: Yale University Press, 1992.

Borrelli, Federica, and Maria Cristina Targia. *The Etruscans: Art, Architecture and History*. Edited by Stefano Peccatori and Stefano Zuffi. Translated by Thomas M. Hartmann. London: Getty Trust Publications, 2004.

Grohmann, Alberto. *Perugia, Le città nella storia d'Italia*. Rome and Bari: Laterza, 1981.

BATHS OF CARACALLA, ROME

Style: Roman Imperial
Dates: 212–235
Architect: Unknown

Large public bathing establishments were typical expressions of the Roman practice of building and organizing complex areas for both social and necessary activities in a large densely populated city. The Baths of Caracalla were recorded in the fifth century as one of the marvels of Rome. All of the comforts associated with the luxury *villas* of the elite were brought together in the public baths and made available to every citizen, rich and poor alike. The Baths of Caracalla were enormous, covering about fifty acres that included swimming pools, exercise yards, a stadium, steam rooms, libraries, meeting rooms, fountains, and other amenities—all enclosed in formal gardens. They were designed for the use of large numbers of people; Caracalla could accommodate 1,600 bathers at a time. This means that every day between 6,000 and 8,000 Romans could take advantage of the facilities.

Although popularly named for the emperor Caracalla, the baths were probably planned by his father, Septemius Severus, the North African emperor, who engaged in many projects to monumentalize the southern part of Rome. Construction of the main block of the complex was initiated at the beginning of Caracalla's reign in 211. A partial inauguration took place in 216, and the outer precinct was not completed until the reign of Alexander Severus (222–235), the last member of the dynasty. The soldier emperor Aurelian (270–275) rebuilt one of the *porticoes*, which had been destroyed by fire, perhaps in 271.

Because they were located on the outskirts of the city, the baths were abandoned in 537 during the siege of Rome by Vitiges the Goth, when the population withdrew into the center of the city. Beginning in the twelfth century, the ruins were used as a vast quarry of building materials. Many *columns* and their *capitals* were removed and reused in famous churches, for example, in Santa

Baths of Caracalla, Rome. The massive ruins of the caldarium (the hot bath) inspired even modern architects like Louis Kahn.

Maria in Trastevere. The Pisans took away capitals to decorate their cathedral. Digging done in the sixteenth century by Cardinal Alessandro Farnese recovered many famous works of sculpture that are now in the Naples Museum. Most important of all, the Belvedere Torso, which so inspired Michelangelo, was found in the Baths of Caracalla.

Many architects recorded their admiration for the design of the baths and the movement of its masses. In book III of *On Antiquities*, published in 1540, Serlio praised the coherency of its plan. Palladio, during his stay in Rome in 1546–1547, drew plans and sections of the building along with reconstructions and studies of the decorative details. The French restorer of medieval churches, Eugène Viollet-le-Duc, sketched the baths in November1863 and enthusiastically praised the ability of the Romans to manage a building of such complexity.

The Bath complex stands on a vast rectangular platform, measuring 1,076 by 1,059 feet, that was partially dug out of the side of the Aventine hill. A new aqueduct, the Aqua Nova Antoniniana, brought water to sixty-four cisterns from which it was distributed via lead pipes to the large swimming pool (nautatio), the cold-water baths (frigidaria), the hot bath (caldarium), numerous fountains, and the latrines. A large thoroughfare approaching the site facilitated the movement of huge amounts of cement and bricks by the 9,000 workers who labored during the five years of construction. After the baths were

opened, this same roadway was used to deliver the ten tons of wood used every day to heat the water. Under the terrace were corridors, large enough for vehicular traffic, great furnaces and boilers, even a watermill, and staircases. All of these were necessary for the efficient operation of a bath complex on such a huge scale. Heat for the warm rooms and sweat rooms was provided by double walls and spaces under the floors into which hot air was introduced.

A great wall, about 4,500 feet long, surrounds the precinct of the bathing block, *colonnades*, and other amenities, including large expanses of garden. The bathing block has a perfectly symmetrical rectangular plan, measuring 360 by 700 feet. Its plan was carefully organized to move people efficiently in and out of the various rooms and halls. The block is not centered in the garden precinct; rather, it is located in the northeastern half on axis with the main entrance that pierces the outer wall. Natural light and heat were exploited by the designers: the hot rooms were aligned across the southwest side of the bathing block and had large arched windows to catch the heat of the afternoon sun (Roman baths did not open until after the noon hour), while the changing rooms, offices, and latrines were located on the opposite shady side.

Following the traditional plan of Roman baths, the principal rooms were lined up on the short central axis of the bath block in the ritual order in which the Romans would use them. First was the large swimming pool open to the sky. This was followed by the immense *groin-vaulted* frigidarium, or cold bath area. Next on axis was the tepidarium, whose waters were slightly warm, and finally came the circular domed caldarium, or hot room, that was nearly as large as the **Pantheon**. Arranged to either side of this file of rooms were offices, service rooms, and exercise courts. Surrounding the bathing block was a formal garden, or xystus, that included fountains, a stadium with seating for spectators, and subsidiary structures such as libraries, meeting halls, and shops.

Thick *concrete* masonry was used to build massive walls to support various roofing structures, some of them of daring design, that covered rooms of many different shapes and sizes. *Domes*, half-domes, *barrel vaults*, and groin vaults, also constructed of concrete, created dynamic spaces arranged in artful sequences.

The rough concrete construction was not visible to the bathers; lavish ornamentation concealed it. Mosaics on the floors, colorful marble veneers on the walls, gilded stucco and glass mosaics on the ceilings, and a profusion of columns in a variety of colored marbles created a sumptuous interior. Added to this were numerous statues by the most famous sculptors of the day and imaginative water displays. The baths provided a place for large crowds of people to take care of their bodies while at the same time enjoying social encounters, reading in the libraries, having a mid-afternoon snack, and observing their fellow citizens. Men and women could use different parts of the facilities or were allotted separate times for bathing. The Baths of Caracalla were typical of the venues built by the state to fulfill the leisurely habits of the inhabitants of Rome in antiquity.

Further Reading

Boethius, Axel, and J. B. Ward-Perkins. *Etruscan and Roman Architecture*. Harmondsworth: Puffin, 1970.

Piranomonte, Marina. *The Baths of Caracalla.* Translated by Sandra Ciuffini. Milan: Electa, 1998.

Yegül, Fikret K. *Baths and Bathing in Classical Antiquity.* Reprint ed. Cambridge, MA: The MIT Press, 1996.

CA D'ORO, VENICE

Style: Gothic
Dates: 1424–1437
Architects: Marino Contarini?, stone cutters and sculptors Giovanni Bon and Mario Raverti

Facing southwest onto the Grand Canal, the façade of the Ca d'Oro, the House of Gold, exemplifies the fantasy of Venice. Formerly gilded, it has interlaced *Gothic* arches on the left, much praised by Ruskin, and a mostly plain wall adorned with precious marble revetments on the right. The resultant asymmetrical façade has three superimposed *loggias*, their *arcades* topped by *ogee-arches* (flame-like arches with S-shaped sides) and *quatrefoil tracery* (forms similar to a four-leafed clover) that contrast with the largely solid wall pierced only by two small square windows and four windows with ogee openings. This sort of composition typifies the visual miracle of Venice: an evanescence caused by humidity in the atmosphere and the glittering reflections off the water that create on the buildings a chromatic, dancing sense of movement of singular beauty. The Saracenic *crenellation* that crowns the building dissolves the façade into the hazy sky.

Marino Contarini, Procurator (public prosecutor) of Saint Mark, belonged to a patrician family and held one of the most important posts in the Republic of Venice. In 1406, he married Soramador Zeno, and in 1412, he purchased the Palazzo Zeno, which he planned to replace with a "Golden House." Contarini was inspired by myths of the original Domus Aurea (Golden House) built by the emperor Nero in Rome during the first century. Contarini guided the work on the palazzo, giving detailed instructions to the builders and masons, and many historians name him as the architect of the building. His lack of professional training is cited for certain discrepancies in the overall organization of the Ca D'Oro.

Contarini kept, or slightly remodeled, the portico of five *bays* of round-headed arches from the old Palazzo Zeno. This portico for the ground floor,

Ca d'Oro, Venice. View of the façade from the Grand Canal.

called the fontego, created an impressive approach from the Grand Canal. Two groups of masons—one from Lombardy directed by Matteo Raverti and one from Venice led by Giovanni Bon—worked on the palazzo from 1424 to 1437. Venetians preferred to borrow motifs from the international Late Gothic style of architecture rather than motifs from Lombardy, thus the ogee arches. The tracery on the superimposed loggias is an imaginative variation on the upper *gallery* of the Doge's Palace. Above the quatrefoils in the second story loggia of the Ca D'Oro the sculptor has added half-quatrefoils to dissolve the pattern of the tracery into a strange sinuosity that creates a surprising *chiaroscuro*. The façade of the palazzo thus becomes animated by the play of light in a way that could be understood as a painting in two dimensions that incorporates all the charm of Venetian art.

As imaginative as the façade may be, the Ca D'Oro remains a typical Venetian house that varies little from the traditional plan. The narrow and rather deep site forces the house to assume a long rectangular shape, with the short side facing the canal, and it results in two entrances, one from the Grand Canal, the other, in the case of the Ca d'Oro, from a street that runs parallel to one long side of the house. The latter doorway opens into a small courtyard in the back quarter of the house that is furnished with a classically inspired wellhead and a dogleg staircase that gives access to the second level, or *piano nobile*. Because all circulation of goods was by boat, the ground floor, or fontego, was reserved for storage and business. A long central hall, the androne, opened onto the canal entrance and extended the entire length of the house. On one side of the androne was a series of offices, while on the other were storage rooms, the small entrance courtyard, and the kitchen.

The residential part of the Ca D'Oro, called the piano nobile, was superimposed on the ground floor and duplicated its plan. Above the androne was the portego, which functioned as a large reception hall and as an antechamber to the more private rooms of the palazzo, which were located to either side. Even though, because of the limited frontage on the canals, the Venetian house is extremely deep, the exterior loggias of the facade provide a remarkable amount of light to the interior rooms.

Further Reading

Arslan, Edoardo. *Gothic Architecture in Venice*. Translated by Anne Engel. London: Phaidon, 1972.

Chambers, David S. *The Imperial Age of Venice, 1380–1580.* London: Harcourt Brace Jovanovich, 1970.

Frankl, Paul, and P. Crosley. *Gothic Architecture.* New Haven, CT: Yale University Press, 2000.

Goy, Richard J. *The House of Gold, Building a Palace in Medieval Venice.* Cambridge: Cambridge University Press, 1993.

CAFFÈ PEDROCCHI (CAFÉ PEDROCCHI), PADUA

Style: Eclectic
Dates: 1826–1831; 1842
Architect: Giuseppe Japelli

Piazza Cavour is a public square and center of activity in the city of Padua. On its southeast corner, a smaller piazza is filled with the tables and chairs of a café housed in a handsome neoclassical building. This is the Caffè Pedrocchi. Two small pavilions using the *Doric order* flank a large recessed entrance *portico* that is two stories tall. It features a *gallery* fronted by *Corinthian* columns on the upper level. The Caffè was famous during the period of the Risorgimento (1848–1871), when Italy was struggling toward unification, and it became a monument symbolizing Padua and a landmark of urban improvements of the nineteenth century.

The philosophical changes of the Enlightenment and the political consequences of the French Revolution modified Europeans' idea of the "monument." If a monument were to be the symbol of the city in the nineteenth century, it could no longer be a church enclosed within its precinct, or a governmental building like the Palazzo della Ragione (the *basilican* stronghold of the courts), or the seat of the famous university created in 1222. Thus, the new

Caffè Pedrocchi, Padua. Architect Japelli juxtaposed Neoclassical, Egyptian, and Gothic styles in an eclectic mix.

monument for Padua became a privately owned coffeehouse, paid for by a successful businessman but open for the pleasure and conversation of the majority of his fellow citizens. Even so, the circle of traditional monuments inherited from the past was within five minutes' walk of the Caffè Pedrocchi. A guidebook published in 1842 explains that the coffeehouse unifies the nearby courts of law, the theater, and the university by creating a central place where all the citizens could gather.

The famous cafés on the Boulevard des Italians in Paris that catered to the affluent part of middle-class society in the first third of the nineteenth century

set the tone for the decoration in the Caffè Pedrocchi, but its architect, Giuseppe Japelli (1783–1852), surpassed these models. Japelli, who became internationally famous for his eclectic fantasies, had been trained by Giannantonio Selva (1754–1819), a gifted neoclassical architect of outstanding competency who designed the Teatro della Fenice in Venice.

Japelli took part in the architectural development of Padua in the first half of the nineteenth century. Pedrocchi's café was planned as an analogy to a "machine," with the different rooms corresponding to handsome mechanics who cared for the apparatus. It was open day and night and never closed. On the ground floor, the Caffè was originally, in 1831, connected to the Borsa, or stock-exchange room. The second floor, not opened until 1842, offered an array of rooms of various shapes and sizes, each with a different theme and style.

After 1866, the three rooms on the ground floor of the café were remodeled and upholstered in white, red, and green, the colors of the flag of the newly unified Italian state. The red room, modeled on a basilica, was in the center. It opened onto an exedra (a curved recessed space) that contained a counter carried on lion's paws, which Japelli designed. The passage of time was symbolized by two relief sculptures executed from models by Thorvaldsen that showed Dawn and Night on either side of a clock.

The second floor of the café evoked a universal spirit of the cultures of mankind: an Etruscan room, an octagonal Greek room, an armory, Moorish cloakrooms, an Egyptian room, a Renaissance room, and a Herculaneum room that led into the ballroom dedicated to Gioacchino Rossini. Japelli worked with illusion, stretching the dimensions of rooms and opening new perspectives everywhere. When walking through the elaborately decorated rooms, one has the feeling of wandering through a puzzle of artistic, political, and historical references.

The collaboration of Pedrocchi and Japelli created one of the masterpieces of Italian eclectic architecture in which styles and themes borrowed from an array of cultures and historical periods were brilliantly combined into a venue symbolizing the new Padua that was open to all of her citizens.

Further Reading

Meeks, Carroll L. V. *Italian Architecture 1750–1914.* New Haven, CT: Yale University Press, 1966.

Possamai, Paolo. *Café Pedrocchi.* Milan: Skira, 2000.

CAMPIDOGLIO (CAPITOLINE HILL), ROME

Style: Mannerist
Dates: 1538–1655
Architects: Michelangelo; Giacomo della Porta; Girolamo Rainaldi

From 1534 to 1549, Pope Paul III supported building projects in the two poles of power in Rome. The first was the seat of Catholic religious authority, the unfinished Basilica of Saint Peter; the second was at the traditional political heart of Rome, the Campidoglio or, as the Romans called it, the Capitoline Hill. For both tasks, Paul III required the services of an artist-architect of unquestionable ability so he turned to Michelangelo.

Sixteenth-century Rome was much smaller in population and area than the ancient capital had been. The reduced urban area stretched from Saint Peter's to the Capitoline, a distance of 1.7 miles. Although it was the smallest of the seven hills of Rome, the Capitoline was the most important, as the site of both the arx, the ancient fortress of Rome, and as the location of the Temple of Jupiter Optimus Maximus, the most important of all the Roman state cults. During the upheavals and riots of the twelfth century when the Romans revolted against the Papacy and attempted to establish a commune free of church rule, the senators built a fortress in the ruins of the ancient Tabularium, the Roman state archives that were built into the side of the hill.

Responding to criticism leveled by Martin Luther and many others within the Catholic Church, Paul III agreed to separate the church from the city government and to renounce the claims, made by numerous popes in the past, that the pope had the right to rule the city. In a symbolic move, the pope ordered that the equestrian statue of a Roman emperor that had stood in front of Saint John Lateran for centuries be moved to the Campidoglio. The statue was thought at the time to represent Constantine, the first Christian emperor, but it represents Marcus Aurelius, the philosopher-emperor who reigned from 161 to 180. In effect, one could read the relocation of the statue as symbolic of the transfer of power from the church to the city. Michelangelo was opposed to moving the statue, but he finally agreed to the pope's wishes and began to develop a plan for the piazza atop the Campidoglio that would be the setting for the statue. Lack of funding and political unwillingness delayed the completion of Michelangelo's scheme for more than 100 years.

Michelangelo's plans, if any physical plans ever existed, were typical of his manner of working; that is, they were continuously changed as he modified his ideas and developed his designs. Vasari testified that in 1568 he saw a very

rich drawing for the Campidoglio but none is preserved. The senatorial fortress at the back of the open space around the statue of Marcus Aurelius and the Palace of the Conservators, for the elected city magistrates, were in ruinous condition and in need of new façades. Michelangelo proposed a third building, to the left, to complement the Conservators' Palace, but because it had no specific purpose and also because it masked the Franciscan church of the Aracoeli, it was not built until the seventeenth century.

Michelangelo designed the piazza as a balcony opening onto the city, with a view of Saint Peter's in the distance. Because the Capitoline was a hill with two summits, he created a three-level plan. Two ramps were constructed coming from the Piazza Aracoeli at the north. One was steep and led to the Church of the Aracoeli, the other was gentler and led to the piazza in front of the Senators' Palace. Giacomo della Porta (1533–1602) improved the latter ramp by transforming it into a series of inclined steps in 1581–1582. Against the light, the piazza offers a *chiaroscuro* vision of the three masses of the buildings, which are crowned by heavy *cornices* that function like dark brows shading the façades below them. On the facades of the palaces giant *pilasters*, column-like structures flattened against the wall, extend through both stories of the building and are framed on the ground floor by two diminutive *columns* behind which is a covered *portico*. In front of the Senatorial palazzo, a double staircase inspired by Michelangelo's design for the staircase of the Medici Library in

Campidoglio, Rome. View of the ramped stairs ascending to Michelangelo's piazza with the Palazzo Nuovo (New Palace) at left and the Senators' Palace visible behind the colossal statues of Castor and Pollux.

Florence, created a third level for a platform from which public addresses could be given.

Michelangelo's strong feeling for chiaroscuro, for contrasts of light and dark, his individualistic handling of geometry and space encouraged him to play with perspective in adapting the disposition of the preexisting buildings. As in the **Piazza Pio in Pienza**, the buildings on the sides of the Campidoglio are not at right angles to each other; the angles of their façades converge toward the entry staircase, reversing the normal expectation of parallel lines appearing to converge toward a distant point. Gaps between the three buildings at their corners open onto impressive views of the Forum below. The Senator's Palace becomes, consequently, a transitional element between the plastic body of the staircase at the entrance to the square and the space of the Forum at its back. In this process of visually connecting the spaces and memories of Rome, Michelangelo created, on the entrance side of the piazza opposite the Senators' Palace, a long balustrade supporting antique statues, which opens onto the horizon of the city dominated by **Saint Peter's dome**.

A collection of antique sculptures, many of them acquired by previous popes, were offered in public celebration of the Campidoglio and were installed in the Conservators' Palace. In 1940, Michelangelo's paving in gray and white stone in the shape of a star with twelve rays was finally completed. Inspired by a manuscript of Isidor of Seville (c. 560–636), it represented the movement of the planets around the earth and gave expression to the ideal of Rome as the caput mundi (the head of the world).

Further Reading

Ackerman, James S. *The Architecture of Michelangelo.* 2nd ed. Chicago: University of Chicago Press, 1986.

Argan, Giulo Carlo, and Bruno Contardi. *Michel-Ange, architecte.* Paris: Gallimard, 1991.

CAPITOLINE HILL. *See* Campidoglio.

CARACALLA, BATHS OF. *See* Baths of Caracalla.

CASA RUSTICI, 36 CORSO SEMPIONE, MILAN

Style: Contemporary
Dates: 1933–1936
Architects: Pietro Lingeri and GiuseppeTerragni

During the 1930s, the city of Milan was changed by the rise of an efficient upper middle class that was modern in its way of life and was looking for new buildings without the heavy overlay of nineteenth-century ornament. A preference for abstraction was advanced by the art gallery of the Milione led by its owner Ghiringelly, a group of painters, and two gifted architects Pietro Lingeri and Giuseppe Terragni. Lingeri was a highly skilled technician. Terragni was a member of the avant-garde and for that reason, in 1926, became a member of the Fascist Party, which initially supported avant-garde architecture. He was already famous for his Casa del Fascio in Como (1932–1936) in which he celebrated the State guided by Fascist principles. Conforming completely to modern ideals and showing his desire to equal Le Corbusier, Terragni's Novocomum in Como (1927–1929) was an apartment block with a façade that resembled the prow of an ocean liner facing onto the lake.

Lingeri and Terragni received commissions for several apartment buildings from members or friends of the Milione group. The first of these was designed for Victor Rustici for a site in the new urban plan of Milan, a central feature of which was the Corso Sempione, a tree-lined avenue nearly 300 feet long. Designed to be an expression of the new prestige of the city, it connected the Sforza Castle and the Foro Buonaparte (built during the French Revolution) with the recreational areas of the Lake Districts in the northwest. The Corso developed into a fashionable district of advanced modernity and a safe place for financial investment.

The Casa Rustici was originally intended to be a two-story private house but it became a building of luxury apartments with a penthouse on top where Rustici would live. Avant-garde architects, who took part in the international debate on modern architecture, adhered to certain ideals advanced by the modern movement. One of these, espoused by Le Corbusier, was to eliminate the traditional enclosed courtyard for both sanitary and aesthetic reasons. As an Italian delegate to CIAM (the International Congress of Modern Architecture), Terragni took part in the debate leading to the publication of the Athens Charter in 1933. The charter laid out modernist concepts of rationalist urban planning and was heavily influenced by Le Corbusier.

Casa Rustici, Milan. A poetic approach to modern apartment building design on Corso Sempione by Lingeri and Terragni (1933–1936).

Plans for the Casa Rustici, made by Terragni and supported by Lingeri, called for dividing the site at 36 Corso Sempione into three sections measuring 40 feet by 80 feet. The central unit would be at the rear of the courtyard; the other units, on either side of it, would be structures containing five levels of apartments. Each unit was accessible by a staircase, and there was a passenger and a freight elevator in each unit. Efficiency was paramount with easy access and a minimum area given over to corridors. The kitchens and some of the bedrooms opened onto the courtyard. The living rooms were on the outside of the units. They had windows that overlooked three different avenues, and because of this, the units seemed unusually spacious. Because the via Fratelli Induno on the left of the building did not align in a right angle with the street in front of the casa, a small tower was inserted into the corner, which expanded the space of some of the apartments.

The architects brought a rather poetic approach to the modern movement, which was combined with their sensibility to such advanced ideas as the creation of a new building type for the apartment block; the relation of the building with the space of the street (Corso Sempione); and the manner in which the apartment block addressed public space. Terragni linked the two wings containing the apartments with six long, slender balconies that traversed the front of the courtyard and created the vision of a façade when viewed from the Corso. Since that façade was all but transparent, its balconies projected a

modern approach to ways of living. Transparency meant exposing oneself to public view. The building soon had a popular nickname, the "Blackbird's Cage."

Casa Rustici's façade is very well ordered, with a ground floor containing shops, the garage, and access to the second-floor lobby. Above this are five levels of balconies under the owner's penthouse, which is on the top floor. This penthouse had large terraces on the roofs of the two side apartment blocks that were connected by a long *gallery* spanning the open central courtyard. As Gio Ponti has said, a lyrical order defined the Casa Rustici.

The Town Planning Administration of Milan, however, was highly critical of the Casa Rustici. Even though the architects knew all the building ordinances, the administration charged them with total ignorance of building codes, with formal anarchy, and with the creation of an unknown building type. Consequently, the building permit was refused nine times between 1933 and 1936.

Lingeri and Terragni's final success proves that they were creating something new. However, their approach to the modern movement in architecture shows that they were attempting to go beyond strict rationalism. Poetry and transparency were, for them, demonstrations of a new attitude toward the city. Far from condemning rationalism, as Le Corbusier would do, they changed it by imagining new building types. Their attitude predicted the Italian criticism of the modern movement after the end of World War II, in the 1950s. Lingeri's and Terragni's flexibility of mind and their way of working against the difficulties they had to face are a good introduction to contemporary post war architecture in Italy.

Further Reading

Hitchcock, Henry-Russell. *Architecture: Nineteenth and Twentieth Centuries.* New Haven, CT: Yale University Press, 1977.

Saggio, Antonino. *Giuseppe Terragni, Vita e Opere.* Rome: Editori Laterza, 1995.

CASA TORRE, SAN GIMIGNANO

Style: Romanesque
Dates: Twelfth to Thirteenth Centuries
Architect: Unknown

Completely walled behind medieval fortifications, the city of San Gimignano is famous for its thirteen remaining case torre (tower houses) built in the twelfth and thirteenth centuries. Its skyscraper skyline on a hilltop

can be seen from all the surrounding roads, making it look like a medieval ancestor of New York City. Saffron cultivated in the surrounding countryside brought tremendous prosperity to the city; the precious herb was collected and exported to Pisa, Genoa, France, and the Netherlands. The main street followed a nearly horizontal course of 2,000 feet at an elevation of 900 feet from the San Giovanni Gate (1262) at one end of the city to the San Matteo Gate at the other. A sequence of charitable hospitals for pilgrims, small churches, stables for horses, shops, and places to stock merchandise lined the street. These establishments were typical of the services offered to the merchants and travelers on which the San Gimignanese families depended for their businesses and prosperity. Strong civic regulations maintained order in these various activities. The center of the city was organized around two different squares, or *piazzas*. The Piazza della Cisterna (Cistern Square) was a triangular-shaped marketplace, which was also used for public feasts and tournaments. In the center of the piazza was a well, or cistern, originally built in 1273 and enlarged and embellished in 1343 by the podesta (mayor) Guccio Malavotti. A large elm tree provided some shade in the piazza for many years. Connected to the corner of the Piazza della Cisterna was the second and more prestigious square, the Piazza del Duomo. Around this square were located the Collegiate Church, the Palazzo Publico (the city hall), and the Palazzo del Podesta (governor's palace). Both squares were surrounded by the residences—and the towers—of the most affluent citizens.

Medieval streets and houses in Tuscany, the region of Italy where San Gimignano is located, as well as in many other parts of Italy, reflected local customs that may seem unusual to us today. Many daily activities took place out of doors. Water was collected at the public cistern; bread was cooked in a common oven; washing was done at a public washhouse; and bathing occurred in public facilities. Women, selling things or talking together with their children in tow, would gather for a long time on benches or seats on a street, which was called a piazza, a place to stay. Privacy was virtually unknown in the Middle Ages. Simple houses included a shop on street level with two or three stories above. Affluent merchants could afford to extend the basic structure of a "merchant house" (called a "casa-fondaco") vertically to form a tower. These towers thus became symbols of a family's financial success, its power in the community, and its membership in the ruling class.

The casa torre of the Ardinghelli (thirteenth century) was typical. It is located at the upper end of the Piazza della Cisterna, close to the famous tower of the Commune called La Rognosa, which, at 165 feet (roughly the height of a modern fifteen-story building), was the tallest of the San Gimignano towers. Civic policy forbade building any structure of equal or greater height.

The Ardinghelli house had two separate parts, each one vertical and surprisingly narrow. Above the monumental arched entrance to a shop or a storeroom for merchandise, the walls rise upward to the level of a fourth or fifth story that contained the family's private rooms. The shop was furnished with benches for the display of goods for sale called "banks"—the Italian language

Casa Torre, San Gimignano. Medieval tower houses that once reflected the wealth of their owners today create a skyscraper skyline.

does not distinguish between "banks," meaning financial institutions, and "benches." More than seventy towers were built in San Gimignano during the twelfth and thirteenth centuries. Lack of prosperity led to their diminishing number; in 1580, only twenty-five remained, while today there are only thirteen.

Attached to the incredibly thin towers, typically measuring only about 15 feet on a side and soaring up to 150 feet were wood balconies and other constructions. These wooden structures provided a great deal of useable space, and a network of gangways facilitated connections between the different buildings. Although the wooden structures have disappeared, the *corbels* (projecting stones) and holes in the walls for the *beams* used to support them are still visible. The towers were used for security and protection during the constant riots and street battles that took place between the two dominant political factions in the city. The Guelphs demanded a (relatively) democratic form of government and supported the political power of the Pope; the Ghibellines favored aristocratic rule and supported claims to Tuscany made by the Germanic Holy Roman Emperor. Legislation passed in the fourteenth century made the building of towers illegal and led to the demolition of most of the medieval structures.

Further Reading

Campbell, C. Jean. *The Game of Courting and the Art of the Commune of San Gimignano, 1290–1320.* Princeton, NJ: Princeton University Press, 1998.

Fanelli, Giovanni, and Francesco Trivisonno. *Città antica in Toscana.* 2nd ed. Florence: Sansoni Editore, 1983.

White, John. *Art and Architecture in Italy, 1250–1400.* New Haven, CT: Yale University Press, 1993.

CASTEL DEL MONTE, PUGLIA

Style: Gothic
Dates: 1240–1250
Architect: Unknown

Emerging from the top of a hill in barren solitude, an enormous octagonal structure flanked by eight octagonal towers is a surprising sight. This is the Castel del Monte built by Holy Roman Emperor Frederick II. With no real adaptation to its site, the pure geometry of the Castel scarcely makes sense as a fortress. At an elevation of 1,800 feet above the hills of the Murge region, it commands a vast view of the surrounding landscape. However, it is

so far from any city or cultivated area that it has little military value and does not control any military or commercial routes. In addition, the total absence of defensive dispositions and lack of a moat prove that the Castel del Monte could not have been built as a military stronghold.

In the thirteenth century, the location of the Castel was famous for its vegetation and abundant water resources. During the reign of Frederick II (1220–1250), the region of Pugila experienced a period of great prosperity, which was based on agricultural production and the consistent development of overseas trade with the Middle East. Though Frederick II was born in Italy in 1194, he was a German, the grandson of Frederick Barbarossa (1123–1190). He had an unusual personality that deeply impressed his contemporaries. Skeptical of the Roman Catholic Church, and developing materialist attitudes, he gathered about him a court of mathematicians, scholars, artists, and architects. Frederick was committed to promoting the study of Greek and Arabic texts in the Christian West and was strongly influenced by the Arab philosopher Averroes. Suspicion of Frederick's Arabic knowledge, which was condemned by Saint Thomas Aquinas, and his apparent lack of reverence for the power of the papacy caused two popes (Gregory IX and Innocent IV) to excommunicate him.

Although it is only one of the numerous castles Frederick built in Puglia, the Castel del Monte, with its sharp geometry and the absolute splendor of its details both inside and out, is unlike any of the others. Unfortunately, the emperor died before he and his court could inhabit the building. During centuries of neglect, it was used as a prison, and in the eighteenth century, its ornamentation was plundered. All the marble columns and window frames were taken by the Bourbons and installed in the great garden park of the Royal Palace at Caserta.

The building is based on an octagonal solid hollowed out in the center into an octagonal courtyard. Eight towers, also octagonal, are attached to the main body at the corners. Five of these towers served utilitarian functions, including bathrooms, while the other three contained spiral staircases leading to the second floor rooms. There are two entrances in the main block of the building. One is an undecorated service entry; the other is a splendid reinterpretation of an antique doorway with classicizing *pilasters* and a grand *pediment* that is indicative of Frederick's interest in reviving the arts of antiquity and in collecting Greco-Roman artifacts. The wall mass is only infrequently pierced by openings. There are six windows on the ground floor and eight *ogee-arched* windows (windows with pointed arches that have reverse curved tops) on the upper level. The interior octagonal courtyard is severe with only a row of eight *arches* on the ground-floor level. There were six doors on the upper story, which opened onto the courtyard. They appear to have been connected by a wooden *gallery* that ran around the walls above the top of the ground-floor arches.

The interior of this very abstract building is divided into two stories of eight identical trapezoidal rooms, all with *vaulted* ceilings. The central square of each room is covered by a *Gothic ribbed vault*; this is flanked by *barrel vaults*

with pointed, rather than semicircular, cross sections. Everywhere, the perfection of the stonework indicates masons of incredible ability and suggests that they were recruited from the lay brothers of Cistercian monasteries such as Santa Maria di Ripalta sul Fortore in the northern part of Puglia. Frederick turned to the Cistercians because he wished to introduce Gothic style and technology into southern Italy, and the Cistercian monasteries offered the best models.

The decoration of the rooms suggests *Byzantine* or antique sources. Slabs of coral limestone lined the walls and framed the windows. On the ground level, mosaics covered the floors. On the top floor, the wall surfaces are built using the antique Roman brickwork technique in which three horizontal layers of bricks are alternated with rows of square bricks set on the diagonal to form a net-like pattern. Roman architects called this type of brick facing "opus mixtum." As was typical of castle interiors, the rooms inside the Castel del Monte had limited light sources. Doors and windows facing the inner court allowed reflected light to enter, but without direct sunlight, the interiors must have been rather dark.

The choice of an octagonal plan with subsidiary octagons at the corners is an unusual one for a castle. This has caused scholars to debate not only the function of the building but also the meaning of its form. It has been suggested that the Castello was actually a hunting lodge built for the accommodation of Frederick's falcon hunts. The meaning of the plan may also lie in the Christian symbolism of the octagon, the number eight being the fulfillment of Christ's incarnation, or the octagon as a mirror of the universe. Such esoteric symbols would be appropriate to what is known of Frederick's insatiable quest for knowledge.

Further Reading

Conant, K. J. *Carolingian and Romanesque Architecture 800–1200.* New Haven, CT: Yale University Press, 1974.

Gotz, Heinz. *Castel del Monte: Geometric Marvel of the Middle Ages.* New York: Prestel Publishing, 1998.

CASTELVECCHIO MUSEUM OF ART, VERONA

Style: Gothic and Contemporary
Dates: 1354–1357; 1957–1964
Architect: Carlo Scarpa for the modern additions and modifications

The medieval equestrian statue of Cangrande I della Scala (1291–1329), poised on a *concrete* balcony thrusting out from the upper parts of the dungeon of the medieval fortress of Verona, signals the mastery with which Carlo Scarpa treats an art museum installed in an old building. Cangrande I belonged to a Ghibelline family (Ghibellines supported the Holy Roman emperor) and was a famous condotierre (professional general, or warlord). He was also renowned as the patron of a period of extraordinary artistic activity in Verona. Cangrande's tomb, featuring his image as a knight on horseback, was erected in the center of Verona in the Scaligar Arches, his family's extensive burial grounds. After several centuries of exposure to the elements, the statue was moved into the museum of art in the Castelvecchio to protect it from further damage. Appropriately enough, since his ancestor is the center of the museum, the Cangrande II built the Castelvecchio (old castle) as the family residence in 1354–1357.

Castelvecchio Museum of Art, Verona. The medieval statue of Cangrande I della Scala is the focal point of Carlo Scarpa's installation.

Carlo Scarpa was asked in 1957 to organize an exhibition of medieval Veronese art in the castle and at the same time to begin renovating the old museum that had been previously installed there. He immediately realized the value of the Cangrande's statue as the initiating image for the exhibition. Given the role of Cangrande I as the patron of Verona's first period of artistic excellence, Scarpa decided that the statue should be the central point of the installation and that all movement around, up, and down should take place in relation to it. The statue's first position, raised on a stone pedestal, was changed between 1962 and 1964 to better display its artistic merits.

Knowing how important the figure of the Cangrande was to Carlo Scarpa's strategy, we have to grasp our relation to the work of art and enter deeply into Scarpa's museographic decisions. From the upper floor of the museum, we directly confront the statue, in a configuration that simulates an individual encounter with the Cangrande. Rather than being raised above us on a pedestal, it stands on the same level as we do, on the floor of a balcony. Cangrande's smile seems ironic; it conveys no sense of heroism, no nostalgia for an epic gesture. Scarpa has created a physical situation that allows the figure to address and speak to us, as if provoked, as though we were involved in a scenographic drama.

The figure is isolated from the background of a wall with horizontal layers of brick and stone construction that evoke different periods of history. The whiteness of the statue contrasts with the subdued colors of the medieval stone and brick fabric. Because of this, the image is a dominating presence, activating all of the space around it. Cangrande can be seen from many vantage points as we move through the museum. We are invited to play with the vision of the statue from around, below, and above as we cross the courtyard on a diagonal bridge, if we go downstairs to the ground level, or if we climb to the top of the wall. Thus, we experience the Futurist idea of a total vision in movement that conveys movement to the statue itself. The work of art escapes positivism; that is, it is not compared to other works of art but is given a sort of sacred meaning by the movement around it and by the building it inhabits.

Carlo Scarpa was opposed to architectural renovation but not to the play of the new within the old. The wall behind the Cangrande statue is full of chronological intricacies and is part of the original fabric, but much of the main wing of the Castelvecchio was built during the Napoleonic era sometime before 1814. In 1923, the façade of the building was reconstructed in a false medieval style that incorporated fragments of fifteenth- and sixteenth-century architectural sculpture that had been preserved in various venues in Verona. It was damaged by bombing in World War II and has since been repaired. The Castelvecchio officially became a museum in 1925.

The della Scala family had built a bridge across the Adige River that was a rear entry to the castle. It was demolished by German troops in 1945. Scarpa was called on to oversee the rebuilding of this structure, a task that he undertook with utmost respect for the past. His motto, "come'era, dov'era," which means "the way it was, the way it should be," guided the work on the bridge,

which made use of the original stones and bricks that were retrieved from the river and assembled with medieval techniques and without concrete.

While Carlo Scarpa respected the historic restoration of the Castello, in building the realm over which Cangrande presides, he superimposed a modern layer on the old with steel and concrete constructions, wooden beams, and splendid paving of cleanly cut stone. The process of restoration and improvement, which began in 1957–1962, proceeded slowly, giving Scarpa time to think and react to what existed and what he added. Cangrande's sculpture was added in 1962–1964, and the work was finished in 1967–1973. His integration of Cangrande's statue explains better than anything else how Scarpa conceives of an art museum. A careful reading of the museum allows us to follow his creative process and to understand how he arrives at his architectural decisions.

Further Reading

Allen, A. M. *A History of Verona.* London: Methuen, 1910.
Crippa, Maria Antonietta. *Carlo Scarpa.* Cambridge, MA: MIT Press, 1986.
www.comune.verona.it/Castelvecchio/cvsito/english/index1.htm

CATHEDRAL, CAMPANILE, BAPTISTERY, AND CAMPO SANTO, PISA

Style: Romanesque
Dates: 1064–1277
Architects: Buschetto and Rainaldus; Diotisalvi; Nicola Pisano; Bonanno; Giovanni Di Simone

The twelfth century was a period of great prosperity for Pisa. Following the Crusades, the Pisans developed a maritime empire in the Middle East. At the northwest corner of the city walls a vast area, called the *Piazza* del Duomo, was set aside for the building of a cathedral, a baptistery, a *campanile* (bell tower), and later the Campo Santo or cemetery. This area expresses the religious power of a Christian city-state as it contrasted itself to the Islamic culture of the Middle East. It should also be compared and contrasted to the municipal **Piazza del Campo** in Siena.

At Pisa, the open space, planted with grass, between the religious buildings was defined as an outgrowth of their interior sacred space. Looking more formal after the clearance of secondary buildings carried out in the nineteenth century, the Piazza del Duomo reveals an exceptional equilibrium between the buildings and open space, between mass and void. The position of the

Baptistery, Cathedral, and Leaning Tower, Pisa. An arrangement of buildings based on the mariners' observation of the stars.

baptistery, the cathedral, and the campanile was based on the position of stars in the Aries constellation on March 21. Sea merchants' night navigation could thus be reflected by the respective locations of their religious monuments.

The cathedral, begun in 1064 under the guidance of the architect Buschetto, is the conjunction of three *basilicas*. The main one extends from the entrance façade to the *apse*. It is intersected by two minor basilicas, each complete in itself, with *aisles* and its own apse. The minor basilicas act as *transepts* in a *Latin cross plan*. The architect Rainaldus added three more *bays* to the nave (1261–1272), prolonging it in the direction of the baptistery. There is total continuity in the *groin-vaulted* aisles and wood-covered *galleries* throughout. An oval *dome* towers above the *crossing*.

The use of the same building materials in the three other buildings in the complex enhances the sense of irresistible unity and allows for considerable freedom in the introduction of various types of marble that reveal a poetic approach to the use of materials. The façade of the cathedral probably reflects Lombard freestanding galleries and is made of a glittering white limestone of the best quality. Because it was also used for the baptistery, the amount of limestone needed was so great that a canal was built to transport it from the quarries in Monte Pisano to the building site.

The baptistery was begun in 1152 by the builder Diotisalvi but was not completed until a second building campaign from 1250 to 1265 directed by Nicola Pisano, who based it on the Church of the Holy Sepulchre in Jerusalem. A double ring of raised galleries wraps around the interior of the baptistery which is covered by a conical vault. Nicola Pisano sculpted a pulpit that offers a display of Late Gothic sculpture and is the precedent for the cathedral pulpit (1302–1311) made by his son Giovanni.

The campanile, inspired by the Early Christian belfries of Ravenna, suffered from foundation problems almost from the beginning. They are the basis for its nickname, the Leaning Tower. Begun in 1185 under the supervision of Bonanno of Pisa, instability of the foundations interrupted the work in 1185. A century later, in 1275, construction was reinitiated by Giovanni di Simone, who attempted to correct the inclination by giving the campanile an unexpected banana shape. The bell tower is eight stories tall and has six superimposed galleries that replicate those on the cathedral façade.

The Campo Santo, or cemetery, is a series of three courtyards or "atria," the medieval Latin term for cemeteries. Its ground is reputed to be sacred because the earth was brought from the Holy Land as ballast in the Pisan ships when they returned from Palestine.

Further Reading

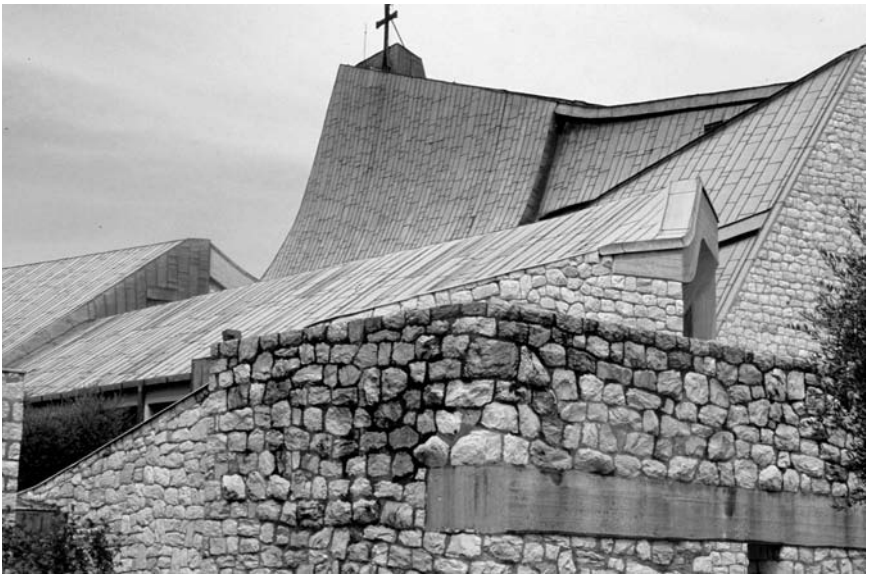
Conant, K. J. *Carolingian and Romanesque Architecture 800–1200.* New Haven, CT: Yale University Press, 1974.

Shrady, Nicholas. *Tilt: A Skewed History of the Tower of Pisa.* New York: Simon and Schuster, 2003.

CHURCH OF THE AUTOSTRADA, SAN GIOVANNI BATTISTA, CAMPI BISENZIO

Style: Contemporary
Dates: 1961–1971
Architect: Giovanni Michelucci

Eight miles west of Florence on the Autostrada del Sole is a large industrial suburb called Campi Bisenzio. In 1439, just fourteen years before the fall of Constantinople to the Muslims, it had been used as a camp to house the Byzantine delegation to the General Council of the Greek Orthodox and Roman Catholic churches. Today, travelers on the Autostrada, the Italian superhighway, may stop for a few minutes at this site to contemplate the Church of the Autostrada, a building of irregular volumes that matches the mood of the harried Italian driver.



Church of the Autostrada, Campi Bisentio. A memorial for workers killed during the construction of the Italian superhighways designed by Giovanni Michelucci (1961–1971).

Thick massive walls of irregular stones contrast with a precious copper roof. The angular lines, the color of the stones redolent of sunlight, and the playfulness of the rooflines dissolve the boundaries of the building and delay the perception of its exact shape. Michelucci's concept for the church was based on processional movement that forms a continuum with the experience of driving a car on the motorway. The processional pathways that lead to the church mix various spaces; balconies, passageways, and resting places are carefully ordered so that they delay the revelation of the church at the end of the procession.

Inside, the main room is covered by a *concrete* vault suspended like a tent on surprising branched pillars that condition the space and create a maze-like feeling of expressionist style. The church belongs to the design approach commonly called "organic architecture." Its curving roof establishes visual links both with the hills of Tuscany that surround it and with the Autostrada that passes by. One stops to wonder: is this pure architecture or a gesture in space full of discrepancies that reveal its creator as a man of doubt, a tormented believer? The tree-like pillars suggest desolation, a sense of evil that was compared by Paolo Portoghesi, another famous Italian architect, to the anguished, brutally expressive figures in Picasso's great painting *Guernica*. The brutal cutting of the windows through the structure expands the plasticity of walls and space, but it complicates the overall image.

The expressive freedom of the Church of the Autostrada, in particular its clashing, unpredictable forms, is Michelucci's reaction to the modernizing process that occurred in Italy in the 1960s. The harshness and austerity of aesthetics in the 1960s distorted the traditional relation of the building to the

landscape. With roots in modern engineering, 1960s architects combined structural innovations with new architectural experiments, creating a difficult tension between an environmental approach and freedom of space.

Giovanni Michelucci was opposed to the architectural conformism of the so-called modern architects in his country. As a confirmed individualist and a Roman Catholic of tormented belief, Michelucci had an exceptional creative capacity that could turn any proposal, no matter how unfit, into beautiful architecture. With his irresistible charisma, he was a major talent in Tuscany after World War II. Michelucci's journal *La nova città* focused on a synthesis of urban design and architecture. His later buildings show him working with contradiction and developing space starting from the essential supporting structure, an idea he learned from studying the French architect August Perret. Michelucci's Stock Exchange in Pistoia, a monument of surprising harmony, reveals his experiments both with what he took from Perret's practice and with his development of a concept of modern architecture that was truly heterodox, that is, opposed to what he considered the oversimplification posed by modernist "truths." He exaggerated the enveloping wall and used structure illusionistically.

Like Le Corbusier's Ronchamp (1950–1955), to which it has been compared, the Church of the Autostrada is a reaction to, or even a revolt against, modern architectural orthodoxy. As such, both are major church-building landmarks of the second half of the twentieth century. Michelucci's church is a powerful protest that resists rational argument. Ludovico Quaroni, a major Italian architect, found Michelucci's church to be "a strong and rare point of reference in Italian architecture" and "a grandiose celebration." The church design is rooted in a transformed tradition that memorializes a large shelter of ineffable space outside time. More than its refusal to submit to the past and to an inherited construction tradition, the Church of the Autostrada constitutes an ephemeral birth of the new and a summit in postwar Italian architecture.

Further Reading

Dal Co, F. "Giovanni Michelucci: A Life a Century Long." *Perspecta* 27 (1992): 98–115.

Dal Co, F. *Storia dell'Architettura Italiana, il Secondo Novecento.* Milan, 1997.

Michelucci, G. "A Conversation with Giovanni Michelucci." *Perspecta* 27 (1992): 116–39.

Portoghesi, P. "La Chiesa del'Autostrada del Sole," *L'Architetturra, Chronachi e Storia.* 101 (1964).

CHURCH OF SANTA COSTANZA. *See* Mausoleum of Constantina (Church of Santa Costanza), Rome.

COLLEGIO DEL COLLE AND EXTENSIONS, URBINO

Style: Contemporary
Dates: 1962–1983
Architect: Giancarlo di Carlo

Urbino is a small university town where 20,000 students receive instruction in a community of 9,000 people. The old city is walled in. It is famous for the **Ducal Palace** built for Federico de Montefeltro in the fifteenth century and for the leading group of artists and architects who were associated with the city: Luciano Laurana, Francesco di Giorgio, and Piero della Francesca. Urbino is the birthplace of the great Renaissance painter Raphael; his colleague in working for Pope Julius II, Donato Bramante, was born in a nearby community. Against this background of personalities of the highest prestige in the arts, emerged Giancarlo di Carlo, an architect of the twentieth century. He was asked by Mayor Mascioli of Urbino and Dean Carlo Bo of the university to take part in the development of a new campus in 1951. The men decided that the university should be separated from the venerable city center and that the first residential buildings and instructional areas should be built on a hillside. Because of long debates over the construction of the school, the actual building did not begin until 1962, and the final extensions that completed the Collegio del Colle were not finished until 1983.

Two-thirds of a mile west of Urbino's historic center, built on a hill and therefore invisible from it, the Collegio del Colle is a university that is conceived as a city. This idea parallels that of the Ducal Palace, which was also organized as an ideal Renaissance city. Fascinated by the old city and even more by the way of life of its inhabitants, de Carlo's thinking stressed both the idea of the individual and the idea of his/her social connections within the urban group. His primary goal was diversity, which was explored through participation in long dialogues. De Carlo's method was open: He listened to others, he carefully examined the spaces they lived in, and he studied the site proposed for the Collegio in order to understand its potential.

On top of the hill, a former Capuchin *convent* was converted into the administrative center. Below it, opening onto the spectacular vista of the hills and mountains to the west, de Carlo imagined his city growing through different stages. As building progressed, each stage of the Collegio project received a specific and individual treatment that insured flexibility. The completed Collegio del Colle of 1966 spread over the slopes of the hill in a design that took advantage of the natural beauty of the site.

Collegio del Colle, Urbino. Giancarlo di Carlo designed the school as a series of terraces stepping down the hillside (1962–1966).

Later extensions to the college built from 1973 to 1983 provided an additional 850 rooms and were simple variations on the original design concept. The Collegio del Tridente (Trident College) steps down the hillside; the Collegio del Aquilone (North Wind) is organized as a small street between two wings of buildings; and the Collegio della Vela (the Sail) has eight buildings on a splendid stretch of planted terraces in which the construction disappears into the absolute presence of Nature.

Giancarlo de Carlo is one of the most important architects in Italy today. In the 1950s, he was loosely associated with an architectural group called Team X, an association of young creators who wished to adapt (not to betray or totally reject) the ideals of the International Congress of Modern Architecture (CIAM), which was led by Le Corbusier, Walter Gropius, and Mies van der Rohe. Always his own person, never deferring to the authority of any group, de Carlo's idea of modern architecture was that it should have a certain modesty and a respect for simple everyday life and for local culture—all of these to be incorporated within the idea of "spontaneity," which he borrowed from Roman architectural circles in 1951. Growth and variation, ideas he derived from his admiration of Frank Lloyd Wright, are also very tangible factors in his creation of the Collegio del Colle.

As architect, urban planner, and teacher, de Carlo represents Italian attitudes toward history. Along with Ernesto Rogers (**Velasca Tower, Milan**) he believed in historical continuity. From the ideas of Benedetto Croce, he derived the concept of history as living material demanding contemporary use.

For de Carlo, today's behavior and social habits should be expressed by contemporary architecture so that tempered modernism becomes familiar. The Collegio del Colle expresses de Carlo's aspirations for architecture. By conceiving the university as an extension of the old city, for which he submitted a restoration plan in 1964 to the Historic Preservation Committee, de Carlo used his university project to bring the old into harmony with the new. The successful complement of college and historic city are ample evidence of de Carlo's talent.

Further Reading

McKean, John. *Giancarlo de Carlo.* Paris: Editions du Centre Pompidou, 2004.
Zucchi, Benedict. *The Architecture of Giancarlo de Carlo.* Oxford and Boston: Butterworth Architecture, 1991.

COLONNADE OF SAINT PETER'S BASILICA, ROME

Style: Baroque
Dates: 1656–1667
Architect: Gianlorenzo Bernini

In 1590, during the reign of Pope Sixus V, the architect Giacomo della Porta finished Michelangelo's *dome* over the *crossing* of Saint Peter's but not his plan for the church as a whole, which was altered when Carlo Maderno added a huge *nave* in 1609–1626. Maderno was responding, although reluctantly, to a century-long demand by the clergy for a more functional church that could accommodate liturgical processions and the vast number of pilgrims who came to worship at the site of Saint Peter's burial place. Gianlorenzo Bernini, who contributed numerous sculptural decorations to the interior, was asked by Pope Urban VIII to create a canopy to mark the site of Saint Peter's tomb under Michelangelo's dome. Urban was accused of plundering the bronze decorations from the **Pantheon** to build this canopy, the famous *Baldacchino* (1624–1633), a sculptural tour de force of huge dimensions that formed a transitional element between the floor of the church and the *lantern* of the huge dome 365 feet above.

Pope Alexander VII Chigi (1656–1667), a man of great moral integrity, was an amateur student of architecture. Rarely in history have an architect and client been so extensively involved in religious and artistic discussions as were

Colonnade and Piazza of Saint Peter's, Rome. Bernini's masterpiece, which abstractly represents the embracing arms of the Catholic Church, viewed from the top of Michelangelo's dome.

the pope and Bernini. The two men met daily or weekly, and Alexander recorded their conversations in his personal journals. The *atrium*, or entrance courtyard, in front of Constantine's basilica of Saint Peter had been destroyed to build Maderno's new nave and façade, and Alexander decided that it should be replaced with a monumental *piazza* to welcome large crowds of visitors. In Bernini's words, the piazza was to welcome "not only Roman Catholics whose faith would be confirmed but also Protestants in order to reunite them to the church and non-believers to be illuminated by faith" (Wittkower 1973, 195). Bernini's first project for the piazza in 1656 was rejected because it was out of scale with Saint Peter's. In March 1657, the pope suggested that Bernini create an oval piazza, an idea that Bernini developed with great skill and imagination.

As he had done at **Sant' Andrea al Quirinale**, Bernini set the oval transversely, that is, with its long axis perpendicular to the church and its short axis in line with the processional axis of the church and Maderno's nave. The transverse axis is in line with the Egyptian obelisk that had been brought from the ruins of the spina (central dividing line) of Nero's circus (racetrack) in the Vatican area and erected in front of Saint Peter's by Domenico Fontana in 1586. The new position of the ancient monument on the transverse axis of the piazza recalls its location on the spina of the ancient oval racetrack. At 600 feet from Maderno's façade and nave, which hid Michelangelo's dome, the obelisk marked a vantage point from which the dome was visible. It also marks the point where the longitudinal and transverse axes of the piazza intersect.

Bernini used the piazza to create perspective devices that reduce the apparent size and proportions of Maderno's façade, which was considered much too broad. By doing this, he created a reference to Michelangelo's designs for the **Campidoglio**, aligning the oval piazza with a second piazza in front of Saint Peter's that, like the Campidoglio, has a trapezoidal shape with sides diverging from the façade. This creates a reverse-perspective system similar not only to Michelangelo's but also to that used by Bernardo Rossellino in the **Piazza Pio II in Pienza**.

Bernini's trapezoidal piazza is flanked by two low, enclosed corridors that frame the massive staircase up to the entrance porch of the church and continue the lines of the great *colonnades* of the much larger oval piazza, which consequently surround the crowds in it "like embracing arms," as Bernini described them. He used a strict Palladian *Doric order* for the colonnade, which is composed of four parallel rows of columns. Between each pair of columns is a vaulted *aisle*, the two *vaults* between the side pairs being lower than the one in the center. Pope Alexander requested this triple colonnade as a reference to antique examples.

As he was very much involved in the planning and building of the piazza, the Pope also demanded both a scale model and a full sized mock-up of a section of the colonnade. These were executed in a nearby house that would enable him to judge the actual dimensions and approve the proportions. Standing on pedestals behind the balustrade over the columns are 140 statues, each about 10 feet tall, that represent the Catholic saints, popes, martyrs, and founders of monastic orders. Propaganda and religious fervor are united in this display of the glorification of saints and their intercession for the believers.

Beyond faith, function was also a key factor in the Saint Peter's piazza. The disposition of the oval permitted the vast crowds of worshippers to see the pope when he appeared in the Benediction Window in the upper level of the church's façade and also when he gave his blessings from the balcony of the Papal Palace on the north side of the piazza. To improve sight lines, Bernini created a pavement for the piazza that is not a flat surface but rather is bowl shaped, that is, hollowed out toward the center. The ground slopes gently upward from the obelisk in the center toward the edges of the oval where the colonnades stand some five to seven feet higher. The shallow bowl shape of the piazza gives most of the 250,000 people who can congregate there a good view of the ceremonies and of the Pope. In a sense, the oval shape of the piazza, Bernini believed, recalls the outline of Michelangelo's dome.

Bernini's design turned the area in front of Saint Peter's into a vast, open urban gathering place that symbolically embraces all the people of the world. It is like the auditorium of a "teatrum mundi," a world theater focused on the papal drama. The piazza is a great space where everyone could gather and be persuaded of the authority of the church. As C. G. Argan (1991) has observed, Bernini created a space that articulates a sacred monument and a city square whose space becomes sacred. Its unexpected openness in form and spirit is characteristic of Roman *Baroque* architecture.

Further Reading

Avery, Charles, and David Finn. *Bernini, Genius of the Baroque.* Boston: Bulfinch Press, 1997.

Borsi, Franco. *Bernini.* New York: Rizzoli, 1984.

Hibbard, Howard *Bernini.* Reissue ed. Harmondsworth: Penguin, 1991.

COLOSSEUM, ROME

Style: Roman
Dates: 70–80 CE
Architect: Unknown

The Flavian Amphitheater, called the Colosseum, was in Roman antiquity one of the most daring buildings ever constructed and demonstrated, among other things, the skill of Roman architects at organizing the movement of huge crowds into and out of an enormous structure. It could seat 50 to 73,000 spectators who came to see the amazing (but sometimes cruel) spectacles called "ludi." Because of its oval shape, the *amphitheater* provided every seat with a thrilling view of the battles and contests performed in the arena. The flat, oval wood floor in the center of the amphitheater, the arena, takes its name from the Latin word for sand, with which it was covered in order to soak up blood.

The Colosseum was the center of an entertainment complex that included baths, shops, fountains, and the training schools for the gladiators who fought in the amphitheater. Although the name Colosseum is often mistakenly assumed to be a descriptive term for the building's size—it is, after all, the largest amphitheater ever built by the Romans, 617 feet long, 524 feet wide, and 200 feet tall at the outside edge—"Colosseum" is really a nickname that refers to a statue. Next to the amphitheater stood the Colossus of Nero, a 150-foot-tall bronze statue of the emperor whose head was changed to that of Sol the sun god after Nero's suicide. It was this immense statue—colossus—that, after the year 1000, gave its nickname to the Flavian Amphitheater.

To a remarkable degree, the building has survived to the present despite natural disasters and human depredation. Fires caused by lightning in 217 and 250, as well as earthquakes in 442 and 508, required repairs, but the Colosseum functioned continuously until Christianity became the official religion of the Empire and condemned the bloody spectacles. The last gladiatorial show was held in 404, and the final "venatione" (wild animal hunt) took place in 523. Beginning with an earthquake in 847, the plundering of building materials became common and continued until the eighteenth century. Materials from the

Colosseum, Rome. The largest amphitheater in the Roman Empire.

Colosseum were used for the Palazzo Venezia, the Chancellery, and Saint Peter's Basilica. After it was consecrated to the memory of Christian martyrs in the eighteenth century, careful restoration was begun and continues today.

Gladiatorial games were originally entertainment provided for the people by the republican nobility—first for public funerals but later as a means of attracting political support. When Rome became a monarchy, the imperial power controlled the gladiatorial schools and delegated the organization of the shows to public officials. An organizer, called the "editor," was in charge of financing the shows, procuring the animals, and selecting the gladiators who had been trained by a "lanista."

To the east of the Colosseum was the Ludus Magnus, the largest training facility for gladiators in Rome. It contained dormitories for them and an oval arena of 206 by 138 feet surrounded by a double level of seats. The gladiators gave up their freedom—and their citizenship, if they had it—when they entered the Ludus and received hard training and tough discipline while learning their fighting skills. Combat in the area was often deadly, but successful gladiators became wealthy public celebrities.

A large area around the Colosseum was dedicated to practical concerns. Dead bodies were received at the "spoliarium" and the wounded were treated at the "saniarum." There was also a large storage facility for the scenic machines and other paraphernalia needed for the games.

Inside the Colosseum the wood floor, covered with sand, hid a complicated series of passageways and galleries used for the movement of gladiators, the storage and release of wild animals, and the delivery of scenery, which was raised from underground on elevators moved by a series of counterweights. In the arena, a forest containing a hundred exotic animals could be created for the "venationes," or the entire space could be flooded for the presentation of naval battles.

Spectators in the Colosseum sat on marble benches in a bowl-shaped seating area, called the cavea, made up of a series of tiers much like a modern football stadium. The cavea was divided horizontally into five sections beginning at the bottom, next to the arena, and ending at the top of the building, 100 feet above the ground. The five sections were divided into wedge-shaped sections by flights of stairs leading both down from the entrances and up to the top of the seating. Seventy-six entrances, each one numbered, allowed the spectators to find their seats and exit with a minimum of confusion—the "tickets" given to the people had the entrance and seat number written on them. It is estimated that the entire 70,000 spectators could leave the building within five minutes.

Seating in the amphitheater was hierarchical: each class of Roman society was assigned a specific location in relation to the arena. The senatorial class occupied the lowest tier of seats closest to the action. Behind them, the various ranks were disposed all the way to the upper tier, where the freedmen, the poor, and the slaves took their places. Women were permitted to attend the spectacles in the Colosseum, but they had to sit in the upper tier with the lower classes.

Entering the cavea tiers and finding seats required a complex organization of circulation. This was accomplished by four levels of *vaulted galleries* that ran around the exterior of the oval seating area; they were connected by numerous staircases. Building techniques were adapted to support the cavea. Various types of materials were used according to their weight-bearing capacity in relation to the loads they had to carry. Large blocks of a special travertine, a type of sedimentary stone found near Rome, encase the lower parts (the first two stories) of the skeleton of the building. Two lighter volcanic stones, peperino and tufa, were used for the inner walls and the upper parts of the structure. The vaults supporting the seating were made of *concrete* and brick-faced concrete, which was disguised by decorations made of stucco.

What remains of the exterior of the Colosseum is impressive. It is composed of three stories of handsome *arches* framed by half-columns that appear to carry horizontal bands, or *entablatures*, that are continuous around the building. Above these is a solid fourth story. The half-columns of the three arched stories are arranged vertically according to their relative simplicity: *Doric* on the ground floor, *Ionic* above that, and *Corinthian* on the third level. At the fourth level, the solid wall carries *Composite pilasters* (flattened columns) that originally alternated with large bronze shields. At the top of the fourth level are brackets that were used to support tall wood posts that supported the vast awning, called a "velarium," that could be unfurled to protect the audience from the midday sun. The Colosseum remains the most impressive example of architectural grandeur from Roman imperial times.

Further Reading

Gabucci, Ada. *The Colosseum.* Los Angeles: Getty Trust Publications, 2002.

Hopkins, Keith, and Mary Beard. *The Colosseum.* Cambridge, MA: Harvard University Press, 2005.

Richardson, L. R., Jr. *A New Topographical Dictionary of Ancient Rome.* Baltimore: Johns Hopkins University Press, 1992.

Ward-Perkins, J. B. *Roman Imperial Architecture.* New Haven, CT: Yale University Press, 1992.

CONFRATERNITY OF SAN BERNARDINO, CHIERI

Style: Baroque
Dates: 1740–1744
Architect: Bernardo Vittone

Confraternities are congregations of laypeople who meet together for worship and also for common support and good works. In Italian cities, they could also be a force for transforming the urban setting since they financed the building of meeting halls and chapels. Chieri was a prosperous city in the vicinity of Turin, separated from the larger city by gentle hills. It played a role in regional government, but Chieri was really famous for its wines and for the linen produced in the local textile factories. The Confraternity of San Bernardino was founded in 1577, fourteen years after the conclusion of the Council of Trent to oppose the Protestant Reformation and to expand the Catholic Reformation or what historians once called the Counter-Reformation.

In the seventeenth century, the Confraternity counted the most prestigious traders, textile manufacturers, and the leaders of the city communal government among its members. In 1675, they found a prominent site on the large Piazza del Piano where a small chapel was built by the Luganese architect Bettino, who worked primarily for the Duke of Piedmont in Turin. The chapel proved too small for the meetings and storage of documents, so in 1694, the Confraternity commissioned the engineer Quadro to design a larger building. He proposed a church on a *Greek cross* plan with a *dome* over the central *crossing*, but his scheme was not built for forty-six years. By the time the building was finally finished, Quadro was dead and little attention had been paid to the details of construction. Defects in the building led to the disaster of August 30, 1740, when the dome collapsed leaving only the walls of the church standing.

The leaders of the Confraternity hurried to Bernardo Vittone (1702–1770) for advice. He convinced them that all that could be saved from the original building were the walls and that it would be most wise economically to use them in the rebuilding. Vittone then proposed that he design a lofty dome to replace the one that had collapsed. He submitted three drawings on March 25, 1741, and the Confraternity selected the most magnificent one. By 1744, the rough brick construction of the dome was finished and soon covered by the delicate work of two stucco artists.

Bernardo Vittone, "ingeniere" (literally engineer, but "ingenious architect" would be more appropriate), was an architect from Piedmont who was admired by his *Baroque* contemporaries because of his extensive knowledge of the famous architect Guarino Guarini (1624–1683). In fact, after having studied in Rome, Vittone convinced the Theatine Fathers to support the publication of Guarini's *Architettura civile* (*Civil Architecture*), written in 1737. Vittone, though a diligent architect and engineer—he designed new canals to improve agriculture in Piedmont—failed to get major commissions from the court in Turin and designed chiefly small buildings, city halls, hospitals, chapels, and churches in remote villages that are difficult to find today.

Vittone's dome at San Bernardino combines luminosity, space, and clever architectural devices to create the effect of a dome hollowed out by light. To understand his design process, consider Baroque *vault* paintings. Most of them use a contour line, an outline based on the *cornice*, to frame a painted, illusionistic vision of the sky above within which saints or mythological

Confraternity of San Bernardino, Chieri. The lofty system of Baroque arches and magical illumination is characteristic of the work of Vittone.

characters float among clouds. Baroque painters created the impression that the physical vault had been opened up to the sky. Baroque architects did much the same thing, using the real cornices and architectural moldings to create openings in a lower vault through which a vault above it can be seen. The space between the vaults became a "box of light," illuminated by well-positioned, often concealed, windows. Light is the dominant feature of these constructions, the openings in the lower vault becoming examples of what Vittone called an "occhio di lumiera," an "eye of light," or "light cell." Vittone became a talented interpreter of Newton (1642–1727), using the English scientist's optical observations in creating these light cells by taking advantage of the reflections of light on their sides. The frames of the cells function like lenses, focusing the lighting effects in an architectural translation of contemporary scientific experiments.

In creating his dome, Vittone, like many other Baroque architects, returned to *Gothic* building techniques, especially those used in churches where architects had created vast *lanterns* above the crossing of *nave* and *transept*. Compared with Vittone's dome, those lanterns were fairly simple; they were square in plan and their weight could be transferred directly to the four crossing *piers* and *arches* beneath them. But Vittone had to support a spherical dome within a square lantern, and instead of using *pendentives* (spherical triangles that are typically used to make the transition between a circular dome and a square supporting structure), he left a gap, creating the light cells that brought light down into the church and around the unusual dome. He covered the neighboring shallow *bays* the same way. This duplication of building elements multiplied the openings of light, and, reducing the dome to a number of crossed ribs, dismantled its physical structure, changing the church into what some historians have called "a lofty system of arches" separated by light cells. In effect, this Baroque scenographic approach (treating the interior as a set designer might) dematerializes the building and creates a total integration of light and space.

Further Reading

Pommer, Richard. *Eighteenth-Century Architecture in Piedmont; the Open Structures of Juvarra, Alfieri and Vittone*. New York: New York University Press, 1967.

Portoghesi, Paolo. *Bernardo Vittone, un architetto tra illuminismo e recocò*. Rome: Edizioni dell' Elefante, 1966.

Wittkower, R., et al. *Art and Architecture in Italy, 1600–1750*. 4th ed. New Haven, CT: Yale University Press, 1999.

CORNARO CHAPEL, SANTA MARIA DELLA VITTORIA, ROME

Style: Baroque
Dates: 1647–1652
Architect: Gianlorenzo Bernini

Cardinal Federico Cornaro, son of Doge Giovanni Cornaro, was the Patriarch of Venice. Soon after his arrival in Rome, he commissioned Bernini to build a sepulchral chapel in the western *transept* of the small church of Santa Maria della Vittoria. The chapel was to be developed around the figure of Saint Teresa of Avila who was canonized in 1622. Carlo Maderno had designed the church in 1608 for the convent of the Discalced Carmelites, the order that was founded by Saint Teresa.

In the western transept, Bernini set up a unified vision of painting, sculpture, and architecture beginning with a cloud-like flow of painting and stucco on the *vault* overhead and descending to a frame of dark and mellow marble. The monumental marble frame, which resembles the frame of an altarpiece, opens onto a niche flooded by light descending along golden rays. Instead of a painting, the frame contains the scintillating white marble statues of Saint Teresa and the angel who, she said, pierced her heart. To the right and left of the altar, on the sidewalls of the chapel, the gentlemen of the Cornaro family are shown seated in balconies that look like theater boxes discussing the vision of the saint. The dense glow of the mixed marbles conveys a sense of religious awe, as if the colored marbles had curative qualities, like semiprecious gems that could inspire spirituality.

Bernini's statue of the ecstasy of Saint Teresa is a complete and detailed visualization of her own account, according to which an angel came to her carrying a golden arrow pointed with fire. He penetrated her heart, which increased in God's love and gave her a feeling of overwhelming sweetness. Bernini's aim was to visualize a human event that took place at the limits of the supernatural: the absolute intimacy of Saint Teresa in ecstasy, indicating God's presence, and the saint's experience was to be revealed not only to the Cornaro family but also to any believer who saw it.

The whole structure of the chapel should be understood as a mental preparation for a spiritual experience. However, the ecstasy is transient and can be understood as the reduction of an instant to impermanency. Teresa called the angel flame-like, and her garments move like flames that flicker fleetingly in a breeze. Bernini sculpted the hard and resistant marble into reflective surfaces from which light flashes and shimmers like elusive flames. To fix the ecstatic

Cornaro Chapel in Santa Maria della Vittoria, Rome. Bernini's sculpture of Saint Teresa in ecstacy is the focus of the bel composto. Photograph courtesy of Fabio Barry.

instant, Teresa's head is thrown back, her eyes are half closed, and her lips are parted as if in a sigh. The cascade of light descending the golden rays behind the two figures represents a sudden flash of light coming from the Holy Spirit. Although the Cornaro family members in their balconies, and we ourselves standing in front of the railing of the chapel, belong to the real world, they and we are invited to glimpse the invisible, the miraculous, the metaphysical, the eternal for a precarious, an impermanent and instantaneous moment.

Bernini puts the figures of Saint Teresa and the Angel above the altar in a niche lit from above where one would expect to see a painting. The figures and architecture are an indissoluble whole, and the vault over the chapel is an illusionistic combination of painting and sculpture. It represents heaven and is populated by cherubs and angels, some of whom descend from the painted surface as three-dimensional forms modeled in stucco. Bernini has fused all the major arts—painting, sculpture, and architecture—into a fluid whole, making it impossible to isolate only one of them. All the arts are combined, organized into a montage where transitions between art forms that are governed by different rules and regimes are treated as a series of shifts from one level to another in continuous process, called "bel composto," to create a convincing reality. In "bel composto," the parts combine effectively into a single effect so that reality and illusion, life, and artifice, coalesce into a singular experience of the divine. Here the purpose is to connect a believer through Saint Teresa's ecstasy to God. Bernini's inspiration was the mental procedure, the spiritual exercises described by Saint Ignatius Loyola, which as a devout Jesuit, Bernini knew and practiced.

One of the many marvels of the Cornaro Chapel is the use of multicolored marbles. Bernini exploited the beauty of their rich tints and patterns to create a state of wonder in the viewer that leads to religious devotion. A close inspection of the details reveals different colored marbles used to imitate other substances. For example, the stones called "giallo antico" and "nero antico" are used to depict the fabric hung on the front of the Cornaro family's balconies, and "alabastro fiorito," which resembles walnut or olive tree roots, is used for the doors below. The chapel walls become a canvas: on the columns next to Saint Teresa, veins of the "brescia polychroma" recall the cloud that carries her figure. Bernini's "bel composto" used marble as a new painting tool, created ambiguities, and appealed to a mixture of reality and imagination to create a convincing revelation of the invisible.

Further Reading

Avery, Charles, and David Finn. *Bernini, Genius of the Baroque.* London: Bulfinch, 1997.

Careri, Giovanni. *Bernini, Flights of Love, the Art of Devotion.* Translated by Linda Lappin. Chicago: University of Chicago Press, 1995.

Fabio, B. "I Marmi Loquaci: Painting in Stone." *Daidalos* 56 (1995): 106–121.

Wittkower, Rudolf, et al. *Art and Architecture in Italy, 1600–1750.* Vol. 1: *Early Baroque*. Pelican History of Art. 4th ed. New Haven, CT: Yale University Press, 1999.

DUCAL PALACE, URBINO

Style: Renaissance
Dates: 1444–1482
Architects: Luciano Laurana; Francesco di Giorgio Martini

The beauty of the Ducal Palace at Urbino, its skyline with the twin turrets on the crest of the hill, defines both what a Renaissance prince was able to achieve and how a "condotierre" (warlord or professional general) could gather a leading group of artists to create a humanist retreat, which was the typical goal of Renaissance thinkers. Federico da Montefeltro (1422–1482) combined military accomplishments with outstanding cultural leadership, which supported his fame as an eminent patron of intellectuals and artists. This surprising mixture of war and peace explains a frantic life spent on the battlefield and a sense of reasoned maturity that influenced his life.

Federico was a warrior, a man of culture, and a shrewd political leader. In a time when a typical man's life expectancy was less than forty years he lived to be sixty; high-spirited, quick in his decisions, and thoroughly lucky. At the age of sixteen Federico was captain of the Montefeltro army. At twenty-two, he was count of Urbino, after having approved of, or caused, the murder of his half-brother Oddantonio, a disastrous ruler, in 1444. As vicar of the church, at twenty-five, he was delegated to rule a part of the Church's territory. Pope Sixtus V gave Federico the title of Duke when he was thirty, and at thirty-two, he became the general captain of the Italian League. He fought for the King of Naples, for Florence, for the Malatesta princes of Rimini, and for the Sforza of Milan. In 1460, after the death of his first wife, he married Battista Sforza, a woman of excellent character who was fully able to govern Urbino in his absence. Battista died in childbirth in 1472 but left to Federico an heir who was named Guidobaldo.

Federico's military success with Italian and foreign princes made him so famous that he was received in triumphal processions in many Italian cities. In Milan, Florence, Rome, and Naples he was welcomed at the most sophisticated courts, and there he encountered the new intellectual manners of the Renaissance. In all these cities, he was struck by the beauty of early Renaissance buildings.

Federico could rationalize his constant involvement in military activity (he was almost always painted in armor) by his belief that war would finance works of peace. As a political leader, he brought in a bureaucracy modeled on that of Florence to handle the financing and remuneration of the military. He also reformed the judicial courts to speed up their decisions, and he reduced the taxes of his subjects to a minimum.

Federico gathered around himself what might be thought of as a "school" of architects led by Luciano Laurana, who was probably advised by Alberti. Laurana created for the Duke of Urbino "a city shaped like a palazzo," or perhaps it is more accurate to say in reverse: a palazzo shaped like a city. The gentle court of Urbino, where young Italian princes flocked to be educated, was organized in a palazzo based on the latest revolutionary principles. Vittorino da Feltre taught all sorts of "sciences" including the development of a psychophysical harmony practiced by a society that desired a life of well-being.

The architects who built the Ducal Palace knew the style of contemporary palazzi in Florence, which was based on mathematical regularity and harmony of proportions. However, they decided not to emulate it. Instead, they worked with contrasts: the ordinary (the sequence of 250 rooms) versus the exceptional (the splendid courtyard at its center); the grammatical (the syntactical order of the courtyard) versus the arbitrary (the diagonal façade framed by twin towers that overlooks the steep ravine); the interior (the simple and flat city façade) versus the exterior (the sculptural façade facing the landscape with its recessed *loggias* and projecting balconies).

In all of the arts, the Ducal Palace should be understood as a laboratory. Federico's library reveals his passion for books while his "studiolo" (study)

Ducal Palace, Urbino. One of the most beautiful of all Renaissance courtyards designed by Luciano Laurana for the humanist prince Federico da Montefeltro.

incorporates an imaginative array of marquetry (wood inlay) doors that depict illusionistic views. Their theme is mostly the city; they are conceived as pure exercises in perspective as it had been developed in Florentine artistic circles. However, beyond displaying perspective perfection, the marquetry panels also trained the eye and the mind to envision the ideal city that the palace was promoting. Three of the panels from the "studiolo" focus directly on the ideal city: one is attributed to Laurana (still in Urbino); one is attributed to Fra'Carnevale (now in the Walters Art Gallery, Baltimore); and one is by an artist unknown (now in Berlin's Bode Museum).

Further Reading

Adams, L. S. ed. *Federico da Montefeltro and Sigismondo Malatesta: The Eagle and the Elephant.* New York: Peter Lang Publishing, 2003.

Osborne, June. *Urbino: The Story of a Renaissance City*. Chicago: University of Chicago Press, 2003.

FIAT LINGOTTO PLANT, TURIN

Style: Contemporary
Dates: 1915–1923
Architect: Giacomo Matte Trucco

Turin was destined to become an industrial city by the end of the nineteenth century and the beginning of the twentieth. It had adequate electrical resources to provide energy and access to an open plane ready for the development of industries that transformed the city into a dream for the jobless people coming from all over Italy, especially from the south. All were hoping for both economic improvement and civil progress. As a result, Turin grew rapidly; between 1911 and 1921, the census indicated an increase of 85,000 people, giving Turin a population of 500,000 inhabitants. The textile industry grew more slowly than metallurgy and automobile manufacturing, which employed 14,600 workers in 1911. Distant mountains and hills across the Po River provided a sort of limit to a constant urban sprawl.

FIAT, the Factory of Italian Automobiles of Turin, was created in 1899. After a crisis in car production in 1908–1909, Giovanni Agnelli was convinced that a concentration of modern means of production was required to ensure the future of his company. He planned a new factory after he had paid a visit to Henry Ford in 1912. Mass production became his guiding idea.

Fiat Lingotto Plant, Turin. Concrete ramps added after 1923 by Giacomo Matte Truco to improve the connection between the various levels of the factory.

Two miles south of the *Baroque* core of the city, with the help of Giacomo Matte Trucco, Agnelli designed a huge rectangular building—1,800 feet long and 264 feet wide—that contained five levels. *Concrete columns* supporting average spans of 20 feet standardized this modern assembly plant. Seventeen electrical elevators brought the car from ground level to the different floors where it was assembled in a sort of vertical version of Ford's assembly line. At

the top of the factory, a test track was provided for testing the finished automobiles. The interior of the building received light from a central courtyard 103 feet long in which were three small structures containing the elevators. The test track was 79 feet wide and nearly 3,300 feet long. It was protected by a 5-foot-high peripheral wall, and the turns at each end were given a steep slope so that testing at all speeds was possible.

When the building was completed in 1923, Agnelli realized that the elevators would have to be replaced. During manufacture, it was necessary first to test the chassis and then later, when the car was complete, it had to be tested again. This meant that every car had to go up and down in the elevators several times, which limited the efficiency of assembly. A beautiful ramp connecting all five levels was built to replace the elevators. The ramp was made of reinforced concrete and remains a testimony of the versatility of concrete construction.

Because the speed of the cars on the test track was limited and also because customers were not really interested in the test results, the racecourse on top of the Fiat plant had little value. The process of assembling the cars was now adapted to six levels as the area reserved for the test track was absorbed into the building. A horizontal, rather than vertical, factory was proposed in the 1930s, and by 1939, Fiat Mirafiori, designed by Vittorio Bonade Bottino, began to replace Fiat Lingotto.

As a contemporary critic pointed out, there was a Baroque quality to Giovanni Agnelli's Lingotto factory. By the time the raw materials, which were delivered by railroad at the lowest level, had reached the summit of their journey, the base matter had been elevated and spiritualized through the process of fabrication and assembly to produce a human tool called a car in a modern "ascension" parallel to that celebrated in the Baroque **Chapel of the Holy Shroud**, relating both factory and church through the same Baroque process.

The remodeling of the unused Lingotto Plant into a commercial hall and exhibition center by Renzo Piano (**Renovation of Old Harbor, Genoa**) brought new life to this remarkable industrial landmark. Some work of transformation was necessary, such as the revision of the formerly monotonous skyline of the building, but today it has an essential role to play in the plan for Turin's modernization.

Further Reading

Comoli-Mandracci, V. *Torino, La città nella storia dell'Italia.* Rome-Bari, 1973.

Fauri, F. "The Role of Fiat in the Development of the Italian Car Industry in the 1950s." *The Business History Review* 70 (1996): 167–206 (includes photo).

Kirk, T. *Architecture of Modern Italy*. 2 vols. Princeton, NJ: Princeton Architectural Press, 2005.

FLORENCE CATHEDRAL DOME, FLORENCE

Style: Gothic; Renaissance
Dates: 1420–1436
Architects: Arnolfo di Cambio; Filippo Brunelleschi

In the second half of the thirteenth century, Florence entered a period of great prosperity and its population increased to 100,000 inhabitants. The Florentine economy benefited from the city's status as a major banking center for all of Europe. The first gold florin was minted in 1252 and became the most trusted monetary instrument in Europe for several centuries. Florentine textile and luxury goods production relied on trading associations located in numerous countries.

Political struggles deprived the noble families of their political power and led to the establishment of a government of the people, mainly composed of leading merchants and craftsmen, in 1250. Resistance by members of the original aristocracy continued until 1293, when they were finally ousted by the Free Commune. During this period, from 1280 to 1300, the sculptor and architect Arnolfo di Cambio, who was born near Siena in Colle di Val'd'Elsa, made a comprehensive urban plan for Florence. The plan was dominated by a new cathedral that would replace the old church of Santa Reparata, which was demolished in 1285. The new church, in the Gothic style, was begun in 1296 and given a new name and dedication: Santa Maria del Fiore. As later in Bologna and Milan, the scale was monumental; the Florentine church could hold 30,000 worshippers.

Italian *Gothic* is quite distinctive. It combines design elements from antique and Early Christian architecture with the use of French Gothic *ribbed groin vaults* (intersecting vaults with ribs on the ridges that spring from the corners and cross at the apex), but unlike French Gothic, it does not use *flying buttresses* (exterior *arches* supporting the *nave* walls that connect the upper parts of walls with freestanding external buttresses). The *bays* (building units that extend from column to column) of the Italian nave tend to be wider than the bays in French Gothic buildings. For example, the four bays in the nave of Santa Maria del Fiore are equivalent to eight bays in a French *Gothic* cathedral such as Rheims.

The Black Death of 1348 reduced the population of Florence by half and revived the political competition between the "popolo minuto," the workers, and the bourgeoisie, the "popolo grasso." A strong disagreement began between master masons who built in the Gothic fashion and those who were

Santa Maria del Fiore, Florence. The dome and apse of the cathedral, hidden by houses today, are completely visible in Despouy's sketch, dated May 1900. Collection of the ENSA Versailles.

inspired by antiquity. In 1367, a large model at the scale of 1 to 16 was presented to the Florentine citizens. More *classical* than Gothic, it included a mockup of a huge *dome* covering the *crossing*, which no one knew how to build.

Fifty years passed without any serious work being done on the problem of roofing the enormous crossing of the cathedral. Then, in 1418, a competition to renew work on the dome was announced by the overseers of the works. The base for the dome was already in place and its octagonal shape determined the size and silhouette of the dome, which had to span 138 feet, nearly the 140-foot dimension of the great Roman dome of the **Pantheon**. Complicating the design and the problem of construction was the height of the Florence dome, which was projected to be 275 feet and was later increased to 285 feet.

Three men took part in the competition: the master mason Battista D'Antonio; the Florentine sculptor of the famous Baptistery doors, Lorenzo Ghiberti; and the Florentine jeweler Filippo Brunelleschi. To everyone's surprise, when the decision of the overseers was announced on April 16, 1420, there was no winner; all three competitors were appointed to supervise the construction program. Brunelleschi was well prepared for the work. He had conducted experiments in the engineering problems necessary to construct the dome and had made a simple and bold model that showed how his proposals would work. Equally important, he had submitted drawings and an accurate description of his plan in a document, the "modellum," which was kept with the city notaries.

Brunelleschi's plan was to build a double-shelled dome strengthened by a brick frame that was inspired by his study of the ruins of the ancient buildings in Rome but not based directly on any previous model. His brick frame, constructed of a herringbone pattern of interlocking bricks, resolved the greatest obstacle to the building of the dome, the impossibility of building a wooden framework (centering) to hold up such a large dome until it was finished. Brunelleschi's plan required neither centering nor scaffolding. He clearly and precisely specified all the building materials and their position in the structure. This manner of thinking through the project as a whole and determining every aspect of its structure, construction, and aesthetics was very different from the traditional ways of the masons and was to some extent the birth of the modern architectural profession.

Brunelleschi used innovative building techniques and guaranteed their success, but his creation of a new division of labor came into conflict with the medieval master builders who were traditionally in charge of design and construction. The workers went on strike from December 1430 until February 1431 because they resented being only the executants of Brunelleschi's plans and orders. In this situation, the architect had to prove his superiority and his competence, which Brunelleschi quickly did. From this time on, he was able to control the execution of the project he had defined in the model of 1418 and in the "modellum."

Brunelleschi became the leader of the modern manner that fascinated painters, sculptors, and musicians like Guillaume Dufay (1400–1474) who composed an anthem "Nuper Rosarum Flores" for the consecration of the dome by Pope Eugenius IV in March1436. All forms of art celebrated the rebirth of classical architecture—which we call the Renaissance—as the Florentines listened to the perfection of the music that created the effect of "songs descending from the heavens unto us below . . . murmur[ing] in our ears something of the ineffable and of the divine" (Giannozzo Manetti).

Further Reading

Dufay, Guillaume. *O Gemma Lux*. Harmonia Mundi, 2000.

King, Ross. *Brunelleschi's Dome: How a Renaissance Genius Reinvented Architecture*. New York: Penguin Books, 2003.

Prager, Frank, and Gustina Scaglia. *Brunelleschi, Studies of His Technology and Inventions.* Cambridge, MA: MIT Press, 1970.

FORUM ROMANUM, ROMAN FORUM, ROME

Style: Roman
Date: First Century BCE
Architect: Unknown

Imbedded within the ruins of the large area of the Roman Forum as it exists today, most of which was built during the Roman Empire, is the 750-by-450-foot rectangle of the much earlier Republican Forum. It lies to the southeast of the **Campidoglio (Capitoline Hill**), and the Via Sacra (sacred road), which ran parallel to the north side of the rectangle and was the route followed by Rome's victorious troops on their way to the Capitoline *sanctuary*. The size of the Republican Forum is not difficult to grasp today if one stands in front of the Temple of Julius Caesar and looks eastward between the ruins of the grand *Basilica* Aemelia on the right and the Sempronia, later called the Basilica Julia, on the left. Beyond the Aemelia, at the northeast corner, is the Curia Julia facing in the direction of the eight remaining columns of the Temple of Saturn and the three extant columns of the Temple of Vespasian in the southeast corner.

One of the most important buildings in the forum, the Curia was where the Roman senate met. ("Curia" was originally the name of a political and military division of the Roman people.) In 88 BCE, the dictator Sulla, who had

Forum Romanum, Rome. The ruins of the heart of the Roman Empire with the Colosseum in the background.

increased the number of senators from 300 to 500, replaced the Curia Hostilia, named after Tullius Hostilius, one of the early kings of Rome, with a larger building. Julius Caesar began to rebuild that structure when he reorganized the forum before his death in 44 BCE. By reorienting the new Curia somewhat, he weakened the original symbolic association of the Curia with the Comitium. The Comitium was a circular, stepped *amphitheater*-like place in front of the Curia where the Roman people (in contrast to the senate, which met inside the Curia) gathered to vote on legislation presented by the senate and to ratify the power of the consuls. Caesar was assassinated before he could complete his rebuilding, but his adopted heir Augustus finished it and renamed it the Curia Julia. The senate met, debated, and set policy in its "aula," an 84-by-58-foot room.

For the ancient Romans, "forum" meant an enclosed space, also called an "inaugural space," that was separated from the fabric of the town as a place for the assembly of the people, where they could engage in deliberation and vote. "Inaugural" meant the place was consecrated as an area where the augurs could predict the future by reading signs, like the flight of birds or the path of lightning, sent by the gods. In addition to functioning as a place for attracting society to participate in public affairs, the forum was also used for business and commerce. Shops, mainly for moneychangers, were lined up on three sides of the Forum. However, commercial transactions, guild meetings, even trials needed a convenient place for groups of people to gather. For these activities, private or public *atriums* (courtyards or halls with colonnades) were

available at the back of the shops. One of these, the Atrium Regium (Royal Atrium), may once have been the site of the residence of Numa Pompilius, the second king of Rome, and "regium" translated into Greek is "basilica," the generic name for these meeting spaces. When the small primitive atriums were replaced by large basilicas, the name was applied to halls that could be as large as 300 feet long, 100 feet wide, and 100 feet tall.

On the north side of the forum was the Basilica Aemelia, founded in 179 BCE by the Aemelia family and considered to have been one of Rome's most beautiful buildings. The great hall was surrounded by *vaulted ambulatories* (sheltered walkways) that gave access to *galleries* on the second floor. Inside, the diversity of marble *columns* in many different colors and the huge wood ceiling, 75 feet above the floor of the *nave*, or central space of the hall, were spectacular. From the balconies above the floor level of the nave, large audiences could attend famous trials (a podium was provided for the judges), political meetings, or commercial debates. The basilica was a multipurpose building, convenient for small group discussions as well as for large audiences. On the south side of the forum was the Basilica Sempronia of 174 BCE, that was replaced by the Basilica Julia, begun by Caesar and finished by Augustus in 12 CE.

Between the basilicas was a rectangular open space that, beginning in the third century BCE, was used for public executions and the spectacle of gladiatorial combats. Voting, commercial activity, trials, and entertainment all took place in the Republican Forum. A wooden structure, repaired by Caesar in 46 BCE, contained a ring of tribunes in the shape of an oval built of straight segments. Like the future **Colosseum**, there were hidden chambers dug into the ground below street level that were used as storage for stage shows and for the gladiatorial exhibitions that eventually found a more satisfactory location in the Colosseum. This displacement of activities from the forum was not the only one. At the end of the Republic, electoral meetings were moved to the Saepta Julia, a large area of 900 by 360 feet, enclosed by *porticoes* in the Campus Martius.

There were temples in the forum, most of which faced its eastern side, but places dedicated to the gods did not have to be dedicated only to the gods or take the form of buildings. For example, parts of the forum, such as the Curia and the Comitium were consecrated spaces. Below the state archives building that occupied the slope of the Capitoline Hill, the Temple of Saturn, founded in 497 BCE, and the Temple of Concord, of 397 BCE, celebrated, respectively, Saturn's teaching of agriculture to the first Romans and the power of Concordia to maintain good faith and harmony within the family and the state. The Temple of Concordia's plan is unusual because the *cella* (cult room) is wide but not very deep, which results in an emphasis on its transverse axis rather than the typical longitudinal axis. This disposition encourages the visitor to move about the cult room and not directly approach the statue of the god. During the early Empire, the temple was used as a sort of museum in which the Emperor Tiberius displayed his collection of Greek art.

This abbreviated view of the Republican Forum in Rome has stressed both its dedication, or consecration, to religious activities and its use for other activities: commercial, entertainment, and judicial as well as religious. As Rome grew and the forum was enlarged, many of its functions were moved to more suitable locations. But the Republican Forum remained the model used in Roman colonies all around the Mediterranean Sea and thus a point of identification of Roman culture everywhere.

Further Reading

Grant, Michael. *The Roman Forum.* London: Weidenfeld and Nicolson, 1970.

Gros, Pierre. *L'architecture romaine*. Vol. 1: *les monuments publics.* Paris: A et J Picard, 1996.

Richardson, L., Jr. *A New Topographical Dictionary of Ancient Rome.* Baltimore: Johns Hopkins University Press, 1992.

GALLERIA VITTORIO EMMANUELE (VICTOR EMMANUEL GALLERY), MILAN

Style: Eclectic
Dates: 1863–1877
Architect: Giuseppe Mengoni

A monumental *gallery*, whose entrances are celebrated by *triumphal arches*, connects the *Piazza* del Duomo (the square in front of the cathedral) in Milan with the Piazza della Scala, the location of the most famous lyrical theater of Italy. The Galleria is about 600 feet long and is intersected at a vast octagonal central space by a second gallery to form a *Latin cross plan* (a cross with one arm longer than the other three). The entire Galleria is covered by a splendid iron-and-glass *vault* that becomes, at the *crossing*, a large *dome* carried on sixteen iron ribs. At its crown, the dome is 145 feet above the ground. The six-story interior façades of the Galleria are overly decorated according to local Lombard tradition.

Giuseppe Mengoni (1829–1877), the civil engineer from Bologna who designed the Galleria, fell from construction scaffolding on December 30, barely three months after King Vittorio Emmanuele had inaugurated the Galleria (September 15, 1867). At this time, the building was not completed; the triumphal arch entrance on the Piazza del Duomo was still under construction. Just ten days after Mengoni fell from the scaffolding, the king died.

Vittorio Emmanuele Gallery, Milan. Iron and glass construction designed by Giuseppe Mengoni (1863–1867).

Milan's Galleria followed the proliferation of French *arcades*, which had expanded to the length of city blocks in the nineteenth century. Although Milan's building was constructed with the help of international finance, mainly by a British-owned company, many of its elements are French inspired. The Galleria was ultimately a monument to the glorification of Italian Unity built when Milan had become part of Free Italy. However, it was also a logical extension of the decision to redesign the center of the city after **Milan Cathedral** finally received its façade in 1806. At this point, it became urgently necessary to create a vast square in front of the church.

Numerous designs for the new city center were suggested during the Restoration period when Milan was returned to the Austrian Empire. After the victory of Napoleon III and Vittorio Emmanuele at Magenta on June 4, 1859, Count Belgioioso, commander of the liberated city, decided on June 28 to connect the Piazza del Duomo to the Piazza della Scala by a street named for the Italian king. An international competition was organized, and by June 1860, 220 projects were exhibited in the Brera Gallery. However, by the end of July, no winner could be agreed on. There were also problems with finance. A lottery had been organized, but it failed to collect more than a million lire instead of the five million that were expected. Since the expense of the project was estimated at fifteen million lire, international financing was required.

A commission of eleven members finally agreed to consider the proposal of Giuseppe Mengoni during a second-stage competition. Mengoni had strictly followed the guidelines of the competition and also included the best features from the first stage. After 1860, it took three years for all concerned to agree on the proposal, and two more years passed before the ceremonial laying of the first stone on March 7, 1865. Mengoni's plan of 1863 created a piazza in front of the cathedral and included all the features that had been proposed for the glorification of Vittorio Emmanuele: a king's *loggia*, an Independence Hall, monumental fountains, and two theaters opening on diagonals at the entrance to the gallery. None of this would be built except the gallery that was expanded into a Latin cross.

The complexity of the original plan and the dome in the Galleria, exactly the same size as the **dome of Saint Peter's,** demonstrate Mengoni's personal ambition and, of course, he enjoyed the comparison to Bramante and Michelangelo. He became highly respected by his contemporaries. The creation of a large communal building, such as the Galleria, signified the accommodation of vast crowds of the rising middle class of Milanese society, and the Galleria provided a central space for secular activities that was equal to the religiously oriented Piazza del Duomo. In addition to the large independent public space, the Galleria included rooms for clubs and coffee shops. Newspapers understood the value of the place; the famous *Corriere della Sera* opened office space in the Galleria in March 1876. Social unrest and large demonstrations in the Galleria also showed how much the citizens of Milan recognized its public utility.

Further Reading

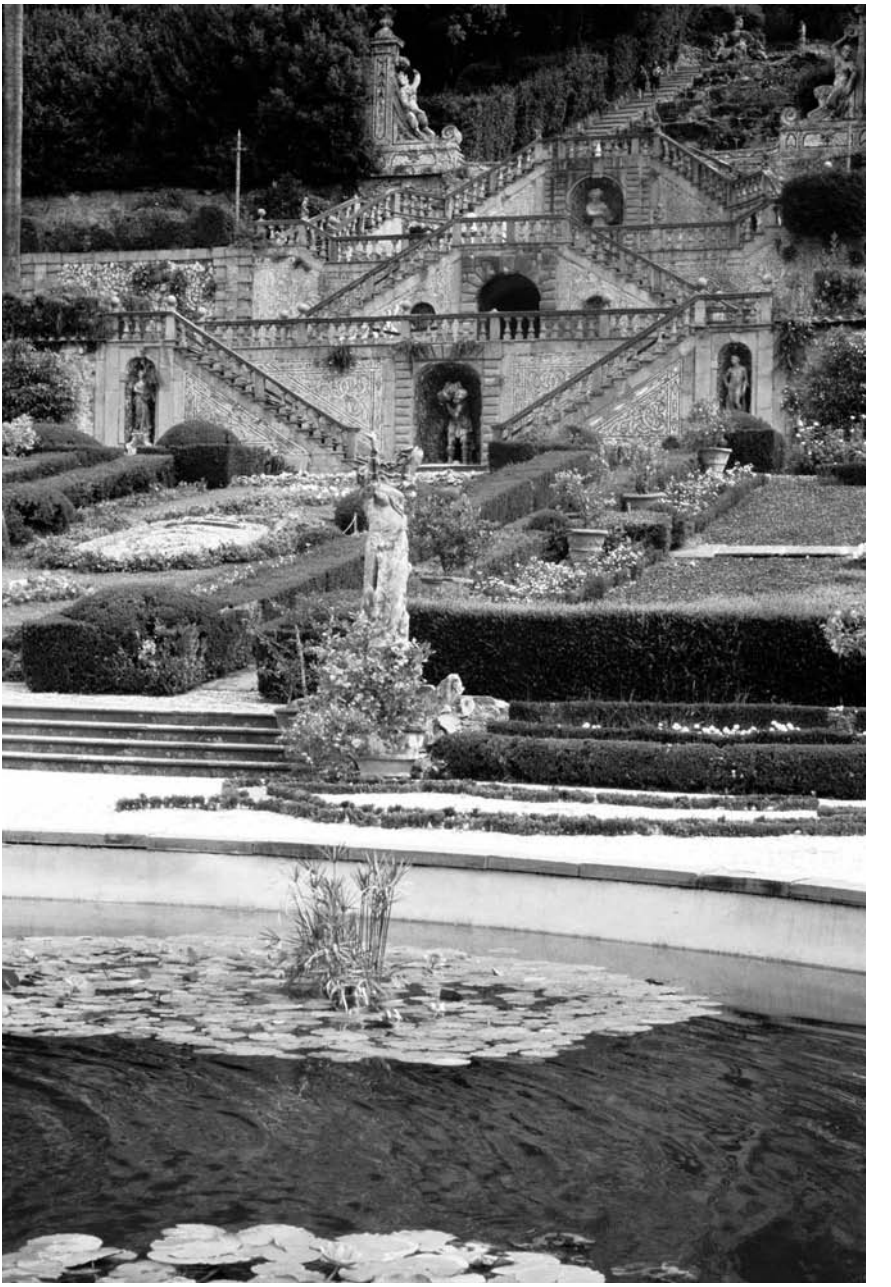
Geist, Johann F. *Arcades, the History of a Building Type.* Cambridge, MA: MIT Press, 1983.

Meeks, C. L. V. *Italian Architecture 1750–1914.* New Haven, CT: Yale University Press, 1966.

GARZONI GARDENS, COLLODI

Style: Baroque
Dates: 1650–1690
Architect: Romano Garzoni

The village of Collodi occupies a narrow ridge between two steep valleys. At the bottom of the ridge is a seventeenth-century palazzo of 100 windows that belonged to the Garzoni family. The site was difficult; a series of ramps provided access to the building, but it was impossible to create a garden in front of it because of the steepness of the ridge.



Garzoni Gardens, Collodi. Plantings, sculpture, and water are combined with terraces, grottos, and mazes in this large and complex Baroque garden.

Romano Garzoni (d. 1663) proposed to create a garden separate from the palazzo, located across the valley to the east. The garden would be easily viewed from any one of the four stories of the palazzo that faced in its direction. Out of a "precipitous horror of a rough slope" he manage to design and build a scenic garden independent of the palazzo, 600 feet long on the main axis and 430 feet on the transverse terrace. A description of 1652 glorifies Garzoni's work, even though it was not yet complete. It would require another forty years to finish the construction of the gardens; Garzoni would not live to see his masterpiece totally realized in 1690.

The fame of Garzoni's gardens was unsurpassed and famous people were struck by their beauty. The Archduke of Austria visited in 1662 and King Charles VII of Naples asked Diodati to design a similar project (never executed) for the park at Caserta. Repairs and improvements of the spectacular water displays in the Garzoni Gardens were required in 1786–1787.

Garzoni Gardens use perspective tricks and the techniques of set design to play with the appearance of height and depth. The slope of the ridge was divided into four sections. At the bottom, a flat terrace contains two symmetrical basins with large water jets at their centers. Yews are treated with fanciful topiary work in both abstract and representational shapes such as a tower, a bird, a boat, or a beast. A gentle ascent, formerly adorned with colored stones and flanked by orange or palm trees, reveals the full extent of both the height and breadth of the gardens. Three superimposed *bays* in the center open onto fountains containing terra-cotta figures or to the grotto of Neptune. The walls of the Boboli Gardens in Florence inspired the walls of the grotto. Simulated rock formations are combined luxuriously, and there are two small side-rooms for the preparation of refreshments. The final part of the gardens, at the top of the slope, offers a view over a watercourse that cascades down from the twin figures of Florence (with a lion) and Lucca (with a panther). A thick wood of green oaks (woods cover the slope) is divided by six narrow terrace-like walks in an arrangement called a "bassine." Laurel hedges combined with the green oaks formed a type of arbor offering silence, isolation, and inspiring scents. On top of the bassine, a curved basin receives a long stream of water emitted by the tall figure of Fame, which dominates the park.

A Baroque garden like Collodi asserts itself through a stupendous arrangement of flat levels imposed on a steep slope. Both walled in and opened to the distant landscape, these levels are sometimes isolated by a double hedge at their edges but offer views of the lower parts of the garden from different places. Visitors could hide in the bassine where they could listen to the play of waters cascading down or listen to pastoral poems in other remote areas. Two large terraces opened to the bottom level and a path flanked by palm or orange trees. At the top of the park is a bathhouse containing three bathing rooms and a place for musicians. At the end of the Imperial walkway, a small outdoor theater remains, now in poor condition, with curved hedges, a figure of Melpomene, and candelabra for night performances.

Further Reading

Hobhouse, P. *The Garden Lover's Guide to Italy.* Princeton, NJ: Princeton University Press, 1998.

Laras, Ann. *Gardens of Italy.* London: Frances Lincoln, 2006.

Ponte, A. "Le jardin de la villa Garzoni a Collodi." In Monique Mosser and Georges Teyssot, eds. *Histoire des jardins.* Paris: Flammarion, 2002.

GENOA, OLD HARBOR RENOVATION.

See Renovation of the Old Harbor, Genoa.

HADRIAN'S VILLA (VILLA ADRIANA), TIVOLI

Style: Roman
Dates: 125–135
Architect: Unknown

Below the city of Tivoli, a vast stretch of ruins, twice the size of the city of Pompeii, attracts scholars and large crowds of visitors fascinated by the ancient grandeur of Hadrian's *Villa*. Hadrian (76–138) became Roman emperor in 117 at the age of forty-two. His capacity for governing and his talent in conducting wars were balanced by a combination of the ethical philosophies of Epicurianism and Stoicism. He had demonstrated his competence as a military leader under his predecessor, Emperor Trajan, but Hadrian was also intensely interested in literature and the arts and had a strong fascination for architecture. Political reorganization and participation in the life of the provinces of the vast Roman Empire obliged him to travel for nine-and-a-half years; he spent only eleven-and-a-half years of his reign in Rome and at his villa near Tivoli. Hadrian greatly admired Greek culture and visited many cities in the Greek east, including Ephesus, Antioch, Alexandria, and especially Athens. He was an enthusiastic visitor of all the empire's outstanding landmarks, of remarkable landscapes, and he never hesitated to climb the highest peaks in the area.

Hadrian's villa at Tivoli was a location for governmental activities but, mainly, it was a place for relaxation. In this aspect, the villa was typical of the aristocratic country estates of the Imperial era. Pliny the Younger (c. 61–112)

has left accurate descriptions of aristocratic villas and the serene landscapes, both natural and man-made, that surrounded them. What is unique about Hadrian's Villa is that it consisted of a series of reminiscences of memorable sites from all over the Roman world that Hadrian had visited. His villa, for example, had a little Nile River, a canal (Euripus), an Academy, and a Poikilos ("Stoa Poikile" is Greek for a *loggia* decorated with murals). Hadrian's Villa thus took the traditional luxurious arrangements of a villa outside Rome to the acme of perfection and added new and spectacular effects.

The villa was built "as a marvel," according to the late Roman biography of Hadrian in the *Historia Augusta*, with its Poikilos, recalling the loggia in Athens decorated with paintings, its Canopus, imitating a canal leading to the Temple of Serapis in Alexandria, its Terrace of Tempe (named for a wooded area in Thessalia), and even a grotto called Hades. Very subtle arrangements in the plan of the villa provided for the mixture of large *vaulted* buildings, *galleries*, basins, and waterworks in which Hadrian's architects (Decrianus? or Apollodorus?) were able to prove their mastery of design and building.

Perhaps the single most influential feature for architects in later centuries was the misnamed Maritime Theater, or Circular Casino, hidden within a circular wall 15 feet tall and 150 feet in diameter, slightly larger than the **Pantheon**, which Hadrian had also commissioned. It is located on the southern edge of Hadrian's residence behind a huge terrace containing the Hippodrome, so-called because it is shaped like a racecourse. The large circular wall contains two concentric circular areas, one a *peristyle* carried on *Ionic columns*,

Villa of Hadrian, Tivoli. The Canopus, a souvenir of a canal in Alexandria, is decorated with copies of the caryatids that support the porch of the Erechtheum in Athens.

the other, a 5-foot-deep canal surrounding and isolating a central structure on a sort of island from the surrounding villa—and the world. This inner structure provided a retreat for the emperor. The Maritime Theater was not a structure to live in because it lacks necessary services and dependencies; but it contained, on the island retreat, what is believed to be a library to the east, a dining room (triclinium) on the south, and a private bath on the west side, which included a room for heating the bath. These three diminutive apartments were connected by a strangely shaped, courtyard with a semicircular basin that was contained in an unexpected semicircular wall.

The richness of the decoration—in red and yellow with black-and-red stuccowork and handsomely worked floor patterns—complemented the play of light reflecting on and from the water in the moat, reflections that created illusionistic effects on the spaces of the "theater." Hadrian's predilection for circular ground plans, which played such a major role in this isolated retreat of perfect equilibrium, must have been a challenge for his architects. However, it must also have stimulated their enthusiasm and creativity. Their unexpected architectural solution, without precedent in the well-known examples of Roman architecture, fascinated the Mannerist, *Baroque*, and even the Neoclassical architects, all of whom were in search of a new and different architecture. They found it hidden in the memory of the Circular Casino.

Further Reading

MacDonald, William, and John A. Pinto. *Hadrian's Villa and Its Legacy.* New Haven, CT: Yale University Press, 1995.

Sear, Frank. *Roman Architecture.* Ithaca, NY: Cornell University Press, 1982.

Ward-Perkins, J. B. *Roman Imperial Architecture.* New Haven, CT: Yale University Press, 1992.

HOLY SHROUD CHAPEL. *See* Santissima Sindone, Turin.

HORREA EPAGATHIANA AND EPAPHRODITIANA, OSTIA

Style: Roman
Dates: c. 145–150
Architect: Unknown

Increasingly, Imperial Roman cities became densely populated. One- or two-storied settlements typical of the Republican era, like Pompeii and Herculaneum, gave way to new styles of living and new housing designs characterized by three, five, or more levels aboveground. Rome, having achieved a population of one million or more inhabitants, was the paradigm of this new type of city. Ostia, Rome's port city at the mouth of the Tiber River, with a population of one hundred thousand, was at least as densely settled because all travelers arriving by sea and all the goods going to Rome passed through it. Excavations at Ostia were begun in the 1920s, and what they revealed presents the clearest vision of an ancient Roman city of the second and early third centuries CE.

Ostia's plan follows the strict rules of Roman urban planning: two axes, major roads called the Decumanus Maximus and Cardo Maximus, cross at the forum, an open public space that is about 300 feet long. A grid plan with all streets crossing at right angles was used to determine the shape and organization of the city. Ostia's main function was to receive products brought from the far parts of the empire to supply Rome; for example, wheat from Sicily, Sardinia, and North Africa. Before being transported to Rome, large amounts of these imports had to be stored; therefore, warehouses were essential features of the city. Worker housing, shipping offices, and places for residential shopping were also necessary. Types of structures accommodating all these functions developed into multistoried buildings that differed significantly from the traditional *atrium* houses of the Republican period. Instead of plans with rooms of different sizes surrounding a central atrium (or large rectangular hall) a new plan was devised with repeated, nearly identical, rooms on the ground floors that were interchangeable (much like office floors in modern speculative office buildings). The rooms or shops in these buildings opened onto narrow elongated courtyards. The name "horrea," although not used in Roman antiquity, has been given to commercial and storage buildings using a nearly identical plan.

The Horrea Epagathiana and Epaphroditiana was one of these commercial buildings, a warehouse owned by two freedmen from the eastern part of the empire. Their names were engraved in a marble plaque mounted above a monumental entrance framed by two *columns* made of brick that carried a *pediment* of noble proportions. The entry was restored in 1929 by assembling the fragments that had fallen to the ground. This careful restoration has resulted in an ensemble of unusual grandeur.

Beyond the entry, a double vestibule opens onto a square courtyard surrounded by a two-storied *portico* with brick *piers* supporting *arches*. The modular repetition of rooms is expressed by the brick arches whose severe forms resemble those of Renaissance palaces. *Groin vaults* cover most of the rooms in the two main storage levels. Staircases in the northwest and southwest parts of the building lead to the upper stories.

The warehouse type of building inspired many variations that accommodated new functions in the imperial city of Ostia; for example, offices for the

Horrea Epagathiana and Epaphroditiana, Ostia. A warehouse in the port of ancient Rome with central entrance reconstructed in 1929.

builders; firemen's barracks; and markets. Like the warehouses, residences in the city could no longer follow the precedent of the "domus," or urban house. Instead, apartments were stacked on top of each other for as many as four or five levels. The arrangements of the nearly identical, multifunctional rooms no longer received light and fresh air from an atrium; instead, illumination came from an internal courtyard or a central room with windows onto the street called the "medianum." Horrea were not designed to be houses, but there were doubtless many exceptions with housing above the store rooms and shops. Ostia shows how Roman architects had to create new types of buildings for high-density living. These included buildings for commerce and storage as well as worker's residences. Ostia's ancient dynamism presents many remarkable elements for the contemporary visitor.

Further Reading

Boyle, Bernard M. "The Ancient Italian Town House Reconsidered." *Journal of the Society of Architectural Historians* 31, no. 4 (December 1972): 253–260.

Hermansen, Gustav. *Ostia: Aspects of Roman City Life.* Edmonton: University of Alberta Press, 1981.

Meiggs, Russell. *Roman Ostia.* Oxford: Clarendon Press, 1975.

For a plan and photographs of the excavation of the Horrea, see: http://www.ostia-antica.org/regio1/8/8-3.htm.
For plans and reconstructions of Ostia, see: http://www.ostia-antica.org/indexes.htm.

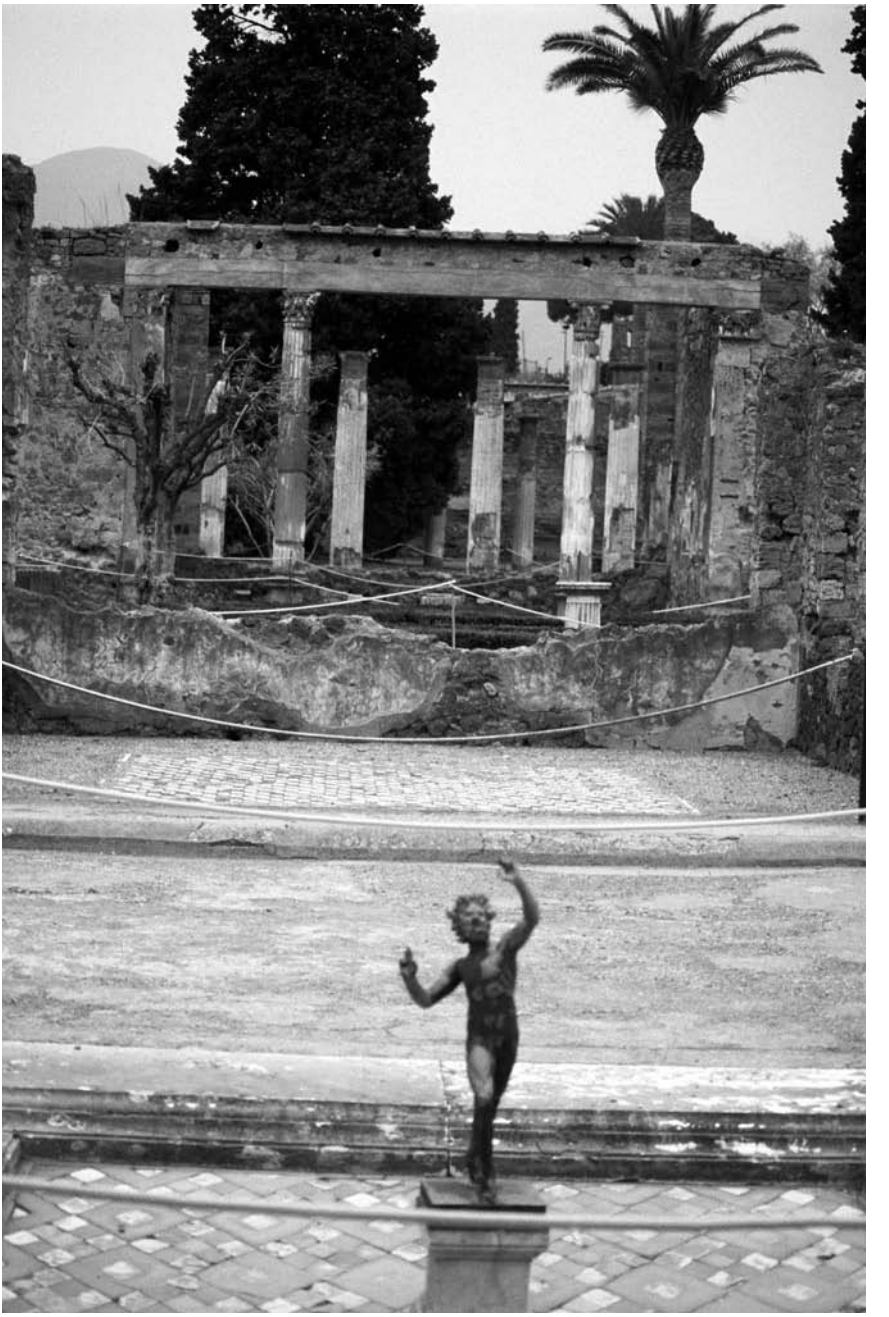
HOUSE OF THE FAUN, POMPEII

Style: Roman
Dates: 180 BCE–79 CE
Architect: Unknown

On the afternoon of August 24, 79 CE, the volcano Mount Vesuvius began to explode. The eruption lasted until August 26 and put an end to the city of Pompeii, burying it under ashes and cinders. Even its name eventually disappeared, and the city sank into oblivion until it was rediscovered and excavations (at first, little more than looting) begun in the mid-eighteenth century. Ironically, the same volcanic debris that destroyed the city, preserved much of it, giving us a very good idea of how Romans lived during the first century of the Christian era. We know of the eruption because Pliny the Younger was an eyewitness and wrote about it. He, aged seventeen, was visiting Naples with his mother when the volcano erupted. They survived but Pliny's uncle, the famous writer Pliny the Elder did not; he suffocated from the sulfurous and corrosive fumes from the volcano.

Pompeii's site at the mouth of the River Sarno offered many commercial advantages. Seafaring ships could berth there and exchange goods with barges traveling inland. Details of the original settlement are largely unknown, but it is likely that the original inhabitants were Oscan and, during the sixth century Greeks, followed by Etruscans in the sixth to mid-fifth centuries who further developed trade, Italic Samnites in the late fifth century, and finally the Romans. Cultural exchanges reduced the differences among these populations, brought progress, and raised the reputation of the city. After 200 BCE, the victory of Rome against Carthage resulted in all of southern Italy being under Roman control. It was after this time that Pompeii became a prosperous city. Although Romans were politically and socially dominant, because of Pompeii's position as a port city, it was always a multicultural community. This is reflected in the diversity of religious cults, which included traditional Roman and Greek gods as well as eastern imports such as Isis and Zeus Melichios.

The House of the Faun, named for a statue found in it during excavation, was the largest and one of the most luxurious houses in Pompeii. It is an extreme example of the residences of wealthy families, which were built from the second century BCE until Pompeii's destruction in 79. The house occupies an entire city block (an *insula*) and covers more than 30,000 square feet,



House of the Faun, Pompeii. The statue of the Faun stands in the impluvium (a shallow pool that collected rain water) and Mount Vesuvius is visible at the left beyond the peristyle.

replacing several smaller houses that had previously occupied the site. These earlier houses were gradually absorbed sometime after 180 BCE, reflecting patterns of growth and adaptation that corresponded to changing standards of beauty and fashion. The house had two entrances: a modest one opening into a suite of private spaces, and a richly decorated, massive one that provided access to the public areas. "Clients"—the owner's business, political, and social contacts as well as people who depended on him for basic needs—were received every morning at the public door. Each entrance opened onto a vestibule that led to an *atrium*, a large rectangular hall with a rectangular opening called a *compluvium* in the center of the roof. The short roofs on all four sides of the opening sloped downward toward the interior. These roofs directed rainwater to a shallow pool in the center of the atrium, called the *impluvium*, which drained into an underground cistern. Most of the important rooms of the house opened onto the atrium and were relatively small except one, the *tablinum*, where the clients and guests were received by the head of the household. The tablinum was decorated with great care because it was a "frame" for the aristocratic owner of the house and represented his familial and social status. Located on axis directly across the atrium from the entrance and raised up a step from the level of the atrium floor, the tablinum positioned the head of the family in a dominant location from which he could survey the atrium, his colleagues, and his subordinates and could symbolically represent the continuity and reputation of his "gens" (ancestral family). The tablinum traditionally sheltered the marriage bed and provided storage for all the important documents that involved the family history, estate, and business. It was also the place where wax death masks of famous ancestors were hung on the wall to create a sort of visual genealogical tree. The House of the Faun had two atriums, relating ostentatiously to the richness of the owner, which were treated differently. On the public side was a Tuscan atrium, a traditional design in which the roof was supported by huge wood *beams* leaving an uncluttered column-free space. The *tetrastyle* atrium on the private side had four *columns* that supported the beams around the compluvium and created a more intimate environment.

On the public side of the house, the major rooms were arranged on axis; that is, they were aligned from front to back, from the vestibule across the atrium to the *tablinum*, and from the *tabliium* into an outdoor space surrounded by colonnaded covered walkways (a *peristyle*), to a semienclosed room, the *exedra*, which in an organizational sense was the focal point of the house. The first peristyle was followed by a second larger one, added later to the original house, from which Mount Vesuvius could be glimpsed. On the floor of a beautifully decorated exedra that opened onto the first peristyle, excavators discovered a very large mosaic of great splendor, homage to Alexander the Great's victory over the Persian king Darius at the Battle of Issus. Perhaps copied from a painting of the fourth century BCE by Philoxenus of Eretria, it represents a rush of horses and spears as Darius begins his retreat. The original is now in the National Archaeological Museum of Naples and a copy has recently been installed in the exedra.

Every possible luxury was involved in furnishing and ornamenting the house; mosaics and paintings were a must. The pavements were identical in quality to those in the most lavish public buildings. "Emblema," little paintings from the *Hellenistic* period that decorated private rooms, were replaced by large *frescoes* during the Roman period. Space, that is, an illusion of depth in mosaics and frescoes was represented by means of several kinds of perspective. Wall paintings, for example, gave the impression of decoratively framed openings onto a garden or a landscape. Sculptures of high quality, such as the faun after which excavators named the house (found in the impluvium of the public atrium) were complemented by ornamental stucco. Pompeii's fine artistic furnishings, distributed in the rooms around the atriums and in the gardens, allow us to appreciate the luxury in which upper-class Romans lived.

Further Reading

Clarke, John R. *The Houses of Roman Italy, 100BC–AD250.* Berkeley: University of California Press, 1991.

Etienne, Robert. *Pompeii, The Day a City Died.* Translated by C. Palmer. New York: Harry N. Abrams, 1992.

Richardson, L., Jr. *Pompeii, An Architectural History.* Baltimore: Johns Hopkins University Press, 1988.

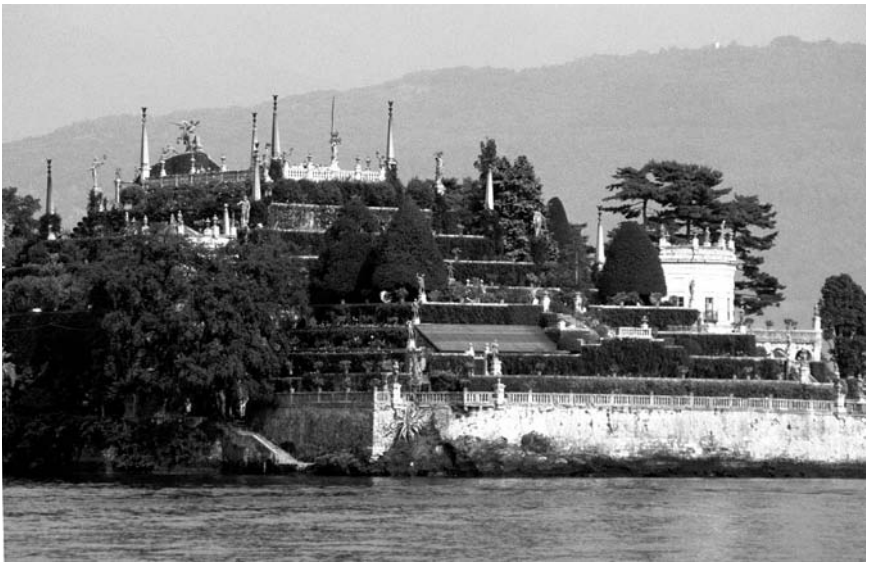
Wallace-Hadrill, A. *Houses and Society in Pompeii and Herculaneum.* Princeton, NJ: Princeton University Press, 1994.

ISOLA BELLA GARDENS, LAKE MAGGIORE

Style: Baroque
Dates: 1631–1671
Architects: Angelo Crivelli; Francesco Castelli; Andrea Biffi

Isola Bella is a little island in Lake Maggiore that resembles a longboat at anchor in a landscape of ravishing beauty, a piece of a lost paradise. Two-thirds of the island contains a world-famous *Baroque* garden; crowded into the remaining third are a palace and a small village of almost identical size. The name given to the island in 1636 is a phonetic reduction of Isola (island) Isabella, the name of the wife of Charles II (1586–1652). More important is the name of the owners of Isola Bella: the Borromeo family of Florence.

Although the family was expelled from Florence in 1370, they were famous bankers in Milan and Venice in the late fourteenth and fifteenth centuries.



Isola Bella Gardens, Lake Maggiore. View of the gardens from an approaching boat showing the terrace at the summit, 120 feet above the lake.

Rivals of the Medici, their financial position allowed them to control a vast region called the "Borromeo State" in the region of Lombardy. Competing with the Sforza, who ruled Milan, and feeling the danger of the Habsburg and Spanish occupations in the sixteenth century, the Borromeo family quit banking and finance and lived as ruling aristocrats in their large "state."

Two members of the family were important supporters of the Roman Catholic Church during the Counter-Reformation: Saint Charles Borromeo (1538–1584) and his cousin Federico (1564–1631). Both were severe reformers when each one served as Archbishop of Milan. Reflecting the family's motto, "Humilitas," Saint Charles was immensely popular among simple believers.

The Isola Bella was a rocky bit of land where only fishermen lived when, beginning in 1630, the Borromeo family began to buy up the land. They purchased a house on the northern end of the island and transformed it into a castle. Like most Italian aristocrats of the period, the Borromeo family members were creators of gardens. After the removal of a large part of the preexisting vegetable gardens, a vast garden surrounding a central pavilion was planned but never realized. The architect Angelo Crivelli, about whom very little is known, was involved in the first stage of the planning of the existing gardens.

Its first three terraces were built in 1632 to provide for the pleasure and comfort of the owner Charles III. Because there was no water available on the island, an octagonal pumping tower was built to irrigate the garden with water from the mainland. After an interruption of fifteen years, Vitaliano VI and his architect Francesco Castelli (1620–c. 1691) transformed the castle into a

palace and embellished the garden. Working frenetically, they completed the main element of the garden, the Great Theater. This was a vast heraldic creation that faced north and had three levels of niches. Castelli's imagination and his love of placing sculpture and obelisks on balustrades were carried on by his successor Andrea Biffi.

The Isola Bella garden was organized around ten terraces, one above the other, imitating a hill or mountainside rising up to a summit 120 feet above the level of the lake. The design was a convenient way of not only connecting the different levels of the palace to the garden—gardens and palace were remarkably unified—but also providing a variety of observation points focusing on local sights as well as distant views across the lake to snow-capped mountains and the villages scattered in the woods.

At the top of two high terraces carried on the western side by colossal *arches* is a point from which paths in two directions are possible. One leads to three more terraces that reach the summit. The other descends via five terraces to the level of the lake. On each terrace, the view is framed by groups of statues or obelisks. Each level has a collection of plants and figures designed to enhance the enjoyment of a specific sight and that reveals in stages, like a game, the profusion of the landscape seen from both above and below.

The Great Theater facing north is a sturdy mass of black stones and limestone concretions symbolic of the forces of nature. Each of its three levels of five *bays* is ornamented with figural sculpture and three colossal shells. At the top, large out-of-scale statues and obelisks suggest fantasies, but they also amplify their visibility from a distance. Most of the statues were sculpted by Carlo Simonetta (1662–1695). The central statue depicts a unicorn carrying Honor, a heraldic symbol of the Borromeo family.

Behind the Great Theater, steps lead to the upper terrace, which affords a view of the square Garden of Love five terraces below. Four formal *parterres* around a basin expand the scale of the design. They provide a contrast to the descent down five terraces to Lake Maggiore. The eastern part of the garden is more private and has large lawns and ornamental plantings. In their varied concepts, the ten terraces suggest a connection of the Isola Bella garden with theatrical set design of the period.

Further Reading

Hobhouse, P. *The Garden Lover's Guide to Italy.* Princeton, NJ: Princeton University Press, 1998.

Laras, Ann. *Gardens of Italy.* London: Frances Lincoln, 2006.

Mauro, N. *Borromee Islands.* Milan, 2000.

LAURENTIAN LIBRARY, FLORENCE

Style: Mannerist
Dates: 1524–1559
Architect: Michelangelo

As soon as he was elected pope in 1523, Clement VII Medici decided to build a library for Greek and Latin manuscripts in Florence. Leo X Medici had suggested the idea to Clement in 1519. These two Medici popes wanted to invest Florence with a cultural prestige equal to that of Rome by building a library that would rival the Vatican's, and they also realized that the rise of the Protestant Reformation, beginning in 1517, required intellectual resistance. Florence, deeply influenced by Platonic ideas that the Lutherans could understand, was the living symbol of the heritage of Lorenzo de' Medici. Michelangelo, who was raised in the intellectual spirit of the Medici-supported Neo-Platonic Academy, was commissioned to design the library to house the Medici collection of books and manuscripts.

Laurentian Library, Florence. In the vestibule, Michelangelo, working as a Neo-Platonist, "imprisons" pairs of columns within the walls.

The library's reading room was to be located on the third floor of the *cloister* attached to the Medici-sponsored basilica of San Lorenzo so that it would be flooded with light from two sides. This meant that the walls of the residences of the *canons* (the administrative clergy) on the first two levels had to be strengthened, work which began in 1524. Michelangelo designed the reading room as a simple box 152 feet long, with a nearly square cross section (35 by 27½ feet). He articulated the walls and ornamented the ceiling and floor in a subtle, regular, neutral fashion to create a sense of calmness that stressed no activity other than reading the books that were placed on the wood desks of equally refined design.

An entrance hall with a staircase was necessary to provide access to the reading room. Michelangelo, a master of playing with oppositions and paradox, created a vestibule with a vertical, active, strongly emotional emphasis to contrast with the horizontality and calm of the reading room. Construction of the vestibule began in 1526, but the Sack of Rome by Imperial (and Lutheran) troops in 1527, a republican revolution in Florence, and the impoverishment of the Medici for three years dashed any hope of finishing the work. Eventually, Michelangelo left Florence and went to Rome in 1534. For twenty years, the staircase to the library reading room was missing.

Michelangelo often played with a sense of the unfinished in his work as he constantly critiqued and revised his compositions. The process of design cost him an enormous amount of energy that he did not want to be revealed in the finished work of art. For Michelangelo, sculpture was a fierce battle with marble, which resisted the creative will of the sculptor, so it is not surprising that his final design for the Laurentian Library staircase was submitted as a model only in 1558–1559. Michaelangelo proposed that the staircase be made of wood like the furniture in the reading room. Despite the sculptor-architect's desire, the staircase was constructed in stone by Ammanati in 1559 to mark the restored power of the Medici court. The library opened to the public in 1571.

The vestibule, containing the staircase, is structurally and aesthetically paradoxical. The pairs of *columns* are nonstructural, that is, they do not carry the load of the building, which is their usual and expected function. The columns appear to be "imprisoned" in niches in the walls and it is the walls, left blank and without ornamentation, that actually carry the load of the vestibule. Hence, the viewer's expectation of traditional structural roles is confounded. A sense of frustration dominates the vestibule. Instead of standing free surrounded by space, the columns fail as supports and are compressed and impotent within the wall. Useless consoles, scroll-shaped brackets, attached to the outer surface of the wall at the bases of the columns defy the laws of stability. They are like Michelangelo's famous statue of Moses for the tomb of Julius II, ambivalent between action and immobility. James Ackerman described how the staircase descends into the tension filled space of the vestibule like an alien intruder that provokes an emotional and intellectual shock. C. de Tolnay described the staircase as a flow of lava from the reading room, not only because of its color but also for its form and the excessive amount of space it occupies.

A central flight of stairs with convex treads contrasts with the flights of straight treads on either side. This intensely three-dimensional element characterizes Michelangelo as a sculptor as much as an architect.

Further Reading

Ackerman, James S. *The Architecture of Michelangelo.* 2nd ed. Chicago: University of Chicago Press, 1986.

Argan, Giuilo Carlo, and Bruno Contardi. *Michel-Ange Architecte.* Paris: Gallimard, 1991.

de Tolnay, Charles. *Michel-Ange.* Paris: Pierre Tisné, 1951.

MAUSOLEUM OF CONSTANTINA (CHURCH OF SANTA COSTANZA), ROME

Style: Early Christian
Dates: 337–350
Architect: Unknown

On the via Nomentana, on the northeast side of Rome, large tracts of wooded land still preserve something of the ancient landscape. A few of these areas were burial grounds in antiquity that were sanctified by the bodies of the Christian martyrs of the third and fourth centuries. Among them was a young girl, perhaps twelve or thirteen years of age, who suffered martyrdom on the January 21 in a year that is only vaguely preserved by tradition as perhaps the fourth persecution of Diocletian in 305. Agnes, whose name means "chastity," was venerated as an example of purity and faith. Although very little is known about her, local tradition added many legendary elements to her story. It is not certain how she was martyred because there are conflicting stories. She may have been beheaded, burnt at the stake, struck by a spade, or strangled. Her bravery became legendary and her burial place attracted large crowds of worshippers including the emperor's daughter.

Constantine, the first Christian emperor, had a daughter named Constantina who lived in Rome from 337 to 351. Her first husband, Annabalianus, was murdered in Asia in 337; she did not marry again until 351 when she became the wife of Gallus and left Rome for Bithynia, where she died in 354.

During her stay in Rome, Constantina devoted herself to the cult of Saint Agnes and made use of imperial resources to build a grandiose *basilica* near Saint Agnes's tomb. (This basilica should not be confused with the present

Santa Costanza, Rome. View into the central dome of the mausoleum of Constantine's daughter.

church of Sant' Agnese Fuori le Mura, which was built in the seventh century.) The *nave* of Constantina's church was 260 feet long, and at 57 feet 5 inches, as wide as the grandest of the Roman basilicas. The nave was flanked by an *aisle* and an *ambulatory*, making the church so majestic that the Pope used it for important ceremonies in 358, 368, and 419. Constantina adorned her church with valuable works of art and then decided to build a mausoleum for herself next to the basilica as if she expected heavenly protection from Saint Agnes.

In 360, Constantina's body was brought to her mausoleum in Rome from Bithynia. Her church was restored around the year 500 but fell into decay and had all but disappeared by the seventh century. A heavy wall, 55 feet tall, that once marked the apse, is one of the few remaining pieces of the fourth-century basilica. However, Constantina's mausoleum has remained largely intact and was restored in 1938–1939. It is one of the finest extant examples of late Roman architecture. Legend made Constantina a saint, and her tomb was turned into a church dedicated to Santa Costanza, her Italianized name, by Pope Innocent III (1198–1216).

The mausoleum contains a replica of the fourth-century porphyry sarcophagus of Constantina; the original is now in the Vatican Museum. It was not placed in the center of the circular building but instead stood in a niche opposite the entrance. The interior of the mausoleum is composed of two concentric elements: an ambulatory covered by a *barrel vault* decorated with sumptuous mosaics and a central circular space covered by a *dome*. The ambulatory opens into the central space because its internal side is made up of a row of double *columns* of purple gray granite that carry lofty brick *arches* that support the drum of the dome. Four of the twelve arches, arranged opposite one another on the longitudinal and transverse axes of the building, are taller than the others. Their correspondences recall the shape of a cross, a symbolic reference to Constantina's Christian faith. Large windows in the upper part of the central space provide illumination for the interior space of the mausoleum.

The twentieth-century restoration of Santa Costanza removed all the damaged original decoration and inconsistent later ornamentation, a series of coupled *pilasters* above the arches framing two levels of mosaics, and marquetery panels that had been applied to the interior. Although nothing remains of them, sixteenth-century drawings preserve a record of the lavish mosaic decorations of the dome and of marble revetments on the lower levels of the walls.

Two niches in the external wall and the vault of the ambulatory are testimony of the imperial rank of Constantina. The niches have religious symbols while the ambulatory vaults are decorated by six mosaic panels on each side, which increase in complexity of design as they approach the small dome above Constantina's tomb. There, a mosaic represents Christ among the Apostles. Some of the mosaic scenes in the ambulatory, which depict cupids and various flowers, birds, animals, and ritual vessels, have no direct Christian connection and seem to reflect pleasurable aspects of the princess's life. Renaissance Humanists understood the images as décor celebrating Bacchus, the Roman

wine god. Because of this (mis)interpretation, a Dutch artist in the sixteenth century was given a bizarre baptism in the Mausoleum. After a night of debauchery, he and his friends served wine on Constantina's sarcophagus, which they believed to be the sepulcher of Bacchus!

Further Reading

Frutaz, A. P. *II complesso monumentale di'Sant' Agnese e di Santa Costanza.* Rome: Tipographia Poliglotta Vaticana, 1960.

Krautheimer, Richard. *Early Christian and Byzantine Architecture.* Harmondsworth: Penguin Books, 1975.

MILAN CATHEDRAL, MILAN

Style: Gothic
Dates: 1386; 1418; 1858
Architects: Simone da Orsenigo; Amadeo; Dolcebono; numerous others

The political and economic power of the Duchy of Milan was enormous from the beginning of the fourteenth century until the Wars of Italy at the beginning of the sixteenth century. A vast system of irrigation and transportation canals, begun in the twelfth century, had concentrated prosperity in the city of 100,000 inhabitants, who were happy with the idea of peace because most of them were eager to accumulate wealth. Gian Galeazzo Visconti took on the title of Duke of Milan in 1395; this was the highest title of nobility given to any of the Italian rulers. Most of northern Italy—including Lombardy, Piedmont, Emilia, and part of Tuscany—was controlled by Milan, which gave the Visconti rulers considerable power.

As was the case with **Florence Cathedral** (Santa Maria del Fiore), or San Petronio in Bologna, or even the grandiose cathedrals at Siena and **Orvieto**, city power in the *Gothic* era was expressed by huge churches. To exceed the size of these, Gian Galeazzo Visconti decided in 1386 to build a cathedral in Milan that would be 520 feet long and 305 feet wide at the *transepts* (the shorter arms of the cross-shaped plan). He put Simone da Orsenigo in charge of design. Five *aisles*—a central *nave* flanked by two aisles, each half as wide as the nave—would lead to the *crossing*. The outer two aisles would continue past the transept up to the *apse* and the inner aisles would continue beyond the transept and around the apse to form an *ambulatory*. A tower would mark the crossing of nave and transepts on the exterior. The nave and aisles were to be separated by immense pillars, heavily decorated on their tops with sculpted capitals and spaced widely enough to permit views through the cathedral.

Milan Cathedral. Sharp pinnacles at the summit rise above the roofs of the city.

Debates ensued for decades concerning the height of the *vaults* in each of the five aisles and the proportions of the interior—from a single plan, many transverse sections were possible. Meticulous records of these discussions were kept and they offer valuable insight into the way Gothic master-builders, at least late in the Gothic period, designed their churches. Among the experts consulted were many famous foreign architects including Nicolas de Bonaventure from Paris, Antonio di Vicenzo from Bologna, and a group trained in Hans Parler's "lodge," which was building another grand cathedral in Prague. A mathematician, Gabriele Stornacolo, was consulted about proportions, and the French "architect" Jean Mignot argued for a nave much taller than the side aisles, typical of French Gothic. Hans von Freiburg, Heinrich of Gmund, and Wenzel (Hans Parler's son) from Prague debated building techniques as well as aesthetics and architectural theory. Later, in 1438, Johannes Niesenberger came to Milan from the leading lodge of Strasburg with fifteen artisans to work on the cathedral.

The debates, which attracted most of the best-trained masters from German lodges, demonstrate the confusion in Gothic design around 1400. The American architectural historian James Ackerman was convinced that the German master-builders lacked experience and that their abstract sense of theory, based on medieval Scholastic philosophy, limited their imaginations to an elementary system of "ad triangulum" (using equilateral triangles) or "ad quadratum" (using squares). Nevertheless, the German "ad triangulum" was eventually agreed on as the system to be used in Milan cathedral. Each aisle braces the next in a way that creates an equilateral triangular section for the church. In contrast to the typical French system with its high nave, that allows large windows in its upper part, the "ad triangulum" system restricts the size of windows so that the interior of Milan cathedral, while impressive, remains dark. At the height of 152 feet 11 inches, the nave is comparable to the most daring Gothic cathedrals anywhere.

Although five *bays* of the nave, the transept, and the choir were already *vaulted* by 1480, the present crossing tower and a spire that seems to shoot into the sky were missing because of unresolved structural problems. In 1481, there was a new debate between Gothic master-masons from Germany and Lombardy and some of the most gifted Italian Renaissance architects: the theoretician Francesco di Giorgio, Donato Bramante, and Leonardo da Vinci. The Renaissance architects' elaborate proposals were ignored and the tower was built according to the recommendations of Amadeo and Dolcebono, which were adopted on June 27, 1490. This traditional and massive masonry (as opposed to the light structure proposed by the Italians) was erected on four hidden *arches* at the bottom of the tower. This solution recreated the continuity of the sidewalls and guaranteed the stability of the heavily decorated spire.

Equally, the expansive interior spaces, as well as their exterior expression, are covered to excess (in many architects' opinion) with ornament: pinnacles, subdivided windows, elaborated balustrades, and statues. These create a "formal

maximum" that expresses quite well the ambition of the Milanese people for their cathedral.

Further Reading

Ackerman, J. "*Ars sine scienta nihil est*, Gothic Theory of Architecture at the Cathedral of Milan." *Art Bulletin* 30 (1949): 84–111.

Frankl, P., and P. Crossley. *Gothic Architecture*. New Haven, CT: Yale University Press, 2000.

Nussbaum, N. *German Gothic Church Architecture*. New Haven, CT: Yale University Press, 2000.

MONREALE CATHEDRAL AND CLOISTER, PALERMO

Style: Romanesque
Dates: Cathedral 1174–1182; Cloister 1172–1189
Architect: Unknown

The Conca d'Oro, the Golden Conch, was celebrated in the twelfth century for the beauty of its landscape and the richness of its soil. Built on the slope of a mountain behind Palermo overlooking the Conca is the Cathedral of Monreale that has been praised by architectural historians for its dignified proportions, its clarity of articulation, and its golden mosaic decoration. Founded in 1174 and quickly completed in 1182 by King William II, Monreale was intended to be a counterweight to the Cathedral of Palermo and a means of keeping its independent Archbishop Walter of the Mill (Gualterio Offamilio) in check. Preceding the cathedral on the site was a Benedictine *monastery* which, at William's invitation, was occupied by a group of *Cluniac* monks and their abbot in 1176. The *cloister* of the monastery is a masterpiece of twelfth-century art, well-known for its elaborate *columns* and *capitals*.

Monreale Cathedral itself shows a strong contrast between the restrained harmony of its interior and the extravagantly complex decoration of its exterior. The east end is particularly florid, with three stories of Norman interlaced *arches* crossed by horizontal *friezes*, medallions filling in the spaces between, and Muslim pointed arches over the windows. On the west end, the entrance to the *basilica* is marked by two blocky tower bases, one unfinished, that flank a *portico* that was not added until 1770. The interior of the Cathedral combines a basilican *nave* flanked by *aisles*, *transepts*, and a *sanctuary* in *Romanesque* style with an Early Christian superstructure and wooden *trussed* roof. In the

Cathedral, Monreale. Interior (archival photograph from W. Luebke, *Die Kunst des Mittelalters*, p. 229, Esslingen, 1910). From author's collection.

nave antique columns in the *Corinthian* order support Muslim pointed arches. Large expanses of wall were presumably designed to carry the extensive mosaics that are purely *Byzantine* in style. The conjunction of multiple styles in the building was handsomely resolved, much as was done in the earlier Cathedral at Cefalù.

A comparison of the Cathedrals of Cefalù and Monreale, separated by only forty years, indicates no sign of architectural progress. The nave of Monreale, planned in 1174, retains the Early Christian tradition without any later refinements. Both the nave and transepts carry timber-framed roofs; only the three *apses* are *vaulted*. This is in contrast to Normandy and the French Royal Domain where church naves were vaulted in the new *Gothic* system by the twelfth century. A large cathedral like Notre Dame in Paris already had a vaulted *choir* in 1160. In Sicily, it would seem, the Normans had lost the

architectural imagination and engineering discoveries evidenced in monuments built earlier in the century.

Inside the church, the glittering, reflective Byzantine-inspired mosaics that cover most of the upper surfaces subordinate three-dimensional ornament as well as the mass of the walls to the splendor of the spaces. The aisles and the ceiling show Muslim influence in the way they are painted. Bonnanus civis pisanus (Bonnanus, citizen of Pisa) created the beautiful central bronze door in 1186. It was the destiny of Sicily to juxtapose, combine, and compare the different forms of art—from the East (Byzantine), the South (Muslim), and the North (Pisa)—that converged on the island. The mosaics of Monreale are of a lesser quality than those of the **Palatine Chapel** in Palermo, but the way in which they cover such huge expanses of wall surface raises them to the first rank in their overall disposition. Old Testament scenes are illustrated in two registers on the upper walls of the nave above a richly ornamental frieze of angel busts. The aisles and *crossing* are dedicated to the life of Christ. Above the image of the Virgin Mary, a colossal half-figure of Christ, Ruler of the Universe, dominates the apse.

The cloister on the south side of the church fuses the numerous styles in a most brilliant manner. Twenty-five Muslim pointed arches in each portico are carried by twin columns. The intricacy of their ornamentation excited Kenneth J. Conant, who cheerfully describes the columns' "fanciful motifs—scroll-work, chevrons, fluting, spiral bands and mosaics" (Conant 1974, 361). The cloisters help to evoke the charms of Norman Sicily.

Further Reading

Conant, K. J. *Carolingian and Romanesque Architecture 800–1200*. New Haven, CT: Yale University Press, 1974.

Luebke, Wilhelm, and Max Semrau. *Die Kunst der Mittelalters*. Esslingen am Neckar: P. Neff, 1910.

Rice, David Talbot. *Byzantine Art*. Harmondsworth: Penguin, 1968.

MONTE AMIATA HOUSING, GALLARATESE, MILAN

Style: Contemporary
Dates: 1967–1972
Architects: Carlo Aymonino; Aldo Rossi; A. de Rossi, M. Aymonino; S. Messare

A daring experiment in public housing, the "Red Dinosaur" of via Chilea in the recent northwest extension of Milan has had much international success among architects. Thirty years after it was built (between 1967 and 1972), the Monte Amiata project continues to project an air of well-organized living. It began as a utopia, but its initial years were disastrous because Communist League groups forced homeless people to move in. Subsequently, in 1974, the complex was deserted; but it now flourishes with proud and satisfied inhabitants.

"Red Dinosaur" describes both the color of the buildings—that Italian mixture of Bordeaux, grey, and blue so fashionable in the seventies—and the oddity of its appearance. In fact, Monte Amiata does not resemble any other housing in the area. It is a group of five buildings: two slabs of eight stories, a long three-story building, a two-story connecting structure, and a final three-story slab block. This grouping creates a varied skyline, and the blocks converge on a central core dominated by an outdoor theater painted yellow. By providing a feeling of simplicity and points of reference, two triangular *piazzas* help alleviate any confusion, when the visitor first enters, arising from the enormous size of the apartment blocks. The apparent simplicity of arrangement is complemented by a series of events: passages, terraces, decks, and bridges, which provide variety in the pedestrian's walk through the project. Simplicity also means unity, and the group of structures seems to converge into a single building of large shape standing on a long terrace that, in actuality, covers a parking facility.

Monte Amiata Housing is a sort of microcosm of a city, a kind of alternative model for the city of the future. When it was designed, its architects, Carlo Aymonino and Aldo Rossi, were well-known for their studies of urban morphology and earlier forms of urbanism, which they proposed as models for contemporary planning. For them, a building on its own had little interest unless it was part of an urban complex. Of course, the contemporary city had long since lost its unity, having become a collection of antagonistic fragments—industries, shopping centers, intersections of freeways, old core businesses and commercial buildings, and housing. Monte Amiata had to be one of these fragments with some sort of mixed activities, shops, communal facilities, and an outdoor theater to manifest its urban identity.

The new concept of the city that emerged in Monte Amiata, which provided its own system of connections via decks, bridges, elevators, and terraces, recalled the experiments conducted in the fifties by a group of modern architects called Team X. They had accepted as a model Le Corbusier's Unité d'Habitation, a slab block of apartments at Marseilles of bold concrete expression, but they wanted to improve it. Team X included open-air decks, introduced variety in details, and connected isolated buildings into a unified design in order to restore the social identity of an urban district.

The splendid flexibility of shape given by Aymonino and his co-designers—440 dwellings of various sizes ranging from studios, to patio houses and duplex apartments—was part of the utopian task. Not only was the housing

Monte Amiata Housing Project, Milan. A daring experiment in public housing that flourishes with proud and satisfied inhabitants.

complex a fragment of the city of tomorrow, it was also conceived as a social place for modest inhabitants to live and interact with their neighbors. Occupied by the homeless as a protest as soon as it was finished, Monte Amiata was eventually turned into a middle-class condominium by the municipality. But its social function remains. Aymonino relied on two main elements of modern architecture: from Le Corbusier's housing in Marseilles he retained the balconies hollowed out from the mass of the building and from Chareau's Maison de Verre in Paris he took the glass-block walls; but in a sense he was influenced by the principles of historical realism. Avoiding prefabrication of elements, the architects minutely considered details characteristic of traditional Italian craftsmanship, modernized, which they contained within a modular structural frame with a *bay* size of 11 feet 10 inches.

Critics in Italian architecture magazines debated the qualities of Monte Amiata during the early seventies. It was thought by some to be too monumental and too disruptive of commonly held urban principles, but it was politically advanced in terms of land ownership and use of space and advanced with respect to 1970s building technology. The most distinguished part of the complex was the smaller slab built to the side of one of the taller buildings by the architect-urban historian Aldo Rossi. Rossi confessed that in his design he was imitating de Chirico's paintings of the thirties and, in a sense, bringing them to life. The absolute repetition of identical windows and bays creates an unusual building that is both monumental and ordinary and which is tricky to categorize historically. All the elements of the building (walls, *lintels*, and windows) are structural, that is, indispensable for construction; but they are treated in an archetypal, primitive, way. With a feeling of pure realism, Rossi works against history by mixing industrial *concrete* construction with simple masonry: one wall section is made of concrete while six other intermediary sections are masonry. Rossi playfully rejoins the *classical* but austere idiom of Terragni, and identifies his architecture with the 1930s. Monte Amiata Housing in the Gallaratese District conceals behind its appealing aspects much of the bitter discussion about Italian architecture and its relation to history that took place in the seventies.

Further Reading

Housing Prototypes.Org: http://housingprototypes.org/project?File_No=ITA021.

Nicolin, P., and C. Aymonino. *Carlo Aymonino, Aldo Rossi: Housing Complex at the Gallaratese Quarter.* Tokyo: ADA Edita, 1977.

Rossi, Aldo. *The Architecture of the City*. Cambridge, MA: MIT Press, 1984.

ORVIETO CATHEDRAL (CHURCH OF THE ASSUMPTION OF VIRGIN MARY), ORVIETO

Style: Gothic
Dates: 1290–1330; façade late sixteenth century
Architects: Fra Benvegnate da Gubbio; Giovanni Uguizzonis; Lorenzo Maitani

At the end of the thirteenth century, the Umbrian hill town of Orvieto was so prosperous that it was able to replace its ruinous old cathedral with one of the marvels of medieval architecture. Bishop Francesco Monaldeschi (elected 1279) was a member of one of the most powerful families of Orvieto and was the motivating power behind the decision to build the new church. Influenced by the mendicant orders, specifically the Dominicans and Franciscans, Bishop Francesco favored the "modern" *Gothic* style of architecture, which he believed would allow his community to build a cathedral of grandiose proportions. Scale was an important factor in thirteenth- and fourteenth-century Italy because the size of a community's major church was as much a matter of civic pride as religious devotion. Competition among the communes of central Italy was fierce, as the huge cathedrals at Siena, **Florence**, and **Milan** make clear.

Bishop Francesco's plans were opposed by the Cathedral Chapter. Its members were conservative nobles who held traditional opinions about the appropriate form of the new church. They seem to have favored Early Christian precedents. Because the chapter was responsible for two-thirds of the new cathedral and the bishop for only one, some sort of agreement had to be reached before the old church could be replaced. The will of the chapter prevailed. They agreed to the total removal of all their buildings as well as the old church to make way for the construction of the new cathedral with the stipulation that the building be modeled on the *basilican* church of Santa Maria Maggiore in Rome. In 1290, the foundations for the *nave* and *aisles* of a very large basilica were begun.

In the meantime, Francesco Monaldeschi was made Bishop of Florence in 1295; there he immediately demolished the old cathedral of Santa Reparata and started work on the huge Gothic cathedral of Santa Maria del Fiore with Arnolfo di Cambio as architect. Meanwhile, in Orvieto, the communal government instituted the magistracy of the Seven Lords (Signori Sette, 1295–1313), which included representatives of both the nobles and the common

Orvieto Cathedral. The vast fields of mosaic decoration on the highly ornamented façade were paid for by the proud citizens of the city.

people. This new governmental body took control of the building of the cathedral. The addition of two *chapels* and the *choir* lengthened the *transepts*, which were roofed with Gothic cross-ribbed *vaults*.

On the side of the north transept is the Capella del Corporale (1350–1356) that contains the *relic* of the Miracle of Bolsena. This is the linen cloth stained with the blood of the Host used by a priest who doubted transubstantiation in Bolsena in 1263. When the host appeared to shed the blood of Christ during the mass, it was taken as a sign of the validity of the Eucharist and of the Corpus Christi Celebration. On the south side, the Capella Nuova (1406–1425), also called the Capella di San Brizio, has *frescoes* by Fra Angelico, Benozzo Gozzoli, and Luca Signorelli.

The triple gabled façade of the cathedral, which is topped by sharp Gothic pinnacles, expresses a new strategy of illustrating and revealing biblical narratives for a huge audience. Although the portals are recessed, and there is a ring of niches and a *gallery*, the overall impression of the façade is one of absolute flatness. The planar surface of the façade is a backdrop for representations of religious revelations, much in the manner of modern mass media, directed to the socially and psychologically concerned worshippers. Its tools for this are mainly two: a vast expanse of panels sculpted in low relief with narrative subjects at the base and, above these, mosaics that are visible from a distance. Traditional sculpture is limited to single figures of prophets from the fifteenth century placed mainly around the *rose window*, a large circular window that dominates the façade. The flatness of the Orvieto façade is typical of the Italian preference for two-dimensional church façades that was continuous from the Early Christian period. In contrast to this conservative element in the façade is the "modern" idea, put forward by the Franciscan Order, that biblical art should not be relegated to monastic *cloisters* but instead should be moved out into the heart of the city itself. In a "radically incarnational" movement (John Fleming), narratives from the Old and New Testaments, the Life of Christ, and the Last Judgment were given artistic form on the front of the church with the direct pedagogic intention of spreading the doctrines of the church. The design of the façade is attributed to Lorenzo Maitani, but numerous sculptors, some from the workshop of Giovanni Pisano, worked for more than a century to complete it.

The use of mosaic decoration on the façade of the church presented problems as well as great satisfaction for the cathedral builders. Financial documents from the years between 1321 and 1390 preserve a detailed picture of the fabrication and installation of the mosaics. The people of Orvieto revealed their public pride by being willing to pay for the vast fields of mosaic decoration on their church. Mosaic work cost four times that of *fresco* decoration. The city felt obliged to build a furnace for making the tesserae, the small glass cubes, used in mosaic fabrication and to dedicate a special room for assembling them. Specialists from Venice were brought to Orvieto to carry out the work. The mosaics were fragile and needed constant maintenance. They were restored in the sixteenth century and again in the twentieth. Orvieto's "open

book façade" is an example of an original use of relief sculpture and colorful mosaic, which create a strong contrast to the severe black-and-white masonry of the rest of the cathedral. The church itself affords a startling view of the changing architectural concerns of fourteenth-century Italy.

Further Reading

Gillerman, D. M. "The Evolution of the Design of Orvieto Cathedral." *Journal of the Society of Architectural Historians* 53 (1994): 300–321.

Riccetti, Lucio. *Il duomo di Orvieto.* Rome and Bari: Laterza, 1988.

Rosatelli, Eraldo. *The Cathedral of Orvieto: Faith, Art, Literature.* Perugia: Quattroemme, 2000.

Waley, Daniel P. *Mediaeval Orvieto: The Political History of an Italian City-State 1157–1334.* Cambridge: Cambridge University Press, 1952.

PALACE OF LABOR, TURIN

Style: Contemporary
Dates: 1960–1961
Architects: Pier Luigi Nervi; Antonio Nervi; Gino Covre

The Palace of Labor, an exhibition hall built in Turin by P. L. Nervi (1891–1979) and his son Antonio with the help of Gino Covre, was quickly nicknamed the "Concrete Parthenon." Its size (580,000 square feet) and its absolute regularity—the 75-foot-tall *concrete columns* are spaced 130 feet apart—celebrate a return to *classicism* by an audacious engineer. Nervi's fame was based on his curiosity about structural engineering and his imaginative creations, clearly reasoned, and mathematically advanced. He resisted conventional solutions, even considered them a creative failure. His sense of economy and desire to fit the building to the very conditions of the program gave his practice a strong sense of moral integrity. Nervi had to go beyond an architect's or an engineer's abstract, preliminary plan; he had to be involved in every detail from the beginning of the design until the moment of realization. Nervi's ideas came from discussions with his clients, but execution of those ideas demanded that he translate his sense of structure into such mundane things as formwork for the concrete. In designing the shapes of the *ribs* supporting the roof of the Palace of Labor, for example, he was inspired to give them the fluidity of *Gothic* rib-and-panel vaulting. Nervi had always expressed structure in a novel and imaginary way, which is obvious in his primary works in Italy, the Exhibition Hall B in Turin (1947–1949) and the two Palaces of Sport in Rome (1956–1957 and 1958–1959). From 1960 to 1962, he was

involved in building the George Washington Bus Station in Manhattan that still serves more than 700 buses each day.

The hall of the Palace of Labor required neutral, open spaces. Nervi believed that the building could be transformed into an industrial school after serving as an exhibition hall for the Turin exhibition. However, the time allotted for building the palace was extremely limited—only seventeen months. Nervi reduced the program to its essentials; he advocated a universal space not very different from Mies van der Rohe's buildings such as Crown Hall at the

The Palace of Labor, Turin. Nervi's modern classicism is reflected in the nickname given to this building—the "Concrete Parthenon." Photo by Remy Rouyer.

Illinois Institute of Technology in Chicago (1950–1956). Although it was a precedent for Nervi, it was too pure, too simple to be as functional as Nervi wished.

In the Palace of Labor, sixteen gigantic columns support steel-ribbed, umbrella-like forms that spread to support an area 125 feet square and carry a roof that measures 520 feet by 520 feet. The cross section of the columns changes progressively from an X-shape at the bottom to a circle at the top, 75 feet above the floor. This change in the geometry of the columns expresses a constant modification of two opposed forms, the cross and circle. Each square steel "umbrella" supported by the columns is composed of twenty ribs. All the roofing compartments (the umbrellas) are independent, separated by 6½ feet wide glass slots. Three months (30 July to October 30) were required for the construction of the roof and the two levels of mezzanines on the periphery of the hall.

These mezzanines, supported on independent columns, were necessary for functional reasons. They leave the central space between the sixteen main columns free and make a ring around the periphery, allowing the ribs supporting the concrete slab of the roof to give a sense of motion, a meandering movement of great refinement, that was part Nervi's structural sensitivity.

The Palace of Labor follows the rules of modern architecture in that it distinguishes small-scale elements from the large and monumental. Freedom of space—inspired by Mies van der Rohe—is enhanced. The only connection between the small peripheral structures and the huge umbrella-like compartments of the roof is provided by huge glass wall panels. Because they must deal with expansion and contraction in the roof, the glass sheets have sufficient mobility so that they will not be broken. Their rigidity is ensured by splendid, slightly curved vertical mullions. Nervi's return to classicism—or to Mies van der Rohe's classicist modernism—was for him an indispensable premise because he believed that correct technique was the only basis for architectonic beauty.

Further Reading

Desideri, P., P. L. Nervi, Jr., and G. Positano. *Pier Luigi Nervi.* Zurich: Patmos Verlag, 1982.

PALATINE CHAPEL, NORMAN PALACE, PALERMO

Style: Romanesque
Dates: 1130–1140; decoration 1140–1183
Architect: Unknown

During the tenth century, "Northmen" (Norsemen) from Scandinavia who had settled in the part of France now called Normandy moved abroad. The Norman lord called William the Conqueror invaded England in 1066; the lesser lords belonging to the Hauteville family were even more adventurous than William. They invaded southern Italy and took over as lords of Puglia and Sicily. There, on the very edge of Christian civilization, the Normans expelled the Muslims and developed a magnificent culture that was a mixture of *Byzantine*, Muslim, Norman, and Latin traditions.

Palatine Chapel in the Norman Palace, Palermo. The interior shows the mixing of Muslim, Byzantine, and Norman styles (archival photograph from W. Luebke, *Die Kunst des Mittelalters*, p. 228, Esslingen, 1910). From author's collection.

The Hautevilles had begun their conquest of Sicily in 1061. In 1072, they made a triumphal entrance into Palermo, which had been the Muslim capital city since 831. Norman culture developed in three stages. First (the Country of Sicily) was an experimental phase that combined elements of different origins. Second (the Kingdom of Sicily, established in 1130) was a brilliant period of connections to Fatimid Egypt and the Maghreb (North Africa). The third stage was a late blooming during the reign of the two kings named William (1154–1195). Accused of dictatorship and the abuse of authority, William I obtained a settlement from Pope Adrian IV in 1156 that led to the rapid Latinization of Sicilian culture.

The power of the Norman kings brought about major changes in Palermo. They moved the royal palace from the shore to a distant hillside inland from which they could control Palermo's urban life and society. Due west of the city, the palace was a mile away from the harbor but linked to it by the Cassaro, a street conceived as the backbone of the city. The palace was a polygon, 500 feet across, which was built on a former fortress of the Islamic period called the Mo'ashar. It stood between the valleys of two diverted streams, the Kemonnia and the Papireto.

The Palatium Novum (the New Palace) was built between two inhabitable towers: the Torre Greca to the south and the Torre Pisana, which contained the state treasury, to the north. In the center, facing the city, were the Royal Apartments ("Joharia") joined to the dwelling quarters of the women. The court was separated from the city, and a strict court ritual required the arrangement of rooms of increasing luxury from south to north.

Outside Palermo in the countryside, the Norman rulers built a number of pleasure pavilions referred to by contemporaries as "jewels embellishing a woman of splendid beauty," or as representations of paradise on earth. The Zisa, Scibene, Cuba Sottana, and Cuba Soprano were inspired by Saracen residences with lavish interiors and gardens ornamented with fountains, canals, and basins.

In the center of the Norman Palace, well connected to the Royal Apartments, is the Palatine Chapel. It is a product of the cultural mixing characteristic of medieval Sicily and of the Norman court ritual. The coronation of Roger II in 1130 was marked by a royal donation for the chapel. Eight *canons*, later increased to twelve, performed the liturgy under a *dome* that covered the *crossing* of the church. The chapel was consecrated on April 28, 1140. It increased the prestige of the kings by its liturgical furnishings and the beauty of its decorations. A little more than 110 feet long, the chapel has a *basilican* plan with a *nave* separated from flanking *aisles* by reused antique *columns*, a *transept* with dome at the crossing and a small raised cylindrical *choir*, reached by four steps, where the marble altar is located. The chapel is built over a lower church, or *crypt*, that includes a burial chamber.

Facing the altar, from the opposite end of the nave, a podium for a throne is accessible by five steps. Its decoration, a marble veneer frame, is typical of the cultural inventiveness of Norman Sicily. The floor has an ornamental pattern of colored cut stone, called Cosmati work after a Roman family who

specialized in this type of decoration. There are also stucco panels, repetitive colorful mosaic patterns, and segmental *arches* of Moorish origin. Above the podium, under a stalactite ceiling of Muslim derivation, was a Byzantine-inspired figure of the enthroned Christ between Saints Peter and Paul.

The eclecticism of the decoration, the shimmering light reflected by the mosaics, the liturgical furnishings such as the pulpit and candlesticks and the Cosmati work combined to create a stupendously rich church interior. While the Normans in France and England created the *ribbed* cross *vault*, those in Sicily were able to give their churches a new sense of lightness. They reused antique columns and they spanned distances with the light construction of the *ogee* (reverse-curve) *arches*, which were more efficient to build than northern vaults because of their thinness. The dome over the crossing of the Palatine Chapel was built according to Byzantine tradition, which was economical and ensured the safety of the church. The mixing of cultures in medieval Sicily was significant of progress in art and architecture in the Middle Ages.

Further Reading

Conant, K. J. *Carolingian and Romanesque Architecture 800–1200*. New Haven, CT: Yale University Press, 1974.

Dittelbach, T., and D. Sack. *The Lower Church of the Palermo's Palatine Chapel*. Kunselsau, 2005.

PALAZZO DEI PRIORI, PIAZZA GRANDE (PLATEA COMUNIS), PERUGIA

Style: Gothic
Dates: 1300–1443
Architect: Unknown

Perugia, an ancient city founded by the Etruscans (see **Augustus Gate**), occupies numerous hilltops overlooking the Tiber River Valley. Commercial facilities and its location made it an important community beginning in the eleventh century. It was a meeting point between Florence to the north and Rome to the south as well as between the Adriatic ports of Ancona and Grosseto on the Tyrrhenian Sea. As a crossroads city, it developed market and financial facilities. The thirteenth century was particularly prosperous as the citizens of Perugia produced artisanal goods and manufactured wool, cotton, and leather products. The city attracted numbers of peasants who

sold their agricultural produce and was also a magnet for the small or intermediate rural nobility searching for a new urban lifestyle.

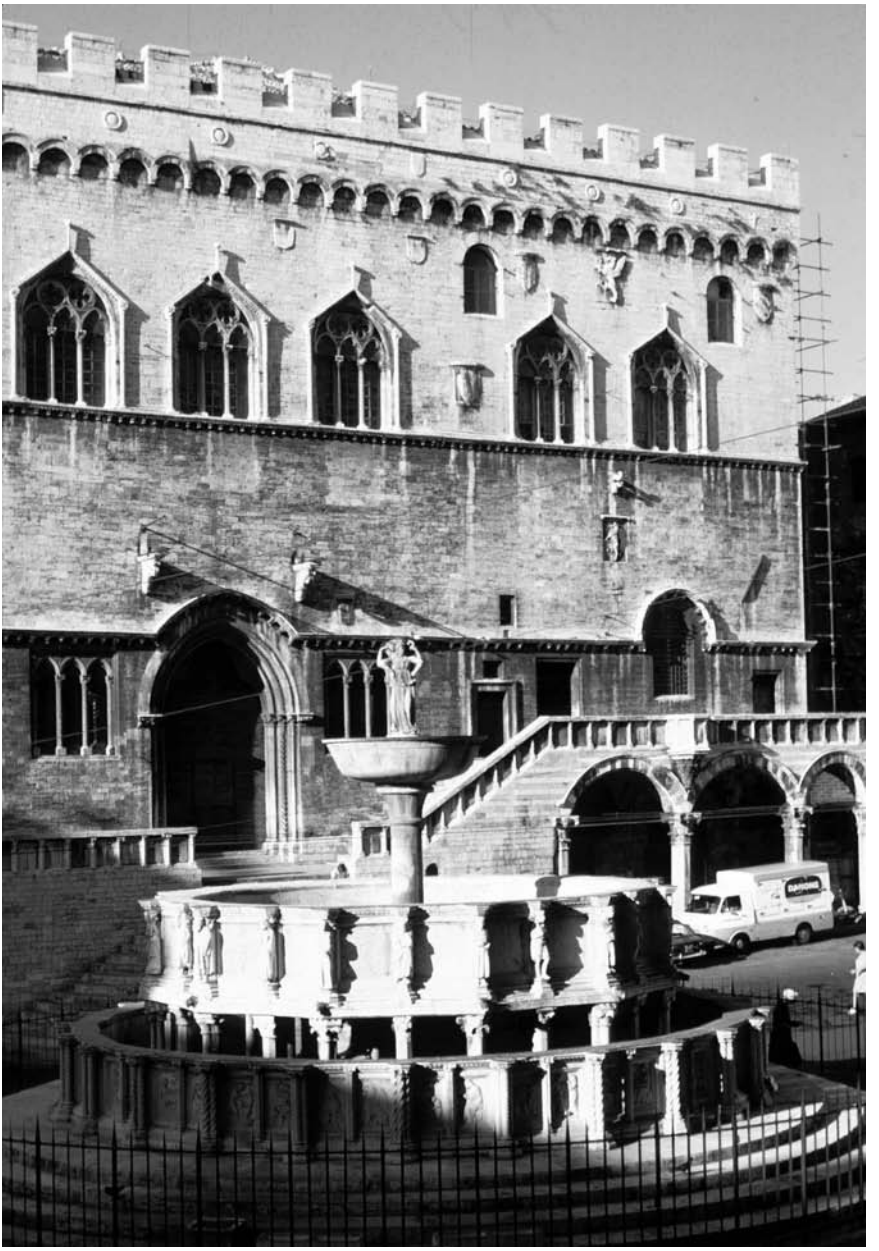
These rural nobles were in conflict with the local rising bourgeoisie. Both classes built a great number of towers in the town that were like the tower houses in **San Gimignano**. By 1315, Perugia may have counted more than 100 tower houses, which gave the city a skyscraper skyline. Perugia was an independent commune until the fourteenth century when, after considerable warfare, it was forced to recognize papal authority and was included in Saint Peter's Patrimony.

The growing prosperity of Perugia caused the extension of the old city core into five suburbs that grew up on the surrounding hilltops. By the middle of the fourteenth century, a new wall around these areas doubled the length of the old Etruscan fortifications from two miles to four. *Convents* of the mendicant orders (the grey friars, or Franciscans, and the Dominicans, whose members were required to live by begging for alms) grew up in a part of the city called "terra nova" (new land) as opposed to the "terra vecchia" (the old city center). These monasteries were surrounded by large groups of the poor and a strong municipal government was required to bring order to the problems posed by these disparate social classes.

At first, the city's guilds (organizations of artisans and craftsmen) participated in the municipal government, but rivalry between classes and organizations put an end to any hope of attaining democratic order. One faction in the commune tried to develop the symbolic power of the Roman Catholic Church by building a new cathedral and to create a rupture between the Priors in the town hall and the Podesta, or mayor. The cathedral offered the protection of the local Saint Ercolano to the people of Perugia and the mayor's power quickly disappeared allowing the Priors to secure full political power.

The Platea Comunis, now commonly called the *Piazza* Grande, is the main square between the cathedral and the city hall, or Prior's Palace. As its name Comunis suggests, the piazza was formed in the fourteenth century as a space that was to be used by the whole community. A fountain, built in 1278, stood in the square where it symbolically reunited the rival seats of Church and municipal power. Two sculptors, Andrea and Giovanni Pisano, with the help of Fra Benvignate, designed the fountain with two rings of sculpted panels to provide interest and attract viewers from all sides. Water for the fountain was brought through an aqueduct from distant springs but it was polluted.

The space of the square around the fountain had all the key components of late medieval urban design. A system of triangles (as at **Milan Cathedral**) determined the ground pattern and the positions of the surrounding buildings, the most important of which was the formidable Palace of the Priors, with its *crenellated* roofline and great meeting room. It had both straight and curved façades, combined in an unusual relationship that gave a sense of flexibility to the urban space. The wall of houses opposite the palace, which contained one *bay* of the former Notary's Hall, enveloped the square with the



Palazzo dei Priori, Piazza Grande (Platea Comunis), Perugia. The Fontana Maggiore (Great Fountain) stands in the Piazza between the cathedral and the Palazzo as a symbol of the reunited rival seats of the Church and the municipal power.

same undulation. Small elements, such as the Prior's staircase and the tribune supplied for public oratory, provide a good idea of the consistency of medieval urban design. Perugia's Platea Comunis remains one of the most appreciated landmarks of urban Italy.

Further Reading

Grohmann, Alberto. *Perugia, Le città nella storia d'Italia.* Rome and Bari: Laterza, 1981.

Gurrieri, Ottorino. *Il Palazzo dei Priori di Perugia.* Perugia: Benucci, 1985.

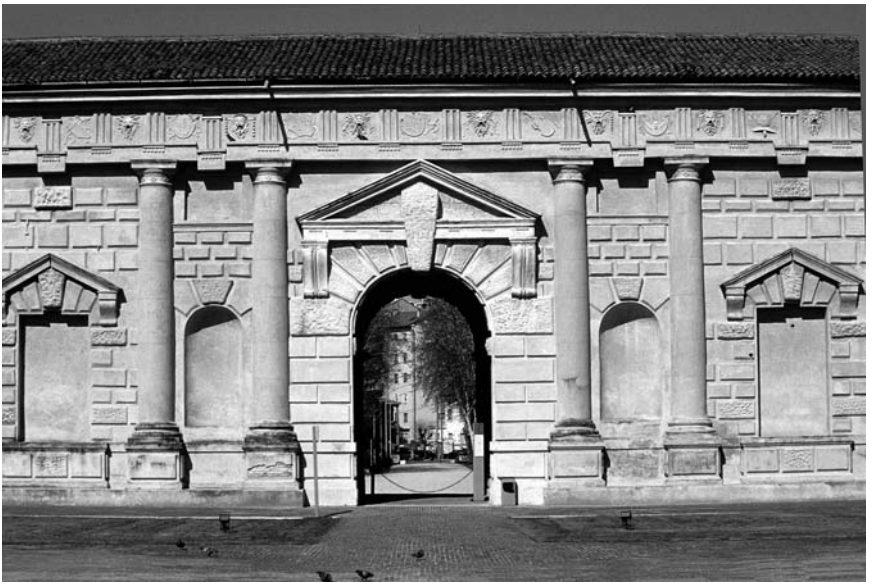
PALAZZO DEL TE, MANTUA

Style: Mannerist
Dates: 1524–1534
Architect: Giulio Romano

For a grassy island named Teieto, The, or Te, outside the city walls of Mantua, Duke Federico Gonzaga II commissioned a *villa* designed around "otium," the Roman concept of relaxation away from the cares of duty, business, and urban activities, which the Romans called "negotium." It was not an entirely new building. Rather, in 1524, the duke asked Giulio Romano, Raphael's most respected student, to remodel the old stables on the island that housed the Gonzaga's famous race horses. Giulio Pipi (1499–1546)—whose Roman origins motivated the change of his last name to Romano, "the Roman"—was a painter, a designer of silverware and other courtly objects, and an architect, a combination of activities that was not unusual for fifteenth and sixteenth century artists.

Giulio was one of the finest practitioners of Mannerism, a style of art that convoluted and played with the Humanist values of the Renaissance. Instead of unity and clarity, Mannerist artists aimed at diversity and complexity. They sought to rival the Renaissance giants, Raphael and Michelangelo, by mastering difficulty of invention, imagination, and design. However, at the same time, it was necessary for the Mannerists to exhibit self-control, courtliness, and a sense of humor that was typical of aristocratic behavior in the overrefined courts of the sixteenth century.

In 1526, Federico Gonzaga requested that Giulio provide a model of a villa based on ancient Roman precedent. The villa would be square, with a central courtyard measuring 145 feet on each side. Three entrance halls, each one different from the others, provided access to the apartments as well as the courtyard. The western façade of the villa block was only completed in 1530–1534,



Palazzo del Te, Mantua. The west side of the courtyard shows Giulio Romano's subversive play with classical rules and details.

in anticipation of a visit by Holy Roman Emperor Charles V of the House of Habsburg.

The villa opened to the east with a long axial view through *loggias*, the courtyard, and the garden that terminated in a final *colonnaded* loggia (replaced in the eighteenth century). A rectangular fishpond, resembling a moat, separated the main block of the building from the garden and was crossed by a bridge on the line of the axis. Stables for the horses and a wall flanked the garden esplanade and in a corner at the far end was a fantastic bathhouse decorated as a grotto.

Although the plan of the Palazzo del Te is based on a Roman suburban villa and uses the simplest of the *orders*, the *Doric*, for its decoration, Giulio introduced conflict, instability, and artificiality into the designs of the façades. Here, the Mannerist paradoxes are unmistakable. On one courtyard façade, the *keystones* over the windows are displaced upward and seem to break apart the *cornices* of the *pediments* over them. In some of the Doric *friezes*, there are *triglyphs* that have slipped down leaving an empty space above—a detail perhaps suggested by the shifting of masonry in the ruins of Roman buildings that were familiar to Giulio from having been raised in the historic center of Rome. Various degrees of *rustication*—from Albertian delicacy in the north façade to the heavy, unfinished-looking roughness in the courtyard—preclude any sense of unity among the wall elevations. This sense of provocative irregularity is found throughout the building and must have been a major factor in its originality and of the allure it exercised on the members of the highly stylized, intellectually refined, and artificial courts of the sixteenth century.

The interior of the Palazzo del Te is ornately decorated with paintings, stuccowork, and impressive wood ceilings. The themes are Roman imperial and mythological, with an aura of pagan sensuality and sexuality that is appropriate for this luxurious playground for Federico, his mistress, and his honored guests. Most famous of all is the "Sala dei Giganti," the Room of the Giants, where every inch of wall, ceiling, and floor is incorporated into a single panorama that depicts Jupiter's destruction of the Giants who tried to storm Mount Olympus and usurp his power. The ruin expressed in this room and the details on the exterior suggest other possible interpretations: first, that some day the Palazzo del Te, too, will return to ruin; or second, that the instability of the architecture reveals both human ingenuity in building and the ultimate fate of history. The architect has presented us with a difficult work that provides a moment of stability in a world of impending disorder.

Further Reading

Hartt, Frederick. *Giulio Romano.* New Haven, CT: Yale University Press, 1958.
Tafuri, Manfredo, ed. *Giulio Romano*. Translated by F. Berry. Cambridge: Cambridge University Press, 1999.

PALAZZO FARNESE, CAPRAROLA

Style: Mannerist
Dates: 1530–1534; 1556–1575
Architects: Baldassare Peruzzi; Giuliano da Sangallo the Younger; Il Vignola (Jacopo Barozzi)

The hilltop village of Caprarola and its fortress became part of the extensive Farnese possessions in northern Lazio in 1504. Cardinal Alessandro (1468–1549), who became Pope Paul III in 1534, had amassed great tracts of land north of Rome and passed them on to his son Pierluigi. (Although a pope is supposed to be celibate, Pierluigi and several other children were born to Alessandro before he entered religious orders.) In 1530, the site of the old fortress at Caprarola, called the "rocca," was selected as the place where a grandiose residence for the Farnese family would be built.

Leading architects from Rome were engaged in the project; in fact, three preliminary designs have been preserved. Attributed to either Baldassare Peruzzi or Giuliano da Sangallo the Younger, the drawings show a design that preserves the pentagonal shape of the fortress and its bastions at each of the five corners and creates a round multistoried courtyard. Construction of the building was halted in 1534, when Alessandro was elected Pope. At this time,

only the first story had been built but it was sufficient to determine the design of the future palazzo, which would retain the form of the pentagon with a circle inscribed into its center.

After more than twenty years of inactivity, construction of the palazzo was resumed in 1556 on behalf of the nephew of Paul III, Cardinal Alessandro Farnese the Younger. The foremost late-Renaissance architect in Rome, Jacopo Barozzi, known as Vignola, was favored by the Cardinal who engaged him to turn the earlier design into an elegant residence situated between a vast expanse of terraced park and a radical revision of the town plan of Caprarola (called "The Farnesian Plan of Caprarola Nova"). The palazzo, with its commodious interior distribution, its lavish stucco and painted decoration, and its dominating position overlooking the town and countryside, would commemorate of the glory of the Farnese family. By Vignola's death in 1573, the palazzo was nearly complete, but finishing and decorating it took two more years.

The approach to the Palazzo Farnese is a sequence of spaces of elaborate beauty. Vignola's plan for Caprarola Nova included the construction of a straight street, 2,500 feet long that climbed 150 feet upward to the residence. This necessitated the expropriation of many old houses that were rebuilt with façades adapted to late Renaissance designs. At the top of the ascent, 400 feet in front of the palazzo, a vast triangular space—the "*piazza* avanti del palazzo"—opened to the view of the main façade and its bastions. A set of stairs at the apex of the triangle, where it joined the street, provided the entrance to the three-tiered piazza, whose levels are connected by staircases. A pair of curving

Palazzo Farnese, Caprarola. The approach to the Palazzo is a sequence of spaces of elaborate beauty beginning in the town below and culminating in the grand entry.

staircases sweeps up to a flat terrace accessible to carriages from which another pair of staircases with straight runs lead up to the entry to the palace.

With its three tall, elaborately decorated stories, the palazzo dwarfs the neighboring houses below on the square. Vignola reduced the height of the bastions at the corners of the pentagonal palace so that their roofs are at the height of the *piano nobile* (the American second story, but the main floor of an Italian palazzo) and turned them into terraces. For the central part of this floor, above the entry to the palace, Vignola adapted the *loggia* Peruzzi had designed for the Villa Farnesina in Rome, which had been built in 1508–1511 for the Chigi family but had been bought by Alessandro Farnese.

The interior of the palazzo demonstrates Vignola's attention to commodious design as well as his concern for references to earlier architecture. An elegantly detailed spiral staircase connects the winter apartments on the ground floor with the reception rooms on the piano nobile. Vignola was clearly referring to Bramante's famous Belvedere "Lumaca" (snail shell) staircase built in 1512, but he replaced Bramante's single *Doric columns* with pairs of them and included illusionistic paintings of landscape views that appear to penetrate the surrounding walls like windows. The round central courtyard, probably inspired by Peruzzi's design of 1530, had two stories of *galleries* beautifully adapted to the formal geometry of the circle.

A penchant for geometrical obsession governed the design of Caprarola with its pentagonal palace, circular courtyard, triangular square in front, and a pair of large square garden terraces behind. Geometry symbolized power and order. Thus, the antinatural strategy of imposing order onto disorderly nature could very well be understood as a means of glorifying—and making visible—the power of the Farnese family. However, the rational order of the Palazzo Farnese is also indicative of the new capacity of sixteenth-century architecture to refashion a difficult topography and exploit its aesthetic possibilities.

Further Reading

Guidoni, Enrico, and Giulia Petrucci. *Caprarola*. Rome: MultiGrafica Editrice 1986.

Lotz, Wolfgang, and D. Howard. *Architecture in Italy, 1500–1600*. New Haven, CT: Yale University Press, 1995.

Portoghesi, Paolo. *Caprarola*. Rome: Grafiche Manfredi, 1996.

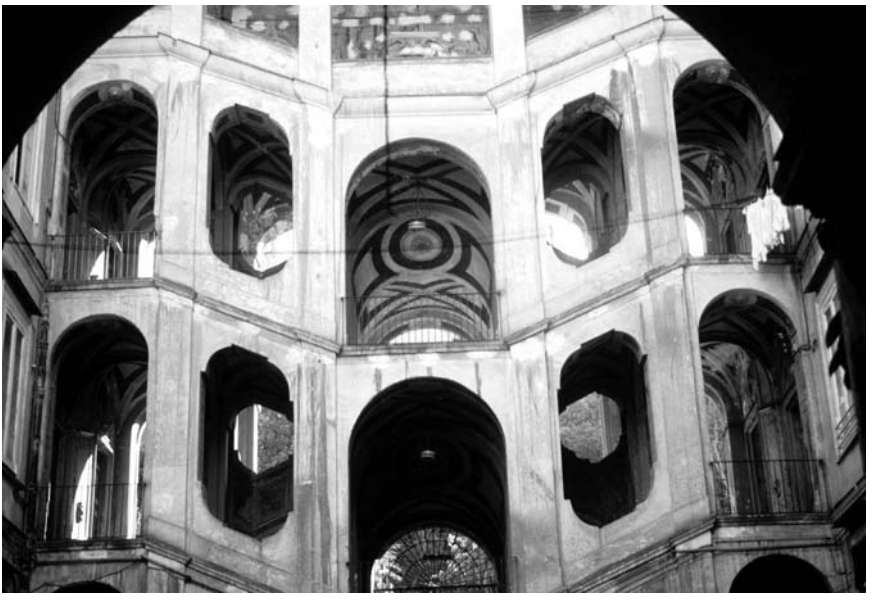
PALAZZO SANFELICE, NAPLES

Style: Baroque
Dates: 1725–1728
Architect: Ferdinando Sanfelice

Naples' mild climate and a strong and consistent *Baroque* tradition in the arts during the seventeenth century explain the flowering of architectural inventiveness that occurred there at the beginning of the eighteenth century. The Spanish monarchy lost control of the Kingdom of Naples under the provisions of the Treaty of Utrecht in 1713, and an Austrian viceroy installed at Naples supported the flow of northern European influence between 1713 and 1734. During this period of transformation, the Neapolitan palazzo became a major feature of the labyrinthine city, whose sublime setting was one of its main attractions. Ostentation and luxury were major concerns of the Neapolitan nobility and creative architects, such as Ferdinando Sanfelice (1675–1748), were much in demand.

Servants and stables occupied the ground floor of a Neapolitan palazzo; the horses and numerous carriages kept there reflected the wealth of the owner and his continuous peregrination from city house to country estate. *Loggias*, open balconies, and spectacular staircases occupied as much as half the main floor (the second story, or *piano nobile*), which surrounded a central courtyard. On the third floor, a sense of intimacy was provided for the family in their private apartment, which contrasted to the stupendous luxury and formality of the public reception rooms. Scenographic effects supplied intricacies and surprises in moving through the palazzo.

Between 1714 and 1755, as one of the most important European capital cities, the Neapolitan population doubled from 200,000 to 400,000, but the Austrian administration was not interested in the problems of urban development.



Palazzo Sanfelice, Naples. The scenographic open double staircase in the courtyard.

To escape the crowded living conditions inside the fortifications of the city, the middle class and nobility abandoned the old city center and built new districts outside the walls on the hills to the north and to the west. The new Vergini and Sanita districts offered easy access to the summit of Capodimonte, where, in 1738, the Spanish king Charles III had created a suburban residence. Here even the somewhat less affluent homebuilders could organize residences in less congested areas than in the old city, which provided views, gardens, and terraced hills.

The Neapolitan architect Ferdinando Sanfelice was a successful set designer who also designed churches and the luxurious palazzi required by the rising middle class. On via Arena della Sanita, at numbers 2 and 6, he designed a double palazzo for his own family residence. The eight-sided courtyard of number 2 has two spiral staircases that combine their unusual geometry into a unified mirror image labyrinth. In the main courtyard of number 6, which measures only 64 by 48 feet, Sanfelice designed a huge double staircase that opens at its far end as a transparent element that frames views of the orange and palm trees growing in the back garden.

This kind of double staircase, which gives access to the apartments on each side of it, became typical of most Neapolitan palaces. From the landing at the top of the central lower flight of stairs, pairs of flights lead up on either side to doorways in apartments across from each other. From the landings in front of the doors further pairs of stairs inserted in the *bay* behind the first set lead up to another landing and another central flight. Heavy pillars support these sets of ascending and descending stairs, dividing the four levels into fifteen space-units flooded with light coming from the garden side. This complex double staircase expresses the ingenuity of Sanfelice's design. The surprises it creates combine with a sense of the picturesque and an overall organization that recalls a stage set. The grey tones of the walls play against the white of the marble steps to express the drama of the unexpected position of the flight of stairs. The Palazzo Sanfelice is a good introduction to the sumptuous staircases of the Neapolitan palazzi of the eighteenth century.

The influence of Austrian architecture provides an interesting background to the creation of the Neapolitan staircase. In 1709, Jakob Prandtauer (1662–1726) built an open staircase of grand design for the *abbey* of Sankt Florian, near Linz. A model of this type may have influenced Sanfelice. The Viennese architect Lukas von Hildebrandt also designed a scenographic staircase for the residence at Pommersfelden (1715–1719). It occupies 280,000 cubic feet in the largest room in the palace. Sanfelice was able to retain many of these innovative ideas even though at a much smaller scale.

His influence can also be seen when, after an earthquake, wealthy traders, some of noble extraction, were obliged to restore houses on urban lots near the main shopping districts in the center of Naples. On restricted sites, three to five levels of apartments were built over first floor shops and storage areas. The fifteen-unit design of staircases in these buildings with their three layers of space created a sense of spatial expansion that gave the same illusion of

depth, the same impression of increased dimensions, to the courtyard as the similar solution Sanfelice used in his own house. All the wit of urban creation is expressed by the Neapolitan staircases. They are symbols of an ascending middle class rebelling against the remnants of feudalism and ecclesiastical power in the eighteenth century.

Further Reading

De Seta, Cesare. *Napoli, la Città nella Storia d'Italia.* Rome: Editore Laterza, 1999.
Wittkower, R., et al. *Art and Architecture in Italy, 1600–1750.* 4th ed. New Haven, CT: Yale University Press, 1999.

PALAZZO VECCHIO, FLORENCE

Style: Gothic; Mannerist
Dates: 1298–1572
Architects: Arnolfo di Cambio; Giorgio Vasari

The Prior's Palace, now called the Palazzo Vecchio or Old Palace, and its sixteenth-century extension the Uffizi, literally the Offices, connect two different periods of Florentine history. The fortress-like *crenellated* Prior's Palace was the center of political and civic life in a period of great prosperity from 1300 to 1348, when Florence monopolized industrial activity and international trade in Italy. Two centuries of political unrest, during which power alternated between the great merchants and the famous bankers, were concluded by a change in government when absolute power was given to Cosimo de' Medici in 1537.

The new government under the Medici was based on authoritarian principles and the supervision of economic life and its control by a centralized administration. Bureaucratic offices (uffizi) that had formerly been located in the municipal palace had to be moved near to the Duke's residence, the Palazzo Vecchio, which remained a symbol of the communal achievement of the fourteenth century. However, the building of the Uffizi and the remodeling of the Palazzo Vecchio by Vasari expressed the great difference of government imposed by the absolutism of the sixteenth century.

Arnolfo di Cambio was a talented planner who helped to give form to municipal Florence in the fourteenth century. He designed or remodeled the vital centers of the city on behalf of civic magistrates, guilds, and religious orders and designed the seat of political life, the Palazzo Vecchio, giving it a military appearance with *battlements* 140 feet above the ground. A formidable tower 330 feet high—about as tall as a thirty-story skyscraper—dominates the building. Inside, rooms were distributed around a courtyard, or central

Palazzo Vecchio, Florence. The "Old Palace," the center of Florentine civic and political life, viewed from its 16th century addition, the Uffizi.

atrium, a plan inspired by that of a traditional monastic *cloister*. This arrogant building expressed the expertise and communal power of Florence, and building the tower had been a challenge for the entire city. Its weight, about 9,000 tons, is carried by the crenellations, which project 4½ feet in front of the building's façade. Equilibrium is achieved by a mass of stone, like a spine in its

center, which remains from part of an earlier tower built by the Foraboschi family.

Vasari (1511–1574) played a role equivalent to Arnolfo's as artistic consultant to Cosimo I in his renewal of Florence as the affirmation of the paternalism of the Grand Duke. Vasari was a painter, an architect, and a man who traveled in high literary circles. His *Lives of the Artists*, published in 1550 and revised in 1568 remains the classic work on the artists of the Italian Renaissance.

Vasari enlarged the Palazzo Vecchio to include an entire city block. Cosimo had demanded a new configuration of the interior that would change the old council chambers into prestigious rooms for court ceremonies and that would include newly designed living quarters and a study, or "studiolo." Because the Palazzo had many internal irregularities, Vasari had to regularize its disposition and he did so without disrupting important older elements. The new decoration, mostly executed by Vasari and Agnolo Bronzino, revolved around the new power structure and the family of Cosimo I.

The Sala dei Cinquecento, which measures 170 feet by 74 feet, was originally the Great Room ordered by Savonorola, the Dominican preacher and reformer who led an anti-humanist political experiment from 1498 until 1512. Vasari turned the Sala into a grandiose celebration of the Medici family who are shown in allegorical paintings. The room was used for ceremonies and for theater performances that were characteristic of sixteenth-century court life.

The uffizi, or administrative offices, were moved to a new street created to join the Palazzo Vecchio to the Arno River. Three buildings defined the sides of the street, and the open end offered a view (in Albertian perspective) of the river. The repetitive rhythm of the façade *bays* expressed the prince's bureaucratic organization, which occupied the top floors, now transformed into the Uffizi Museum, one of the finest art museums in the world.

Like the Palazzo Vecchio, the statues in the *Piazza* della Signoria, the large city square in front of the palazzo, express the change in values and the move from the communal liberties of the fourteenth century to the absolute power of the sixteenth century. Michelangelo's David, to the left of the main entrance to the Palazzo Vecchio (a copy now replaces the original) confronts Bandinelli's powerful Hercules, while to the left of the façade, the political interest of Cosimo's maritime commerce is represented allegorically by Ammanati's Neptune Fountain. Giovanni da Bologna's statue of Cosimo I on horseback introduces the power imagery of aristocratic values into the square that once expressed the republican freedom of Florence.

Further Reading

Conforti, Claudia. *Giorgio Vasari architetto.* Milan: Electa, 1993.

Muccini, Ugo. *Palazzo Vecchio: Guide to the Building, Apartments, and the Collection.* Florence, 1989.

Najemy, John. *A History of Florence 1200–1575.* London: John M. Blackwell, 2006.

PANTHEON, ROME

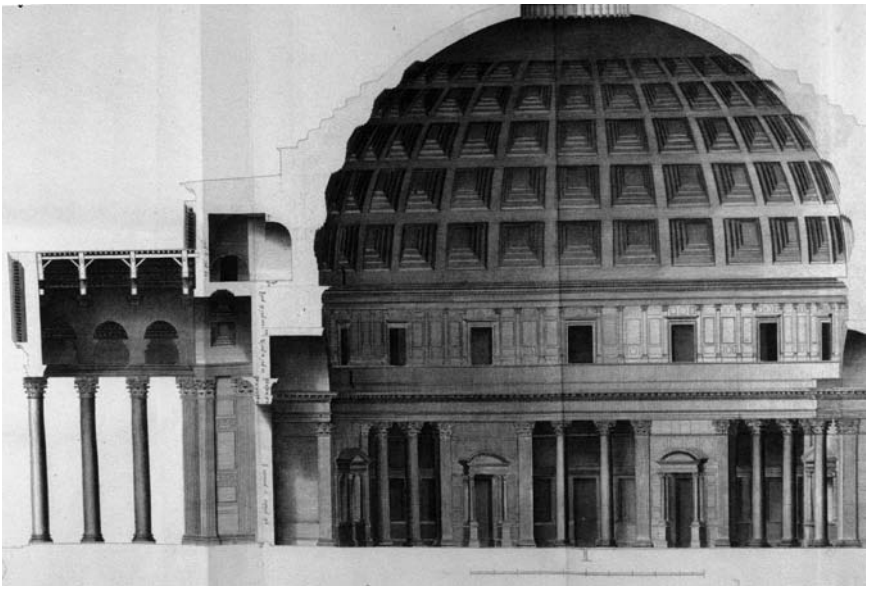
Style: Roman
Dates: 118–125
Architect: Unknown

Hadrian's temple, the Pantheon, dedicated to all the Roman gods, is along with the **Colosseum** one of the best known and certainly the best preserved of all the buildings of ancient Rome. Its interior presents a breathtaking view of a huge volume based on the pure geometry of a hemisphere resting on top of a cylinder of the same diameter. In fact, if the hemispherical *dome* is completed, a sphere, the Roman symbol for the universe, can be inscribed within the rotunda: the height and the diameter of the interior space are precisely the same, 142 feet 5 inches. This diameter exceeds the spans of the domes by the great Renaissance builders: Brunelleschi's dome for **Florence Cathedral** is 140 feet, 5 inches across, and the dome Bramante proposed for **Saint Peter's Basilica** was 139 feet 6 inches. In span, the Pantheon's dome would not be superseded until the invention of metal and reinforced *concrete* structures in the nineteenth and early twentieth centuries.

The Pantheon's only source of light is a circular opening 30 feet in diameter at the top of the dome called an *oculus*, from the Latin word for eye. Light entering through the oculus immediately draws the visitor's attention upward emphasizing the height of the dome giving drama to the space of the interior. Hadrian's Pantheon is an ultimate expression of the extraordinary ability of Roman engineers and architects.

The second century Pantheon replaces a temple dedicated to all the gods that Marcus Agrippa, the son-in-law and lifelong advisor of Augustus, built in 27 BCE. It was restored by Domitian after a fire in 80 CE and was later struck by lightning and burned during the reign of Trajan (98–117 CE). When he succeeded Trajan, Hadrian replaced the destroyed temple with his new, unique building; but with great modesty he retained the original inscription on the façade that proclaimed Agrippa had built it.

The use of a dome to roof a temple was an innovation. Traditional temples were rectangular rooms surrounded by *columns* or with a *colonnaded* front porch. They had a gabled roof. Romans did use large domes to cover some rooms in the great baths, like the **Baths of Caracalla**, but domes were always used in a secular context. The porch in front of the Pantheon that resembled a conventional temple would have identified the building as sacred and would have hidden the dome in antiquity. Unlike today, when the Pantheon sits isolated behind a *piazza*, in ancient Rome it stood at the back of a long rectangular piazza and was framed by *porticoes* that shut out the view of the world beyond



Pantheon, Rome. Section diagram from the engraving by Antoine Desgodets in *Edifices antiques de Rome*, Paris, 1682. From author's collection.

the sacred precinct. From this piazza, only the traditional façade of the porch was visible. This temple façade was truly grand: 100 feet 8 inches wide. Eight monolithic grey granite columns, 45 feet tall, with white marble *Corinthian capitals* are ranged across the front. The columns, most likely imported from Egypt, are arranged in *classical* Greek fashion with a wider spacing between the columns in the center of the façade opposite the entrance door and narrower column spacings toward the outer ends.

An ancient visitor, having seen what appeared to be a traditional rectangular temple, would have been utterly surprised on entering the huge, light-filled domed space. It is still breathtaking to enter the Pantheon today, its interior essentially unchanged when it was transformed into a church in the seventh century by Pope Boniface IV.

The thrilling space, the equilibrium of the height and diameter, is enhanced by the decoration of the walls with multicolored marbles from every corner of the Empire. Their highly polished surfaces reflect the shaft of light entering through the oculus, which moves during the day like a spotlight over the walls, floor, and early and late in the day, the underside of the dome.

Behind the marble decoration, and therefore invisible, is the Pantheon's structure, a 20-foot-thick drum and dome of brick set into thick mortar. All parts of the structure—dome, drum, and foundation—combine structurally to make a monolithic structure that functions much like a giant, thick, rotated *arch* set on a cylinder. The mass of the cylindrical drum is hollowed out with niches and passageways and contains a system of brick arches and *vaults*, so

that the enormous stresses exerted by the dome are resolved within the mass of the walls with no need of external buttressing. The cylindrical drum stands on a foundation ring of concrete 24 feet wide and 15 feet deep. Functioning much like the niches in the walls of the cylinder, which reduce its mass by half, sunken panels (*coffers*) are introduced in the dome to reduce its weight. The dome also becomes thinner toward the oculus and physically lighter since pieces of a lightweight volcanic stone replace brick in the mortar.

The unexpected dimensions and simple geometry of the Pantheon, complemented by how the interior is subdivided and decorated, give the interior a quality of grandeur and unity. The interior is subdivided vertically into three parts. On the lowest level, a dignified colonnade is suggested by the Corinthian order that frames the eight niches, six of which contained altars dedicated to different gods. (The other two niches are the entry and an *apse* directly across from it.) Above this is a middle level, modified in 1746–1748 by architect Paolo Posi for Pope Benedict XIV. The coffered dome figures as the uppermost level.

Renaissance and Baroque architects thought the subdivision of the middle level awkward, but Hadrian's architect seems to have simply decided he had to break the scale of the interior by introducing a decorative zone to set off the rise of the dome, making it resemble a celestial globe. In fact, the dome has twenty-eight ribs, a number which may have represented the moon's orbit to the Romans. Combined with the movement of the sun, whose motion is expressed by the shaft of light through the oculus, the Pantheon may very well have been a diagram of celestial motion. Given the ideology of the Roman Empire, the Pantheon is appropriately known as the grandest building of the Romans.

Further Reading

Gros, Pierre. *L'Architecture romaine*. Paris: Pocard, 1996.

Loerke, William C. "A Rereading of the Interior Elevation of Hadrian's Rotunda." *Journal of the Society of Architectural Historians* 49, no. 1 (March 1990): 22–43.

MacDonald, William L. *The Pantheon: Design, Meaning, and Progeny.* Cambridge, MA: Harvard University Press, 1976.

Sear, Frank. *Roman Architecture.* Ithaca, NY: Cornell University Press, 1982.

PAZZI CHAPEL, FRANCISCAN CONVENT OF SANTA CROCE, FLORENCE

Style: Renaissance
Dates: 1429–1459
Architect: Filippo Brunelleschi

Centrally planned churches, churches with a focus on the center of the building under a *dome* rather than on the end of a long axis, had become traditional in Florence by the fifteenth century. Florentines thought that the Baptistery, situated in front of **Florence Cathedral**, was an important precedent for this type of building, believing it to have been a temple of Mars from Roman antiquity. (It is, however, a *Romanesque* structure from the eleventh and twelfth centuries.) Filippo Brunelleschi did not therefore hesitate to propose a centralized domed building when in 1429 Andrea Pazzi commissioned him to rebuild the chapter house (the room where the business of a *monastery* is carried on) for a Franciscan *convent*. He nonetheless did not entirely follow what he considered a traditional form, and complemented the central dome with a smaller one over the little room opposite the entry, called a *scarcella*, that contained the altar. Two *barrel vaults* cover the extensions of the volume under the dome to the left and right. Because Brunelleschi was interested in the visual procession from outside to inside, he preceded the interior with a porch with six *columns*. It has a central *bay* covered by a small dome identical to that over the scarcella and barrel vaults to each side. Four tall, round-arched windows to either side of the porch door, which let light into the chapter house and illuminate it, are similar to frames on either side of the scarcella.

Brunelleschi's approach is typical for a Renaissance architect: He explains spatial depth from an external vantage point to the interior, moving the visitor's eye through space and identifying its progression with markers. The mathematical construction representing space is called perspective, from "per-" (through) and "specere" (to look), that is, seeing through the space from a single point.

Brunelleschi's approach to architecture helps to explain the meaning of "Renaissance" as a creative development of antiquity, though, as the misidentification of the Baptistery as an ancient Roman building demonstrates, in Brunelleschi's time relatively little was known about ancient architecture with archeological accuracy.

Filippo Brunelleschi, born in 1377, had performed many experiments with perspective before designing the Pazzi Chapel, but the application of his ideas

Pazzi Chapel, Florence. View into the dome designed by Brunelleschi but only completed after his death.

in the building took physical form slowly. We know that Pope Eugene IV was housed in an apartment "above the Pazzi chapter-house" in 1442, implying that the building was probably nearly complete. But the main dome was erected only in 1459—thirteen years after Brunelleschi death—and the dome above the porch not until 1461. Ludwig Heydenreich is convinced, however, that the Pazzi Chapel, although unfinished at Brunelleschi's death, is faithful to his original project. He certainly produced the plans, designed with the utmost care; and because of the smallness of the site, they could not be altered, except in a few details.

The clear, even light in the chapel emphasizes the depth and geometrical quality of space, which is easily measured by Brunelleschi's use of a module (a defined unit of measure on which the building is based). The main dome and the scarcella dome have the same form but their different dimensions are based on multiples of the same module, a square; a module was also used for extending the space under the main dome and for the more difficult three-dimensional construction of space under it. The mathematical multiplication and subdivision of the module is also easily visible to any visitor in the ornament and windows (or blind window frames) as well as the roundels, circular decorative plaques created by the sculptor della Robbia. The window-unit design is reproduced on all four walls of the main space, bringing a sense of unity to the whole structure.

Brunelleschi carried out this arrangement of *vaults* of different sizes and the unit design of the windows into space. For example, the (horizontal) bases

of the domes over both the central space and the scarcella are circles carried by four vertical, semicircular *arches* of the same diameter. Brunelleschi further "measured" the main dome by dividing it with eight *ribs*, each semicircular, which emphasize the volume of the dome. Between the circular base of the two domes and the square plan of the arches carrying them are spherical triangles called *pendentives* that make the transition between the square of the plan and the circular base of the dome. In the scarcella, they are ornamented with big conch shells and in the main space by roundels for which Brunelleschi, originally a sculptor, modeled figures of the four Evangelists. All the details in the walls—window frames, the circles, squares, *pilasters*, *entablatures* (over the pilasters), even the seating bench at the base of the walls—are delineated with strips of dark-green limestone, called "pietra serena," which stand out against the white walls. Decoration is reduced to the minimum, to only sculptures of apostles, the evangelists, and some small incrustations. All the visible elements of the chapter house have only one reason to be there: to help the eye to follow the spatial development of the building in three dimensions. Light is essential to this explanatory task, to defining the various unit structures that make up the composition of the building and define the lines that create its perspective depth. Brunelleschi used the Pazzi Chapel to explain the clear connection of geometry and space, typical of his approach to Renaissance architecture.

Further Reading

Funari, M. *Formal Design in Renaissance Architecture from Brunelleschi to Palladio.* New York: Rizzoli, 1995.

Heydenreich, L. H., and W. Lotz. *Architecture in Italy 1400–1600*. Translated by M. Hottinger. Baltimore: Puffin, 1974.

PIAZZA DEL CAMPO, PALAZZO PUBBLICO, SIENA

Style: Gothic
Dates: 1169–Fourteenth Century; 1284–1310; 1325–1348
Architect: Unknown

During the Middle Ages, Siena was a city-state of great ambitions; it was a banking center in competition with Florence, and its merchants traded with all of Europe. In the twelfth century, it became a self-governing commune and the noble families and bishops were held in check. This ensured political freedom for the citizens and autonomous jurisdiction and administration.

Proportional taxes were collected by the government to finance public works such as fortifications, defense, and the construction of a city hall.

The seat of municipal power was located in the center of the city on a large square, or "campo." By 1169, the *Piazza* del Campo was already organized, although adjustments and construction in the area continued over a long period. One of the best examples of medieval urban planning in Italy, it is 650 feet long and 425 feet wide; and in plan it has the beautiful shape of a fan or scallop shell that slopes down to the southeast side where the municipal buildings are located. The Palazzo Pubblico, the city hall, occupies the southeast side of the Piazza. Its *crenellated campanile*, or bell tower, the Torre del Mangia (1325–1348), thrusts 325 feet (about the height of a twenty-five-story modern office building) into the sky. It can be seen from many miles around and dominated the towers built by the rich Sienese merchants.

As the leader of the Tuscan Ghibellines, who opposed the Pope and his claim to power in central Italy, the Sienese came into conflict with the papal ally Florence and in 1260 roundly defeated the Florentines at the Battle of Montaperti. The Pope excommunicated all of Siena, which damaged the merchants' trade and the bankers' credit. In 1270, the municipal government was overturned, peace was restored with the Church, and the most serene period of Sienese history began. The Council of Nine presided over this prosperous time and, adopting new urban regulations, they built the Palazzo Pubblico and reorganized the Piazza del Campo. This period of stability endured until 1348, when the Black Death killed three-quarters of Siena's population. The commune never recovered from this serious loss, and in 1355 outside powers seized control of it.

Siena is a hill town spread on a Y-shaped ridge that is connected to its surrounding territory by three main roads. To the west, the road leads to the Maremma and the sea; the southern road goes to Rome; and the road to the north connects Siena to the rival commune of Florence. The Piazza del Campo is hidden from these roads and is only accessible through eleven narrow lanes (there were once twelve) that are steep but offer breathtaking views of the Palazzo Pubblico and the Torre del Mangia. The Piazza is self-contained, like a vast urban interior room. To maintain the visual dominance of the Palazzo, an urban regulation of 1297, approved by the republican government, fixed the height of the buildings around the Piazza. Those facing the Palazzo were to have low façades while those at the ends of the Piazza could be fairly tall.

When, in 1347, the Piazza was paved with brick, eight white lines were inscribed that converged on the Palazzo Pubblico and divided the Piazza into nine wedge-shaped segments symbolizing the Council of Nine. The vibrant colors of the pavement expressed both the concavity of the square and its role as a big urban theater, with the balconies on the surrounding buildings functioning like theater boxes during municipal celebrations such as the Palio, a horse race that takes place twice each summer. The Palio, in which all the districts ("contrade") of the city compete, is still celebrated today. A fountain called the Fonte Gaia (1408–1420) was built in the Piazza by the sculptor

Piazza del Campo and Palazzo Pubblico, Siena. The Gothic seat of the governors of the republic with its spectacular Torre del Mangia viewed from the top of the 14th century cathedral.

Jacopo della Quercia (c. 1374–1438). It was a splendid work of art celebrating good government, the protection of the Virgin Mary, and also the legendary ancestors Rhea Sylvia and Acca Larentia, mother and nurse of Romulus and Remus, who symbolized the Roman origins of Siena.

The Palazzo Pubblico was originally a fortress. Wings of two stories were added to the three-story central block in 1310; their height was increased to three stories in 1680. Addition of the wings extended the façade of the building into ten *bays* in the *Gothic* style, articulated by shallow *arches* within pointed arches on the ground floor. The interior of the Palazzo was elaborately decorated by some of the most important Sienese painters of the fourteenth century.

The room where the Council of Nine met was adorned with two paintings by Simone Martini (c. 1284–1344): a Madonna in Majesty, called the "Maesta" (1315), and a large painting celebrating the military glory of Guidoviccio da Foligno who is shown in front of a radiant blue sky riding gallantly on horseback between the castles he had attacked. In the Room of Peace, Ambrogio Lorenzetti had a great success based on the philosophical ideas he was developing. He covered three of the walls with allegories of Good and Bad Government in which he depicted both political propaganda and scenes of Sienese society in a poetic treatment that imposes a freshness, which became characteristic of fourteenth-century painting in Siena.

During the *Baroque* period, the houses in front of the Palazzo Pubblico lost their medieval silhouette. All of the towers, except for five, were dismantled and balconies with rectangular openings replaced the pointed arches of the medieval windows. In the nineteenth century, a desire to redefine the city as medieval mobilized a large renovation project in the Piazza del Campo, which was partially "re-gothicised." Today, in its harmonious restoration, the Piazza del Campo provides a genuine vision of a medieval square functioning as a center of civic and social interaction—a medieval urban showroom.

Further Reading

Hastings, Gilbert. *Siena, Its Architectuer and Art.* London: The De La More Press, 1902.
Macadam, Alta. *Tuscany. Blue Guide.* 3rd ed. New York: W. W. Norton Company, 1999.
Schevill, Ferdinand. *Siena, The History of a Medieval Commune.* New York, Scribner's Sons 1909.

PIAZZA DUCALE, VIGEVANO

Style: Renaissance
Dates: 1492–1494
Architect: Donato Bramante

Vigevano, a dynamic city twenty miles west of Milan on the banks of the torrential course of the Ticino River, became the seat of Luchino Visconti's power in 1337. He took charge of the city and a big fortress that dominated the plane. To provide for an easy access, he built an elevated road 550 feet long and 20 feet wide that was carried above the streets and houses. The Sforza family, which succeeded the Visconti as Dukes of Milan, turned the fortress into their main residence. Ludovico il Moro (1451–1508), following the advice of Leonardo da Vinci (1452–1519) and Bramante (1444–1514), decided to remodel the city and to connect the castle with a grand *piazza*. The piazza, on which Bramante worked for two years, from 1492 to 1494, was conceived as the forum of a city that would equal the political and commercial power of antique Roman cities. According to the Renaissance theorist Alberti, an urban square should be encased by regular façades. It should take the form of a great room, in this case, 155 feet wide and 453 feet long. Because Roman antique precedents were nearly unknown at the time, the square could have continuous *arcaded galleries* on the ground floor and above them, houses of the same height. Vigevano's piazza resembled a big *cloister* or the elongated courtyard of a Renaissance palace such as the one in **Urbino**. Its main precedent, however, was the Hospital in Milan, the work of Filarete (1457–1464).

To make the square regular, the prince had to exercise his power and pull down houses, or parts of houses, that were not in line with Bramante's project. Bramante's ground-floor arcade and the regular façade above it would be continuous around the square, hiding fragments of the old fabric and creating from the unconnected, irregular existing houses the beauty and harmony of a unified, overall design. Above the *arches* of the gallery, painted decoration substituted for actual relief, as was common during the Renaissance, illusionistic and real decoration and ornamentation being considered equivalent. The original Quattrocento painting and two *triumphal arches* added in the seventeenth century were inaccurately restored at the end of the nineteenth century.

Before the *Baroque* period, the square was connected to the tall entrance tower of the castle by a large recess and a ramp that climbed 23 feet to the castle's gate. Bishop Juan Caramuel de Lobkowitz (1606–1682), who was very active in mathematics, theology, and architecture, decided to remodel the square so that it would face the cathedral at its western end. He filled the gap and closed the recess so that the castle would not compete with the cathedral. In a typical Baroque gesture, the Renaissance cathedral was given a false front of four *bays* that ignored the real position of the *nave*, while a narrow passage and a street came through on the left side. The square was paved to enhance the feeling that it was a great room. Lines of marble that cross a cobblestone background give an astonishing magnificence to a square that looks like a "gran salon," a grand living room, welcoming passersby with cafés for everyone's pleasure.

Piazza Ducale, Vigevano. Although the Piazza was designed by Donato Bramante and mainly built between 1490 and1492, the cathedral now has a Baroque façade added by Bishop Juan Caramuel de Lobkowitz in the 17th century.

Further Reading

Bruschi, Arnaldo. *Bramante*. London: Thames and Hudson, 1973.

PIAZZA PIO II, PIENZA

Style: Renaissance
Dates: 1459–1462
Architect: Bernardo Rosselino

In February 1459, the Humanist Pope Pius II (Enea Silvio Piccolomini) paid a visit to Corsignano, his native village, and decided to change it into an ideal city to be called Pienza, the city of Pius. Within three years, the Piazza Pio II would be enclosed within a group of buildings that included the cathedral, a papal palace, a city hall, and a bishop's palace. Leon Battista Alberti, one of the most famous architects of the period, took part in the visit and gave advice to the Pope, but the task of designing and constructing the ideal city was given to Bernardo Rosselino (1409–1464). Rosselino was a distinguished architect in his own right and was also the architectural executant for Alberti on the Palazzo Rucellai in Florence (1447–1451). The pope, who was keenly interested in architecture, engaged with Rosselino in a process of intense collaboration.

In the center of the village, at the end of a main street that measures just under 1,000 feet in length, Rosselino created a town square such that the approaches from the intersecting side streets would be visually attractive. Rosselino treated the square, or *piazza*, 90 by 80 feet, as if it were an interior room with walls created by the façades of the cathedral and the three surrounding buildings. For Rosselino, town design was simply an extension of architecture. He designed the piazza/room as a strict exercise in perspective, organizing the pavement as a horizontal grid and the building façades as vertical grids, like those that would be used in constructing a perspective drawing of the square. The pattern of the rectangles implied by the grid identify the mathematical rules used in creating the proportions for all aspects of the piazza. This sort of construction conformed to Alberti's theories.

Rosselino treated the façade of the cathedral like a Roman *triumphal arch*. The plan of the church, like that of the piazza, is square, so that volumes of church and square are nearly comparable, the piazza being an "open room" and the cathedral an enclosed room—a "covered square." Pius, who had developed an interest in Late *Gothic* Austrian church design when he was apostolic secretary and ambassador, chose to build Pienza cathedral as a German "Hallenkirche," a church with *nave* and side *aisles* of the same height.

To the right of the cathedral, the Pope's Palace, called the Palazzo Piccolomini, was designed by Alberti and built by Rosselino. It closely resembles the Palazzo Rucellai, which the same pair built in Florence. The façade is built of mellow ocher stone with all details organized by the dominant rectangular grid. Windows in the upper stories are bipartite, that is, divided in two by a central column and framed by a thick, round *arch* at the top and two *pilasters*

Piazza Pio II, Pienza. View of the well and the Cathedral entrance facing onto the piazza.

to the sides. Two strong horizontal stringcourses resembling *classical entablatures* divide the three stories and the palace is topped by a powerful *cornice*. The module of the bifurcated window between pilasters is repeated on the walls, giving a visual density to the palace block. Like Florentine palaces, there is a square interior courtyard, from which a *gallery* leads to a planted terrace that overlooks the immensity of the surrounding landscape. Analogous to the piazza-church pairing, the area of the terrace-garden is equal to the ground plan of the palazzo, creating a similar case of open versus closed volumes. To carry the open/built comparison further, the piazza, the cathedral, the palazzo, and the terrace-garden are all comparable in size, and they oblige us to consider and to understand the way in which they were combined by Rosselino.

The Bishop's Palace and the town hall are simpler than the other two buildings and they follow Tuscan tradition. The façade of the town hall opens into a lovely *Ionic* gallery. Although the mixture of different architectural styles may be surprising, it actually reflects the flexibility of Renaissance design.

A closer look at the space of the piazza reveals that the walls of the Palazzo Piccolomini, the bishop's palace opposite, the town hall, and the cathedral are not perpendicular to each other. As at Michelangelo's much later **Campidoglio** in Rome, the buildings create a trapezoidal plan for the piazza, in effect reversing the normal perspective sense of parallel lines appearing to converge. The effect is to make the façade of the cathedral seem larger than the façade of the papal palace, which is in fact the larger of the two buildings.

One more element should be noted: the exterior landscape. Two openings between the palace and the cathedral, and between the town hall and the cathedral, reveal the countryside with a view of distant mountains, a view of Mount Amiata covered with snow in the winter. Like the terrace-garden of Palazzo Piccolomini, the cathedral *choir* sits on the very edge of the village's platform above the valley. The Piazza Pio II demonstrates to how great a degree the new element of Renaissance design, the landscape, influenced the planning of the city. Pius II, a highly educated man who was fond of art and deeply involved in the poetry of the natural environment, was so fascinated by the forest and the open-air landscape that he took Catholic cardinals to the mountain facing Pienza and gave audiences to ambassadors by a spring where water cascaded into a lake.

Further Reading

Furnari, Michele. *Formal Design in Renaissance Architecture from Brunelleschi to Palladio.* New York: Rizzoli, 1995.

Mack, C. R. *Pienza: The Creation of a Renaissance City.* Ithaca, NY: Cornell University Press, 1987.

PIAZZA PO. *See* Piazza Vittorio Veneto (Piazza Po), Turin.

PIAZZA VITTORIO VENETO (PIAZZA PO), TURIN

Style: Neoclassical
Dates: 1821–1831
Architects: Giuseppe Frizzi; Joseph Ramée Pertinchamp; Charles-François Mallet; Ferdinando Bonsignore

Turin, the foremost city in Piedmont and the capital of the newly created Kingdom of Piedmont-Sardinia, became a model of seventeenth-century urban development. Beginning at the central square of the old city, the *Piazza* Castello, a new district was added that expanded in the direction of the Po River, a distance of about two-thirds of a mile. The Contrada Po (Po Street) was flanked on both sides by identical façades above a monumental first floor *gallery*. Cutting through active districts of the city, the galleries today still bustle with commercial activity. The Contrada Po ended in an *exedra* (a semicircular space) just short of the city wall. A distance of 1200 feet was left open between the wall and the Po River for defensive reasons.

The city of Turin was annexed to the French Republic and the French Empire from 1798 until 1814. A series of new urban plans were drawn up focusing on early-nineteenth-century urban planning decisions. The old bridge crossing the Po was replaced by a long bridge with five *arches* to give a better connection to the right side of the river. This new bridge was designed by the French architect Joseph Ramée Pertinchamp and supervised by the French engineer Charles-François Mallet in 1809. The first stone was laid on November 22, 1810. Between the bridge and the Contrada Po exedra, a vast open space was defined by a huge semicircular row of trees on a 1,000 foot diameter; this was called the Imperial Square.

When, after Napoleon's defeat in 1814, the Sabaudian Monarchy of Savoy was restored and a time of increasing prosperity was slowly beginning, a double decision was made to improve the eastern access to the city. The area of the Imperial Square would be reduced and replaced by a rectangular piazza, 300 feet wide and 1,000 feet long, opening onto the river. On the other side of the river, after the removal of a small district inhabited by boat people, the architect Fernando Bonsignore designed a church dedicated to the Great Mother of God as a memorial for the return of the Sabaudian King.

A square was necessary to provide a setting for the church. The design for the church square in the suburbs should be simpler than the design for the Piazza Po (its name has changed several times) on the left bank in the city. The Piazza Po should act as the entrance square to the capital city. But, at the same time, its gentle slope should reveal the famous Po River and make it a

Piazza Vittorio Veneto, Turin. View from the bridge over the Po River.

part of the city. And, on the other side of the river, the Piazza della Gran Madre di Dio should open to a vision of the splendid wooded area of the Monferatto Hills, whose aristocratic villas, scattered in their parks, offer relief from the densely built city. A new connection was provided between the city and its surroundings when the city opened up to a vast landscape.

The church of the Great Mother of God, designed by Ferdinando Bonsignore in 1818 and built 1827–1831, is a reproduction of the **Pantheon** in Rome, executed in a manner typical of neoclassicism. The rotunda is raised on a crypt and is accessible from a long flight of steps leading to a temple-like façade. The Piazza Po, on the opposite bank of the river, was designed by architect Giuseppe Frizzi, whose plans were approved on May 20, 1825, and the work completed in 1830. The process of design ignores the division of the ground into plots (two or three in each block) to focus on a highly monumentalized block façade. On each side huge galleries offer an expanse of urban space filled, like the via Po, with commercial activity. But the openings are no longer a series of identical *bays*, but a bridge-like succession of large bays and heavy pillars opened by a circular window on top and a small arch underneath. The success of the design is due to the ability of Frizzi to accommodate the gentle slope toward the river. The central block on each side has a pavilion at each end topped by a *pediment* that is carried by two *Doric columns* without bases in the ground floor, a typical device of neoclassical architecture. Following the level of the *cornices* (the horizontal moldings), an observer notices how the pavilions create a device for the change in slope, giving accurate expression to one of the grandest possible squares in the history of architecture. On top of the gallery, three stories of apartments display alternating balconies that crisscross the façades and introduce a surprising rhythm to an

ensemble that deserves careful observation to express the restricted sense of its beauty.

Further Reading

Comoli-Mandracci, V. *Torino, La città nella storia dell'Italia.* Rome-Bari, 1973.
Hitchcock, H. R. *Architecture: Nineteenth and Twentieth Centuries.* New Haven, CT: Yale University Press, 1977.
Meeks, C. L. V. *Italian Architecture 1750–1914.* New Haven, CT: Yale University Press, 1966.

RENOVATION OF THE OLD HARBOR, GENOA

Style: Contemporary
Dates: 1988–1992
Architects: Renzo Piano Building Workshop; Ove Arup and Partners; Peter Rice

On August 3, 1492, Christopher Columbus, who was born in Genoa in 1450, sailed from the harbor of Palos, sixty miles west of Seville, Spain. He selected a route that was the opposite of the one used by Portuguese sailors, which followed the African coast to the Cape of Good Hope and reached India by sailing eastward. Columbus sailed west across the ocean believing that he could reach India in that direction. On October 11 or 12, he discovered for Europe a new continent, the New World (later called America). Commercial routes opened all around the earth; the sixteenth century was, in fact, the first period of globalization.

Five centuries later, in 1992, Seville and Genoa celebrated the new global reality by holding the Columbus International Exhibition. To prepare, Genoa began to restore its old harbor by removing the disastrous additions that had accumulated since the beginning of the nineteenth century. The public authorities wanted once again to celebrate the union of the city with the sea as a symbol of Columbus's brave discoveries. Renzo Piano, born in Genoa and already a famous designer, was put in charge of the harbor renovation.

The coastline of the Ligurian Sea left little space for a city crowded onto the shore of a small bay. Large mountains at the back of the settlement offered little possibility of development. In the Middle Ages, in 1133, the city government managed to open the city toward the harbor thanks to a *portico* 3,000 feet

Renovation of the Old Harbor, Genoa. View of Renzo Piano's Big Bigo.

long, which created a nice frontage called the Palazzata. It contained merchant's shops and houses, as well as storage areas filled with all the valuable goods shipped from Asia through the Mediterranean Sea. The industrial prosperity during the early nineteenth century in northern Italy compelled the government in Turin to build a large warehouse, 3,000 feet long, which hid the Palazzata. But the top of the warehouse was accessible and became an attractive promenade that afforded good views of the city and the harbor. In 1885, this warehouse was demolished and replaced by railroad tracks, and in 1965 by an elevated motorway, called the Sopraelevata, which ran in front of the Palazzata. Like a work of vandalism, this destroyed all connection between the city and the harbor.

Renzo Piano's plan considered two aspects of the exhibition-renovation. He wished to remove all the elements that separated the city from the harbor. So, a vast *piazza* was created and vehicular traffic went underground but the Sopraelevata, unfortunately, could not be demolished. The second task was to bring new festive activities to the harbor itself and to the unused piers that projected out into the bay. Only ferries going to Sardinia and Sicily used the old harbor, the modern harbor having been moved to the west of Genoa where its huge development in front of the Sampierdarena and Sestri Ponente was designed by the engineer Albertazzi in 1933.

As the old Palazzata could now be opened up onto the harbor, with a better view under the Sopraelevata, the Piazza delle Feste (festive plaza) could celebrate the sea with a structure of carnivalesque sails, tents, and aerial masts.

This would be joined to an undistinguished warehouse called Millo, restored and newly colored pink. Then, on the nearby pier, would be the surprising aquarium, shaped like a boat, which created the sense that it was sailing on the water.

The Piazza delle Feste contains the most attractive architectural works. A huge derrick, anchored in the waters, projects hollow-shell booms that imitate the old cranes of the harbor. It provides a panoramic elevator that offers views of the exposition center called the Big Bigo. Tent-like roofs, connected with translucent elements, cover the multipurpose hall, creating an aerial appearance. Renzo Piano got his inspiration from Frei Otto's work in Germany and from Archigram's projects in England during the 1960s.

Wind sculptures perched high above were designed by the Japanese artist Susumu Shingu to remind visitors of the fragility of Columbus's ships. Across the basin from the Piazza, blocking the horizon, a large cotton warehouse, 1,200 feet long, built from 1895 to 1901, was restructured to house a large auditorium made up of twinned rooms containing 800 seats linked by a central stage.

The Columbus exhibition of 1992 was the starting point of a comprehensive study for the development of the new twenty-first-century harbor of Genoa that will extend more than ten miles to the west. Renzo Piano's fascination with sustainable and ecological procedures gave him the opportunity to define the new landscape of the Ligurian coast for the future of the city of Genoa.

Further Reading

Museum of Architecture: http://www.archmuseum.org/biyografi.asp?id=10033.
Piano, R., and G. Bianchi. *Renzo Piano & Building Workshop.* Genoa, 2004.
Renzo Piano: http://www.renzopiano.com.

ROYAL HUNTING LODGE, STUPINIGI

Style: Baroque
Dates: 1729–1733
Architect: Filippo Juvarra

Stupinigi, a hunting lodge, is a work of Filippo Juvarra's maturity, built just before his departure for the Court of Madrid in 1735 and his death on January 16, 1736, at the age of fifty-eight. Juvarra (1678–1736) was a northern Italian *Baroque* architect of great talent who was strongly influenced by *classical* art. His handsome and refined design for Stupinigi is the equal in quality

of some of the best Tuscan and Venetian *villas* of the sixteenth century, although the program he had to follow for the lodge was unusual for Italy. Indeed, Stupinigi establishes him as one of the most creative European architects of the eighteenth century.

Stupinigi is six miles distant from the center of Turin. It was accessible by a straight axial avenue lined with elm trees. Juvarra believed strongly in the variety of invention, and he began by playing with forms in the approach to the hunting lodge. The avenue was framed by two rows of farm buildings but was interrupted by a large semicircle, called an *exedra*, containing stables that opened into a hexagonal courtyard in front of the X-shaped lodge.

The central feature of the lodge is an oval rotunda from which wings containing rooms for the king and queen, for the royal family, and for the court and guests are extended. The large roof that now dominates the building is a late remodeling by Benedetto Alfieri (1764–1766). The rotunda opens onto four wings arranged in a Saint Andrew's cross (an X-shape) and offers views in multiple directions on the main and secondary axes and through the wings that align with long alleys cut into the woods. Connected to distant views in six possible directions, the lodge provides for a splendid dialogue between architecture and the rearranged nature of the surrounding hunting forest.

The central rotunda is two stories tall and is enlarged by four half-domes penetrating the main volume in a monumental Baroque manner. Juvarra reminds us of Bernini and Borromini in Rome but modernizes their spirit. The proximity to Venice explains a sense of "bel composto" (see **Introduction**)

Royal Hunting Lodge, Stupinigi. View upward into the central rotunda designed by Filippo Juvarra and painted by Domenico and Giuseppe Valeriani.

adapted to the Veneto. Juvarra carefully controlled the introduction of color in the *fresco* of The Triumph of Diana by Domenico and Giuseppe Valeriani (1731–1733). The range of color was not very far from that of Tiepolo and suggests a sort of early impressionism. Subtly, cleverly, and very intelligently arranged, Stupinigi's suites of rooms give the feeling of a reassuring and stable world. Can we imagine Vivaldi's music played in these rooms? While Juvarra recalls aspects of the Baroque style of the previous century, he establishes the sense of everyday comfort characteristic of the eighteenth-century Enlightenment.

Filippo Juvarra prepared his sketches in 1728. After the Treaty of Utrecht, the kingdom of Piedmont-Sardinia was created as a buffer state to protect Habsburg Austria from French hegemony. Looking at a plan of Turn in 1730, a double transformation, due to this change in status, was visible within a five-mile radius around the city center. A number of magnificent residences displaying the power of the King were built surrounding the city: Moncalieri to the south; the hunting lodge at Stupinigi to the southwest; the castle of Rivoli seven miles to the west; and Venaria Reale to the north.

As the power of the king expanded, a new relationship was created between the city and its surroundings. The city was able to dominate the land around it and showed its domination by the opening of large straight streets joining Moncaliere, Stupinigi, and Venaria, and connecting Rivoli to a church erected on a tall hill twelve miles distant called La Superga. Agriculture was not financially rewarding so most of the middle class and nobility, who lived in the city, began to develop commercial interests. Stupinigi presents an optimistic vision of this age of transformation as it joins architecture with a new sense of controlled nature.

Further Reading

Boscarino, S. *Juvarra Architetto.* Rome, 1973.

Pommer, Richard. *Eighteenth-Century Architecture in Piedmont:The Open Structures of Juvarra, Alfieri, and Vittone*. New York: New York University Press, 1967.

Severo, D. *Filippo Juvarra.* Bologna, 1996.

Wittkower, R., et al. *Art and Architecture in Italy, 1600–1750.* 4th ed. New Haven, CT: Yale University Press, 1999.

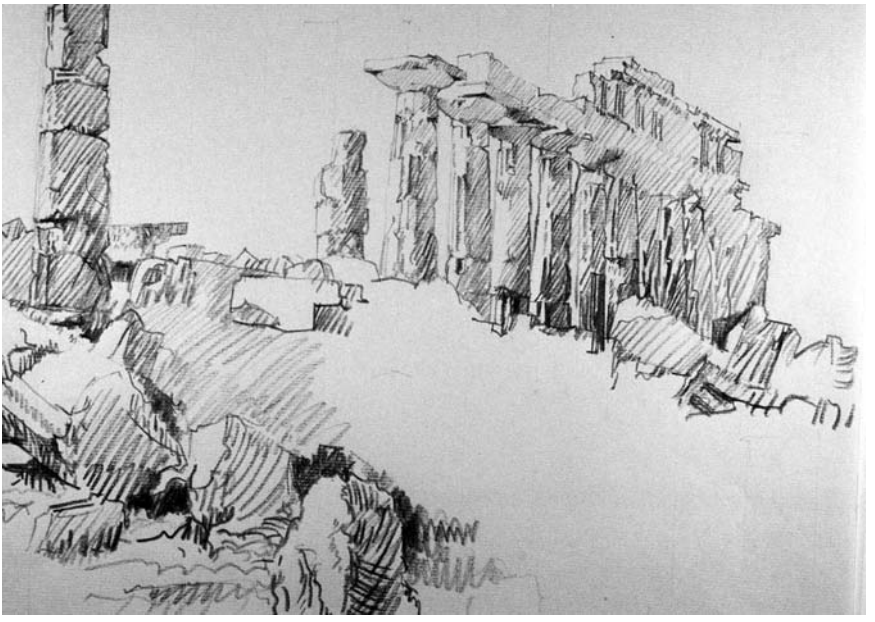
RUINS OF THE GREEK CITY OF SELINUS, SELINUNTE

Style: Greek
Dates: 651–250 BCE
Architect: Unknown

Beginning in the eighth century BCE, and continuing well into the sixth century, the mainland Greeks engaged in a wave of colonization that took settlers to lands situated both to the east and west of their homeland. The colonists went in search of agricultural land and pasturage as the increased population of the mainland city-states put pressure on the limited amount of farmable land in areas such as the Isthmus of Corinth and Euboea. A group of citizens from the isthmus city-state of Megara sailed west, to the fertile island of Sicily, where they founded Megara Hyblaea in 726 BCE about fifteen miles north of the Corinthian colony of Syracuse.

Megara Hyblaea prospered, its population increased, and a new infusion of colonists from the Greek mother-city of Megara arrived. As on the mainland, the population of Megara Habylaea eventually outgrew the local resources and around 650 BCE, the settlement organizer Pammilus led a group of colonists to a new location in southwest Sicily where they founded the colony of Selinus. It was the most westerly of all the Sicilian colonies, which led to its early contact with the Carthaginians, Phoenician settlers (originally from the eastern Mediterranean littoral) who also established colonies on the island.

Between the rivers Belice and Modione, the colony occupied two low-lying hills as well as the plain around and between them. The southern hill, the oldest part of the settlement, became an acropolis ("high city") where a number of impressive temples were built. To either side of the settlement the mouths of the rivers could be turned into harbors to facilitate export and trade. Wild



Ruins of the Greek City of Selinus, Selinunte. Temple G sketched by the author in December 1986.

parsley grew along the rivers, which indicated rich water and agricultural resources, and provided the name for the colony—the Greek word for parsley is "selinon." The colonists understood immediately that the land could produce cereals, olive oil, wine, beans, and other produce.

The Greek inhabitants of Selinus lived on the border of Carthaginian territory and benefited from this position as a center for trade between the western and eastern Mediterranean. They exported agricultural products, wood, and the chalk used as a colorant for fortifications and buildings to the North African coast where Carthage was located. The trip took only a day and a half by sea. Thus, the histories of Selinus and Carthage were intertwined for better or worse.

During the sixth and fifth centuries, Selinus grew as fast as a modern American city, a sort of Sicilian California, as G. Fougeres has remarked. The profit from trade was transformed into outstanding works of art dedicated to the dignity of the gods. Seven large temples were built, four on the acropolis and three, called the East Temples, across the Gorge of the Cottone. These works challenged the artistic superiority of Athens under the great leaders Pisistratus and Pericles.

Because of its location on the Carthaginian frontier, Selinus was in an ambivalent position, at one time allying itself with Carthage, at others taking up the Greek cause. Although the Greek colonies involved themselves in competitive, ultimately self-destructive disputes and rivalries, at times they were able to unite in the face of Carthaginian aggression. In 409, during the third Carthaginian War, Selinus, while allied with Syracuse, attacked its archenemy Segesta and was crushed by the army of Hannibal, son of Gisco. The Carthaginians destroyed everything in Selinus except the temples and sold the entire population into slavery.

Shortly after this disaster, Selinus was resettled by a Syracusan exile on a greatly reduced scale. This smaller city, occupying only the south hill, was demolished by the Carthiginians in 250. A small village (vicus) of the *Byzantine* period has been located under the collapsed columns of Temple C, and a later Arab village, called Rahal al Asnaam, "the village of the columns," was located nearby.

At some time in their history, the temples of Selinus were so totally demolished that archaeologists posit that a massive earthquake, not human action, was responsible for their destruction. The buildings were forgotten and not rediscovered until around 1550 and later on by travelers in the eighteenth century. Some of the temples were rebuilt; some columns still remain scattered on the ground waiting to be re-erected.

The splendor of the temples at Selinus contrasted sharply with the simplicity of the houses. Most of them had rudimentary foundations that consisted of a stone base carrying clay or brick walls, which did not survive the decay of the city. Roofs were covered with tiles and the inclusion of terraces could modify the silhouette of the building. Single story or two story houses, most of them built on narrow lots 15 to 30 feet wide, had small rooms without any definite

function. Houses had very few openings onto the street, but some had storefronts. Inside the house was a courtyard where an oven in one corner could define the cooking area or a movable oven could be placed on a terrace. The distinction between spaces for men and women was hardly discernable. Most of the excavated houses are late, dating to the fourth and third centuries BCE rather than to the days when Silenus was as the height of its power and prosperity. What remains of the fortifications of the city, partly destroyed by the Carthaginians, preserves strongly organized defensive features.

Further Reading

Carratelli, G. Pugliese. *The Greek World, Art and Civilization in Magna Graecia and Sicily.* Milan: Rizzoli International Publications, 1996.

Woodhead, A. G. *The Greeks in the West.* New York: Praeger, 1962.

SAFFA AREA PUBLIC HOUSING, CANAREGGIO, VENICE

Style: Contemporary
Dates: 1984–1987
Architects: Gregotti and Associates

A certain number of Italian architects, like Saverio Muratori (1910–1973), believed so deeply in the quality of the urban fabric of Venice that they conceived it as a model that would be impossible to surpass. The urban patterns in Venice were a historical development that explained the slow process of change from the *Gothic* "decorated house," such as the **Ca D'Oro,** to the Renaissance palazzo and to the larger blocks of the eighteenth century. Social life had originally developed on small islands later connected by canals to form wards around central squares called "campi," which contained a church and a *campanile*. But could contemporary architecture fit within this tradition? Could it harmonize with the traditional urban fabric, yet create new forms and improve social life?

Few possibilities for building remained in Venice after 1980. However, an unused former industrial estate, Saffa, near the railroad station, offered possibilities. The unused Dreher brewery on the eastern end of the Giudecca Island also presented a chance for development. The architect Gino Valle took charge of the Dreher residential estate (1981–1984) and Vittorio Gregotti of the Saffa estate (1984–1987). A public housing project containing 192 apartments contributed to the regeneration of the Venetian urban fabric. Gregotti, a brilliant

Saffa Area Public Housing, Canareggio, Venice. View of the inside of the housing block designed by Gregotti and Associates (1984–1987).

contemporary architect, began by following the Italian traditions of the "townscape," connecting architecture with the existing urban fabric, and the "landscape," connecting new buildings to the surrounding territory, which he did on a grand scale in the Zen district of Palermo. The visual and social richness of Italian towns and the beauty of the landscape were the foundations of his ideas.

Italian morphologists, architects and planners who study the growth and future of urban form, were concerned with combining in a single process the building and the public or private spaces (the street, the "campi," and the courtyard) around it. For them, a building could not exist alone, isolated. The building and the adjacent area made up a single unit. Their method was based on the study of the city as it is, with residential areas or housing defined by certain types of buildings (a row house, a palazzo, an apartment house) and, at the same time, defining a section of street, a "campo," or a courtyard. The designer's task was to modernize tradition, to adapt it to financial requirements, and to improve the contemporary sense of comfort. He might introduce modern technological standards, but he would do so with care. For example, Gregotti still uses the traditional Venetian tile roofs. When, in 1985, as the editor of the architectural magazine *Casabella* (nos. 509–510), he opened an exciting discussion on the perfect integration of architecture into the existing fabric, the Saffa project was already under construction.

Gregotti respected the Venetian tradition of the "campi," sometimes reduced to "campielli" because of their diminutive size. A "campo" today could be a paved space, planted with trees, that contains community pavilions or

rows of shops. One of the "campi" he built opened directly onto the canal Rio della Crea. Around these central cores, Gregotti modernized a series of typical Venetian row houses, making them linear or doubling the row to open the block to little gardens or to small courtyards. Duplex homes were given more space by means of porches, gardens, or roof terraces that mixed interior and exterior life. Each apartment had its own private open space. A sequence of spaces from private to public enhanced the significance of social life. Mixing activities in the "campi" and the plantations, either in the private gardens or in the public spaces with large old trees, increased the potential for social encounters and gave freshness to the estate. The pink coloration of the interior and in the court gave a visual density to the walls, which remained flat and were perfectly adapted to the neighborhood. Repetitive windows offered a neutral background and left the architect free to creatively develop such inventions as Venetian chimney stacks, bay windows on the street side, or wooden roofed terraces that imitated "modernistic" architecture from the early twentieth century. Gregotti's Saffa residential area was a successful approach to the problem of bringing of modern design into traditional cities.

Further Reading

Rykwert, Joseph. *Gregotti Associati*. Translated by R. Tannenbaum. New York: Rizzoli, 1996.

Tafuri, Manfredo. *Vittorio Gregotti, Buildings and Projects*. Translated by R. Sadleir. New York: Rizzloi, 1982.

SAINT MARK'S SQUARE, VENICE

Style: Romanesque; Renaissance
Dates: 888–912; 1172–1178; 1511–1640; 1810
Architects: Various unknown architects; Bartolomeo Bono; Jacopo Sansovino; Vincenzo Scamozzi

Saint Mark's square is the symbol of Venice. Except from the far end of the Piazzetta di San Marco, a smaller extension of the main square, it presents the paradox that the most important civic space in Venice has no view of the water in a city devoted to distant shipping with the eastern half of the Mediterranean Sea. Although originally built on a half-emerged sandbank in the sixth century, the strictly unnatural shape of the square was determined in the sixteenth century and gradually modified thereafter. It became a built artifice of great beauty imposed on a natural setting that offered few possibilities of development. As such, it typifies the city of Venice.

Saint Mark's Square, Venice. The Basilica of Saint Mark and its campanile are the focal point at the far end of the vast square.

During the period of the Lombard invasions in the sixth century, part of the population of the Venetian area found refuge on islands in the lagoon. This group of islands, which became Venice, was ruled by an exarch from the Eastern Roman Empire called the Magister Militium (military commander). His title was changed to duke and later, by election by a minority of important

citizens, to Doge. The Doge's palace and a church dedicated to Saint Mark (832) became the roots of the future Saint Mark's Square. Venice took advantage of its eastern connections and developed rich commercial activities with the Orient. In the early Middle Ages, the public square that became Saint Mark's was only a "campo" (a local square for a ward or neighborhood), not unlike the many "campi" that existed on each island of Venice. A canal, the Rio Batavio, cut across the center of the present square and thus reduced its length.

The bell tower, or *campanile*, that plays the important role of connecting, like a pivot, the large open space focused on Saint Mark's façade and the smaller one, the Piazzetta that opens at a right angle onto the Grand Canal was started in 888–912, and partly finished in the twelfth century. Its height was increased in 1511–1513 by a tall pyramid that raised the crowning figure of Archangel Gabriel to more than 300 feet above the pavement. The campanile crashed to the ground on July 14, 1902, but was quickly rebuilt from 1903 to 1912. Around the corner from the Piazza, the view from the Piazzetta of the Grand Canal, the large waterway that winds through the center of Venice, is framed by two tall *columns* carrying figures of the two protective saints of Venice, Saint Mark and Saint Theodore. Today, one needs to imagine Venice's fleet, the cause of its riches and of its grandeur, sailing proudly on the Grand Canal. The fleet included the enormous gilt galley called Bucentauro, which was used every year for the symbolic marriage of the Doge to the sea, a celebration of Venetian domination of the waters.

Two periods show how the space of the Piazza San Marco changed. Before 1500, it looked almost *Byzantine*, focused as it was on the Byzantine-inspired church of **San Marco**. From early in the sixteenth century, however, the square began to take on a decidedly *classical* outline based on the designs of Jacopo Sansovino (1486–1570), who had been trained in Bramante's studio in Rome, and who brought with him to Venice a mastery of the classical *orders*.

In the thirteenth century, new lead-covered *domes* were added to San Marco, which gave the church a more picturesque silhouette. The Doge's Palace was rebuilt in the fourteenth century in a lavish *Gothic* style. The Procuratie Vecchie (the old offices of the high-ranking magistrates of 1172–1178) on the northern side of the Piazza were purely Byzantine. Facing them, the Ospizio (Hospital) Orseolo was aligned with a small campanile.

In the sixteenth century, the desire to celebrate Venetian modernity changed the aspect of the Piazza. The campanile was heightened, as mentioned above, and the Procuratie Vecchie were thoroughly rebuilt with three rows of *arches* instead of two (1514–1532) by the architects Bartolomeo Bono and Jacopo Sansovino. The western face of the Piazzetta was remodeled by Sansovino in a handsome classical style beginning with the Mint (la Cecca, on the Grand Canal 1536–1547), continued by the Libreria Marciana (the Marciana Library 1537–1588), and the fine design of the Loggetta at the base of the campanile (from 1537 on). All this defined the new grandeur of the Piazza San Marco. Scamozzi replaced the Ospizio Orseolo and pushed it back to create a monumental wing inspired by Sansovino's design for the extension of the

Procuratie Nuove (the New Offices 1582–1640), which were finished by Longhena. The far end of Saint Mark's Square contained a church that was demolished during the French occupation and replaced in 1810 by a two-story gallery inspired by the Procuratie Nuove. Napoleon was proud of completing "the most beautiful drawing room in the world."

Further Reading

Howard, Deborah. *The Architectural History of Venice.* Rev. ed. New Haven, CT: Yale University Press, 2004.

Samona, Giuseppe, ed. *Piazza San Marco, l'architettura, la storia, le funzioni.* Padua: Marsilio, 1970.

SAINT PETER'S DOME, ROME

Style: Renaissance
Dates: 1505–1590
Architects: Donato Bramante; Michelangelo; Giacomo della Porta

It took nearly a century to build Saint Peter's *dome*, a gigantic, slightly pointed hemisphere, inspired by the **Pantheon**, that Bramante designed to crown a *centralized plan* to replace the Constantinian (Early Christian) church of the fourth century. By 1505, when the first designs were made, the ancient church was in danger of collapsing, and Bramante and Pope Julius II wanted it replaced by a church worthy of the capital of the Christian world. Neither man lived to see his plans for the church fulfilled. At the time of Bramante's death in 1514, only the four main *piers* intended to support the dome were standing. During the subsequent decades, one of his former pupils, Antonio da Sangallo the Younger, who worked on Saint Peter's from 1520 until his death in 1546, transformed and radically altered Bramante's design into a colossal structure.

By the time Sangallo took over, the Protestant Reformation had changed the conditions surrounding the church. What would it mean to build such a great church for the Pope, and how would its form influence future Catholic Church design? Martin Luther had criticized the Church as illegitimate, religiously inactive, and corrupt. His decision to separate from it in 1517 and Calvin's conversion to Protestantism in 1533 put an end to Christian unity and to the unique power of the Church of Rome.

To combat dissent against the Catholic Church in this period, two Popes and two architects decided to complete Saint Peter's *Basilica* and to start a movement of Catholic resistance called the Counter-Reformation (or Catholic Reformation). Paul III (Pope from 1534 to 1549) unwillingly convened a

Dome of Saint Peter's Basilica, Rome. Begun by Michelangelo and finished by Giocomo della Porta and Domenico Fontana.

meeting of church personages, the Council of Trent, which clarified and systematized the bases of the Catholic faith. In 1547, he overcame the resistance of Michelangelo, then seventy years old, to serve as architect for a remodeled Saint Peter's. Michelangelo incorporated his final thoughts about architecture in his design for the building (1547–1564).

Sixtus V (pope from 1585–1590) decided on January 19, 1586, to finish the dome that Michelangelo had designed. The great architect had died before construction could begin but he had prepared a detailed model. Using a revision of that model, Giacomo della Porta was able to complete work on the dome by May 19, 1590. A solemn mass celebrated the end of nearly a century of work on Saint Peter's Basilica.

Michelangelo had accepted his task with scrupulous faith. Looking back at his earlier convictions, he thought that Saint Peter's should be a monument without obscurity, darkness, or secrecy. He had to clarify his own position because he had been accused of Protestant sympathies and, at the same time, was subjected to criticism from Protestants. Michelangelo objected to Sangallo's colossal project, criticizing it as dark and confused. Offended by the corruption of Sangallo's team of workers, he dismissed them and, acknowledging his need for freedom, he refused payment for his work. To return to

the simplicity of Bramante's plan of 1505, Michelangelo demolished the uncontrolled growth of Sangallo's church and returned Saint Peter's to a *Greek cross plan* inscribed in a square. Four equal arms terminated by semicircular *apses* are arranged around the central space, which is framed by powerful piers that support the dome. He put four subsidiary domes above the spaces in the corners, that is, the spaces between the arms and the outer square envelope. Michelangelo criticized Sangallo's juxtaposing of receding and projecting masses and his use of numerous superimposed *columns*. Instead, he wrapped the church in closely spaced vertical elements—giant *pilasters* that extend the height of the building—capped with a strong horizontal element that turned the church into a unified sculptural body. Inside and out, the pilasters suggest tense forces in action. This dynamism would, for Michelangelo, express the impulsion given by the Church to a world infused with divine grace. To defend his ideas against the unduly expensive models commanded by Sangallo (one, costing 6,000 scudi, equaled the cost of some small churches), he carefully studied the church and ordered four models: in 1546, a clay model for twenty-five scudi; another in 1547 for eighty-seven scudi; a third in 1557; and a great wood model finished in November 1561.

As a leader in sculpture and painting, Michelangelo knew well how to exploit light reflected on the travertine *vaults* to emphasize the dominance of the dome inside Saint Peter's. (*Baroque* painting has obscured this effect.) The erection of the dome, strengthened by double columns, was begun in January 1554. For the construction of the dome, Michelangelo turned to Brunelleschi's dome of **Florence Cathedral** (Santa Maria del Fiore). He, like Brunelleschi, used a dome with a double shell, an interior hemispherical dome separated from a taller exterior one, to which della Porta gave a pointed shape, making it more than twenty-five feet higher than the interior shell. This gave the dome a greater visual impact in the already famous Roman skyline by providing the decisive thrust, which has become such a familiar sight to Roman citizens and visitors.

The construction of Saint Peter's *nave* by Maderno obscured Michelangelo's simplicity. But, inside, Bernini's *Baldacchino* (1624–1633) restored the dome's supremacy by turning the nave into a long vestibule leading to it. And Bernini's *colonnade* in front of Saint Peter's (1656–1667) created an ecumenical elliptical *piazza* that appeared as a splendid urban translation of Michelangelo's argument for simplicity and attractiveness in his design of Saint Peter's dome. A Baroque artist could be faithful to Michelangelo, who himself had respected Bramante's much earlier design. The long connection of artists across 160 years surely explains Saint Peter's unchallenged rank in world architecture. *See also* **Colonnade of Saint Peter's Basilica, Rome.**

Further Reading

Ackerman, James S. *The Architecture of Michelangelo.* Chicago: University of Chicago Press, 1971.

Scotti, R. A. *Basilica. The Splendor and the Scandal: Building St. Peter's.* New York: Viking, 2006.

SAN CARLO ALLE QUATTRO FONTANE, ROME

Style: Baroque
Dates: 1638–1667; 1674–1676
Architect: Francesco Borromini

The church and *convent* dedicated to Saint Charles Borromeo occupied Francesco Borromini (1599–1667) at both the beginning and the end of his productive life. The body of the church was quickly erected between February 1638 and the spring of 1640 when its rough construction in brick was completed; but its rich stucco decoration was not finished until the spring of 1641. San Carlino, as the church is fondly called by Romans, was Borromini's first successful building. Its subtle façade was added between 1665 and 1667 with undulating concave and convex movements that clearly exemplify the architect's highly imaginative creativity. When he died in 1667, work on the first story of the façade was suspended until his nephew Bernardo, using Borromini's original designs, built the second story between 1674 and 1676. The statue of Saint Charles in the central niche over the door was the work of Antonio Raggi; two sculptors, Dori and Antonio Fontana, positioned the two angels carrying the large medallion at the top of the façade in 1676.

San Carlo alle Quattro Fontane was the church of the Spanish Discalced Trinitarians, a monastic order to which Borromini was deeply attached. The monk's convent occupied a small but remarkable site at the hilltop crossroads of via Pia (now via XX Settembre) and the pilgrimage thoroughfare via Felice (now via Quattro Fontane) that connects the churches of Santissima Trinità dei Monti and Santa Maria Maggiore. Four fountains, "quattro fontane" in Italian, mark the intersection, thus the name San Carlo at the Four Fountains. For the restricted site owned by the convent—its frontage on via Pia was less than 80 feet long—Borromini had to design a compact block that contained the refectory (dining room), the monks' cells, the library, a large *cloister*, a tiny cloister only 28 feet long, and a church. He accomplished the plan with great mastery, finding a way to erect an ingenious church contained within the block that has only one wall (the entry façade and the entrance to the cloister) exposed to the via Pia; the church is separated from the via Felice by the sacristy and the monk's chapter room (a room where the administration of the monastery is carried out).

We possess sufficient numbers of drawings to be able to understand the way in which Borromini arrived at the church plan. After several unsuccessful attempts, he introduced a reduced version of a *dome*, derived from Saint Peter's,

San Carlo alle Quattro Fontane, Rome. The undulating façade of Borromini's small masterpiece.

carried on its diagonal axes by strong *piers*. On the main longitudinal axis (from the door to the high altar) and the transverse axis Borromini opened small rectangular *bays* and then, in a most original move, he changed the shape of the dome from the original circular form to an elongated oval.

Next, Borromini lengthened the two bays on the main axis, making them semicircular. At first, he intended to complete the scheme by adding semicircular bays on the transverse axis, but he had to abandon this formulation to allow room for the sacristy. To reduce the length of the transverse axis, Borromini used a sort of crushing movement of the semicircles that left just small, shallow partial ellipses at either end of the axis. The *arches* connecting the ellipses to the dome are bent in torsion.

The significance of San Carlino was understood as a "suspended difference," a subtle moment in architectural creativity. The two-story *columns* set into the walls link the shallow and deep recesses on the axes and accentuate the movement of the walls. Above the strong uninterrupted *cornice*, the oval dome appears to be higher and lighter than it actually is because its mass is deemphasized by a decoration of recessed crosses, hexagons, and octagons illuminated by the light coming down from the *lantern* and from hidden light sources at the base of the dome.

Borromini's façade for San Carlino was the most urbanely active of his creative life. Its primary motif was the sinusoidal *entablature*, which employed a triple movement of contraction, expansion, contraction that was typical of *Baroque* attitudes toward space and mass. The movement can be compared to

San Carlo alle Quattro Fontane, Rome. View of the interior, a masterpiece of light, space, movement, and proportionality.

the actions of balls in a game of billiards. When the balls collide, they repulse each other, an action that people of the seventeenth century called "contraction," (at the contact between the balls) or "expansion," when the balls bounce off each other. The sensuality of the sinusoidal curve was the translation of this idea into architectural form.

Although the façade barely touches the church volume behind it, the expansion of the central bay reveals its presence. The recession of the bays on either side, on the contrary, is conditioned by the presence of the urban space of the street. Urban space and architectural space are engaged in a game of rivalry, like the balls in a game of billiards, and the façade simply reflects their competition. The second story plays against the ground floor: the ground floor's concave-convex-concave articulation is countered by the second story's concave-concave-concave articulation, except for a small, oval "temple" that is set into the center bay, so that visually, at least, the second story appears to be concave-convex-concave like the ground floor—until one looks carefully. As in the interior, the columns on the façade are set in front of the plane of the façade, but this time the columns frame smaller columns, much as on Michelangelo's **Caampidoglio** façades.

Further Reading

Blunt, Anthony. *Borromini.* Cambridge, MA: Belknap Press, 1979.
Portoghesi, Paolo. *The Rome of Borromini*. New York: G. Braziller, 1967.

SAN FRANCESCO (SAINT FRANCIS BASILICA), ASSISI

Style: Gothic
Dates: 1228–1253
Architect: Unknown

Born in Assisi in 1181 or 1182, Saint Francis was responsible for a great and fundamental change in medieval Christianity. His active mysticism, his asceticism, and his sense of mortification were tempered by a profound sense of humanity. Francis brought into the religious outlook of his time a faith in the beauty of creation—of animals and nature as well as humans. Both the mildness and sympathy with which he contemplated God's Universe and his spiritual simplicity and humble joy permeate the *Canticle of the Sun*, his hymn to the unity of the forces and elements of Nature.

Saint Francis was immensely popular with the "little people" because he detached himself from obscure theological debates and addressed himself directly to the hearts of the poor, the sick, and the needy. He believed in social charity as a means of experiencing the Christian faith. In a period of doubt and anxiety that was characterized by the lack of secure papal authority, "worldly" monastic orders, and overcrowded cities, Francis and other reformers redirected the goals of Christian religion toward a more humanistic relationship with worshippers than had been the earlier practice.

Giovanni Bernardone was the son of a rich cloth merchant in Assisi, who expected his son (whom he indulged rather extravagantly) to take up the family trade. The name Franciscus ("Little Frenchman"), by which the Saint is known, was given to him by his father because his mother came from French-speaking Provence. Although the young Francis enjoyed writing poetry and carousing with his friends, he also had a deeply spiritual side. He once met a beggar in the streets of Assisi and promptly gave all his money to the man.

In 1201, Francis took part in a military expedition against Perugia and was captured. During the year of his captivity, Francis began having religious visions that eventually caused him to abandon the military and reject the wealthy lifestyle of his father. This caused a rupture between father and son that was very bitter. Francis gave away all his wealth, even his clothing, and became a holy beggar who worked with the lepers and embraced apostolic poverty. As his reputation for holiness spread, many young men began to follow him and to share his interpretation of the Christian life. As the numbers grew significantly, Francis founded the Franciscan Order, which was recognized by Pope Innocent III in 1209.

The Franciscans practiced poverty and humility. They were not cloistered (separated from the outside world) as were earlier monastic communities, and they favored itinerant preaching at crossroads or in barns—any informal place that had good acoustics and could accommodate large numbers of worshippers. Congregations were spellbound by the Franciscan emphasis on preaching in understandable language as a major focus of their new reformed liturgy. As the popularity of the order grew, among the rich as well as the poor, the famous Franciscan preachers moved into parish churches and cathedrals. Among the established clergy there was strong opposition to the Franciscan example of radical poverty and simplicity. Scurrilous attacks and diatribes full of disdain were launched from church pulpits against the new order.

By 1224, the followers of Francis had so increased in number that he turned over the job of organizing and directing the Order to Brother Elia. It was Elia's dream to build a magnificent church that would eventually house a tomb for Francis. When, two years after his death, Francis was canonized in 1228, Elia authorized the beginning of work on a *monastery* and a *basilica* for Saint Francis to be located in Assisi. Elia's project, although sanctioned by Pope Gregory IX, who laid the foundation stone, was not without controversy. Many of the friars argued that a large and ornate church ran counter to Francis's ideal of poverty and his spirit of humility. Nevertheless, the final decision

was to build a large and imposing structure because the church was the motherhouse of the Franciscan Order and because it would become an important pilgrimage site.

The church contains the *crypt*, under the main altar, where the body of Saint Francis was placed in 1230. The basilica is actually two churches consisting of a lower level that is mysterious and dark and an upper basilica that shows the influence of the *Gothic* style of French cathedrals. Each church has a simple plan of a *nave* made up of four *bays*, a *transept*, and an *apse*. Both unusual cylindrical *buttresses* (constructions that brace the main wall) and *flying buttresses* (freestanding arches) support the walls. Until 1235, the entrance to the lower church was in a vast *narthex*, or transverse entry hall. The upper church was originally planned to have a nave of only three bays to avoid covering the narthex. But eventually, it was decided that the upper basilica should have four bays in to emphasize its importance. A new façade was built with a great simplicity that recalls *Romanesque* architecture. Divided into three stories, the façade has a Gothic doorway on the lowest level, a *rose window* above that, and an *oculus* in the third story directly below the simple gabled roofline. A Romanesque-style *campanile*, or bell tower, was added at the left side of the façade.

The two-story church combines a lower burial church, with its separate doorway in the narthex, reminiscent of Old Saint Peter's in Rome, with an elegant upper basilica inspired by French Gothic chapels and the Church of

Basilica of San Francesco, Assisi. View from the lower Piazza of the entrance to the lower church (at the left) and the façade of the upper church (at the right).

the Holy Sepulcher in Jerusalem. The Franciscan friars were attempting to develop a synthesis, an "ecclesia specialis" (special church), that combined the pilgrimage church in Jerusalem, the Roman church symbolizing the supremacy of the Pope, and a sense of modernity that was associated with French Gothic architecture.

Long stretches of walls in both the lower and upper churches were decorated by the most famous painters of the time. Between 1296 and 1304, Giotto di Bondone (1267–1337) painted twenty-eight episodes from the life of Saint Francis in the upper church. The young painter introduced a new style of painting, a new way of representing the world, that moved away from the abstract, flat, and heavily *Byzantine*-influenced painting of the Romanesque era toward a way of penetrating sacred history through the representation of daily life and natural settings. For Giotto, God could be understood in terms of the human image, by everyday life, and by a sense of action. Giotto's holy figures were constructed from mighty volumes; they conveyed the action of the story with gestures typical of central Italian society. The basis for Giotto's new attitude toward painting was Saint Francis's conviction that human beings could imitate, or even recreate, the life of Jesus Christ. Life in the religious communities encouraged the acceptance of these ideas and the understanding of religious mysteries as part of a more humanistic approach to both life and faith. For Giotto, the plasticity of his figures and three-dimensionality of his paintings explain the new spirituality.

Further Reading

Bellucci, Gualtiero. *Assisi, Heart of the World*. Assisi: Edizioni Porziuncola, 2005.

Frankl, P., and P. Crossley. *Gothic Architecture*. New Haven, CT: Yale University Press, 2000.

Smart, Alastair. *The Assisi Problem and the Art of Giotto: A Study of the Legend of St. Francis in the Upper Church of San Francesco, Assisi*. Oxford: Clarendon Press, 1983.

White, John. *Art and Architecture in Italy, 1250–1400*. New Haven, CT: Yale University Press, 1993.

SAN GAUDENZIO DOME, NOVARA

Style: Neoclassical
Dates: 1841–1878
Architect: Alessandro Antonelli

Thirty-seven years were required for the conception and construction of the *dome* of the church of San Gaudenzio in Novara. By the time he was

forty-two, its architect, Alessandro Antonelli, had been a professor at the Academy of Fine Arts in Turin for five years. The commission to build the dome was his first opportunity to capitalize on his technical virtuosity and to fulfill his architectural ambitions. When, in 1878, the statue of Christ the Redeemer was installed on top of the *lantern*, 400 feet above the ground, Antonelli was eighty-years-old. He had spent most of his life constantly improving and transforming a dome originally intended to be 159 feet tall into one 327 feet tall. Antonelli went through six different projects and an additional single late design for the lantern, built from 1875 to 1878, which added the final 73 feet to the total height of the dome. Its vertical thrust is awesome, making it rise high above the roofs of the city of Novara.

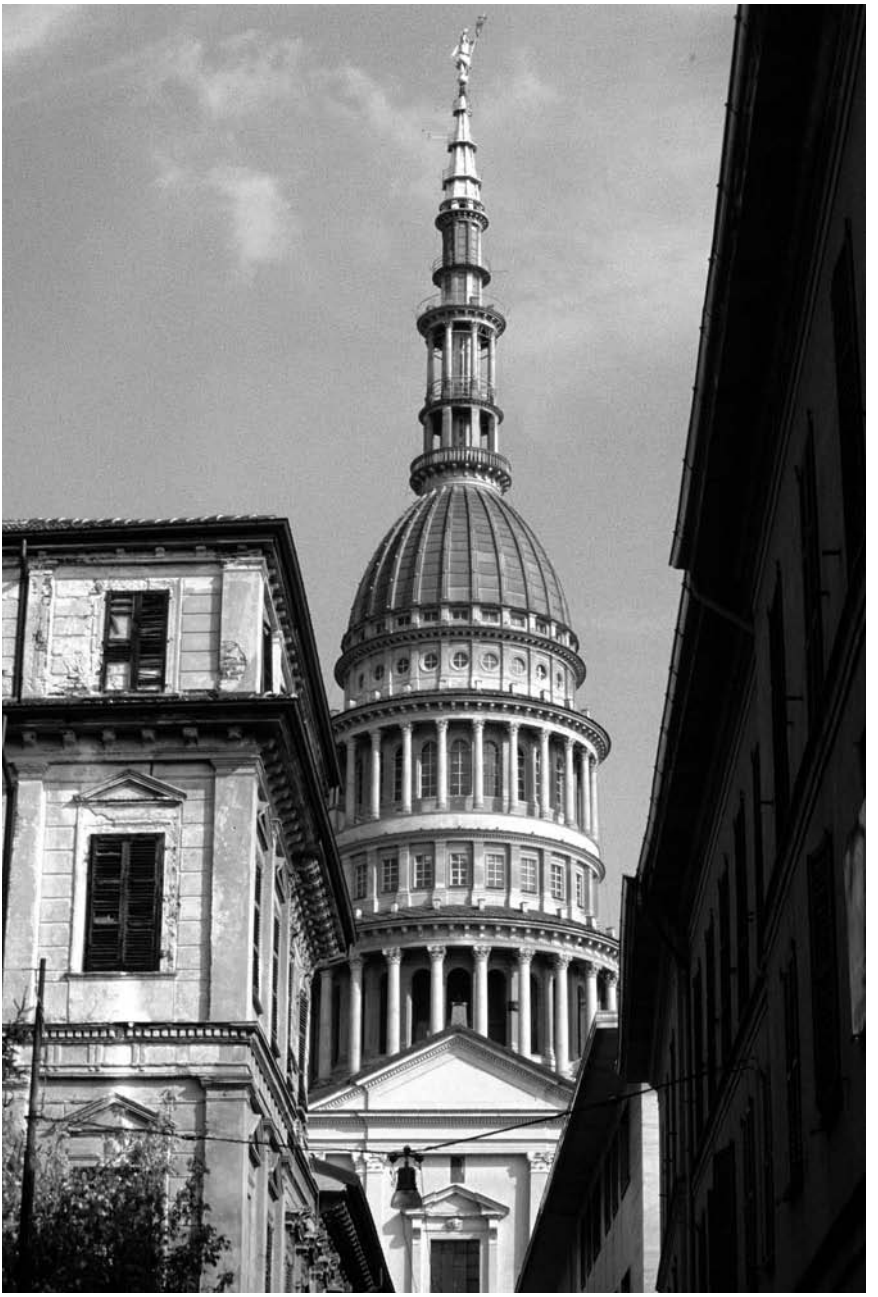
Although it was finished with stone and stucco, the huge dome is actually held up by an internal structure of brick *arches* and interior *buttresses* analogous to the steel skeleton in a modern skyscraper. Antonelli's brick and glass dome contrasted with the new popular art of iron and glass construction epitomized by the Crystal Palace (1851) in London, designed by Joseph Paxton.

To understand the phenomenon of the San Gaudenzio dome, two questions must be answered. First, how could Novara, a city of only 14,000 inhabitants in 1798, which had tripled to 38,000 by 1888, finance such a grand monument when the Roman Catholic Church had lost most of its power and disposable wealth after the Napoleonic Conquest of Italy? Second, what were the creative visions and technical skills that allowed Antonelli to conceive such an extraordinary work of art?

Between 1720 and 1880, irrigation had caused the sixfold increase in cereal production around Novara, a city in the Piedmont district of northwest Italy, west of Milan. The city was quickly industrialized to provide the tools and clothing needed by the rural population. Large cotton mills and blast furnaces were introduced during the first industrial development. Novara not only housed administrative centers, schools, and hospitals but also became the seat of a big commercial market, and its stock exchange went through explosive growth in the middle of the nineteenth century. Building a dome on the long unfinished church that housed the silver sarcophagus containing the *relics* of the town's patron saint, Gaudenzio, was a fitting way to celebrate the financial success of Novara's aristocracy.

The church could not collect more than 6 percent of the city's resources every year—compared to twenty percent before 1790—but the deficit was easily made up by the communal government. During the thirty-seven years of the dome's construction the government at times changed and withheld funding, but overall the city spent an average of 15,000 lire a year. Half a million lire was spent by 1850, and around a million by 1880. Building the dome twice as high as the first design had not ruined the city's finances. On the contrary, it seemed a decent way of spending the local taxes.

Although a neoclassicist in spirit, Alessandro Antonelli was involved in the construction of several daring brick structures of enormous dimensions and spent most of his life searching for the solutions necessary to build them.



San Gaudenzio, Novara. Eleven years before Eiffel built his iron tower in Paris, Alessandro Antonelli had finished his brick version in Novara.

The Sanctuary of the Crucifix in Boca Novarese (1827–1918), the dome of San Gaudenzio in Novara, and the Mole Antonelliana, originally the Jewish Temple, in Turin (1862–1900) are examples of his work. The Sanctuary of the Crucifix crashed to the ground in 1907, but was rebuilt in 1918, and the dome of San Gaudenzio required consolidation and reinforcement in 1882–1885 because the pillars that supported it were independent from, that is, not structurally part of the church *crossing*. Both the flexibility and safety of the structure were proved when it did not sustain any damage in an earthquake that occurred after the repairs.

Antonelli's six projects for the dome developed from the potential inherent in the first basic plan of 1841. He wanted to build a triple dome, inspired first by Saint Paul's Cathedral, London (1675–1711), the work of Sir Christopher Wren, and secondly by the Panthéon in Paris, designed by Soufflot (1757–1777). Antonelli's triple dome was composed of an interior dome at the scale of the church with a large opening at its crown; an intermediate conical dome, visible from below, with a painting illuminated by large windows; and an exterior dome, much taller than the others, with a silhouette that exalted the city's skyline.

In the second project (1844), Antonelli corrected an error found in the first scheme. Because the layers of the dome were independent structures, it was necessary that the supporting pillars and the two rings of *arches* that supported the interior and exterior shells be independent of the preexisting sixteenth-century church. Antonelli continued to improvise. In the third, fourth, fifth, and sixth projects he added a second *colonnade* above the first, doubling the height of the dome. He was pushing the possibilities offered by his brick construction system to their limit. The double curvature (in both the vertical and horizontal planes) of the arches at the bottom of the dome could resist huge thrusts. As long as he kept the structure light in weight, raising the summit of the dome to 327 feet was safe. Because the unusual conical structure was so technically stable, it was possible for Antonelli to add the 73 feet of the lantern to its summit. The complex brick structure with its *buttresses*, its rings of balconies, and its metal-looking reinforcements was as imaginative as Gaudi's interiors in Barcelona. The awesome dome of Novara hid its most creative part above the visible interior dome where the brick structure and Antonelli's imagination combined to create an appealing beauty. Eleven years before Eiffel built his iron tower in Paris, Antonelli had finished his brick version in Novara.

Further Reading

Meeks, C. L. V. *Italian Architecture 1750–1914.* New Haven, CT: Yale University Press, 1966.

Rosso, Franco. *Alessandro Antonelli, 1798–1888.* Milan: Electa, 1989.

SAN MARCO (SAINT MARK'S BASILICA), VENICE

Style: Byzantine
Dates: 1064–1094; Decoration Twelfth Century
Architect: Unknown

A major route of invasions in the fifth century passed through the northeast of Italy, between the Alps and the shores of the Adriatic Sea. First came Aleric in 401 and then the Huns led by Attila in 452; finally the Goths swept into prosperous Roman regions. In a country ravaged by these barbarians, refugees from the metropolis of Aquileia, just north of Venice, found small islands in the Adriatic where they could feel safe and develop a new way of living. Their major settlement was on sandbars on the sites of what are today the Doge's Palace and the Rialto.

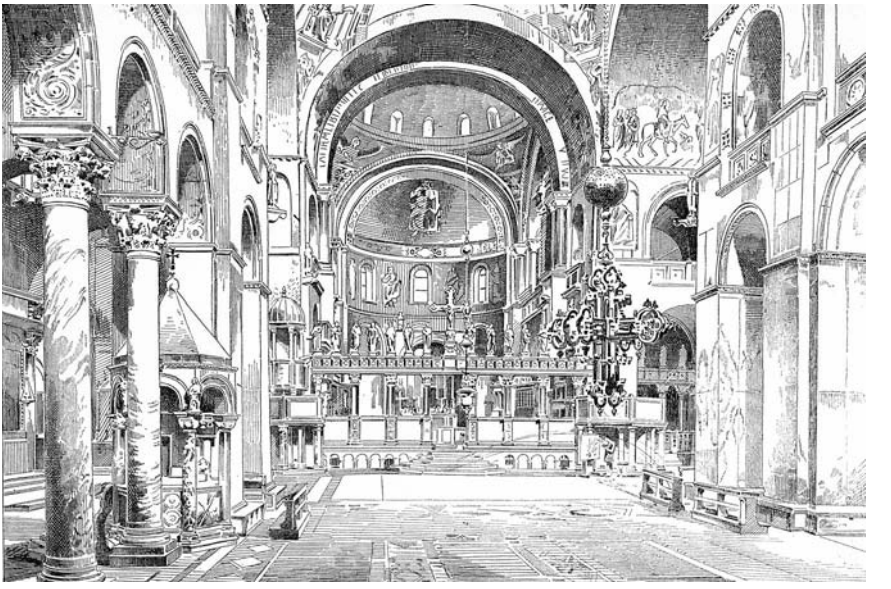
Originally, Venice was a community spread over a group of isolated islands; they coalesced in the ninth century into a single political entity. Because of its location on the eastern coast of Italy, Venice became a trading center and had established strong relations with the *Byzantine* Empire by the eleventh century. Since the Byzantines ruled much of the shoreline around the Adriatic Sea, the Venetians began playing a double game: as defender of the Western world from Byzantine expansion and as commercial partner in the lucrative Byzantine luxury market. The Byzantine emperor formally recognized the Doge (the elected head of the Venetian Republic), naming him the Duke of Venice and Dalmatia, and Venice became autonomous and sovereign.

In 828, the *relics* of the Evangelist Mark were brought to Venice from Alexandria in Egypt. A ducal chapel that was built to house the shrine containing the relics was destroyed after a popular revolt in 976 and rebuilt two years later, probably using a Byzantine *Greek cross* (equal arm) plan. Domenico Contarini decided to rebuild and enlarge the chapel in 1063, and he looked to Byzantium for a prestigious design, to the Apostoleion (the Church of the Holy Apostles), which is universally considered to be the inspiration for his new *basilica*. The original Church of the Holy Apostles, which was built by the Roman emperor Constantine (285–337) in the fourth century, was rebuilt by the emperor Justinian in the sixth century using the architects of Hagia Sophia. Enlarged in the ninth century under Emperor Basil I, the Holy Apostles was one of the greatest churches in Constantinople and was also distinguished as the burial church of the Byzantine Emperors. To build a church that would rival such a magnificent and culturally significant building challenged the pride and abilities of the Venetians.

San Marco is often called a "copy" on a reduced scale of the Church of the Holy Apostles. Like its model, each of the four equal-length arms of San Marco carries a *dome* as does the *crossing* (the area where the arms intersect at the center of the church). This, the largest dome, is 42 feet in diameter with small windows at its base and is supported on four square *piers* that are pierced by arched openings on two levels. A U-shaped *narthex*, or front porch, runs across the front of the *nave* and wraps around its sides.

Although built in little more than thirty years, the craftsmanship at San Marco was outstanding. Combining the exotic architectural and decorative influences from Byzantium with the work of local Lombard craftsmen and, presumably, craftsmen imported from Byzantium itself, the church could not be easily imitated in other regions and cities. It has remained unique, a one-of-a-kind masterpiece. Its only European successor was probably the abbey church, now the cathedral, of Perigueux. This building, far from Venice in French Aquitania, was built in the twelfth century, and was almost certainly inspired by San Marco.

The Venetians had to adapt the Byzantine plan, intended for Orthodox services, to the ceremonies of western Catholic rite. Second-story galleries reserved for women were suppressed, and the equal-armed centralized plan with its five domes was subtly altered to resemble aspects of a western basilica. The arm of the nave is slightly longer than the transverse arms, and the pierced piers on either side of the nave suggest *aisles* that terminate in chapels.



San Marco, Venice. Interior (after engraving in Planat, *Encyclopedie de la Construction*, vol. 5, p. 238, pl. XLIV, Paris, 1892). From author's collection.

The rough brickwork in the Lombard style, used for the fabric of the building, is only visible in the upper parts of the exterior. Inside San Marco, mosaics with predominantly gold grounds cover large expanses of brickwork. This decoration of the church was begun in the twelfth century by Byzantine craftsmen and continued for centuries. During the Renaissance, the famous Venetian painters Titian, Tintoretto, and Veronese furnished designs for the mosaics. The shimmering mosaics dematerialize the walls and unify the lower level with the smooth luminosity of the domes, overwhelming worshippers with celestial visions pictured in tiny pieces of glass and stone. In *Stones of Venice*, John Ruskin remembered "the dark dusk" he left behind when he pushed the bronze door open to enter San Marco: "light penetrates through narrow openings . . . which looked like large stars." (Ruskin 1906, 67) Glittering light on the irregular surfaces became brilliant reflections. Instead of mosaics, the lower parts of the walls are covered with marble veneer; with age, their white color has turned into the softness of a brown patina.

To honor Saint Mark, the patron of their Republic, the Venetians adorned his church with treasures plundered from Constantinople when the Crusaders took over the city in 1204. The extraordinary Pala d'Oro is a gold altarpiece adorned with silver, jewels, and enamel work that was made in Constantinople in 976. Also looted from the east were the four bronze horses, Greek works of the fourth century BCE, that were proudly exhibited above the entrance on the balcony of the second story. These magnificent works, replaced by copies on the façade, are now housed in the museum located in the upper galleries of the church.

The exterior of San Marco was thoroughly transformed in the thirteenth century. The Byzantine domes were replaced with lead-clad, oriental looking domes that add significantly to the picturesque quality of the church. The recesses of the porches received brilliantly colored mosaics. *Gothic* pinnacles and a wealth of ornamentation were added and give San Marco an irresistible charm. San Marco demonstrates the sort of Venetian luminosity that destroys all sense of solid form and emphasizes the eclectic decoration. It mixes the tall crowning silhouette of the domes, the agitation of Gothic profiles, and the multitude of the supporting marble columns on the lower level of the porches in an abstract and subtle composition of light and color.

Further Reading

Demus, Otto. *Studies in Byzantium, Venice, and the West.* 2 vols. London: Pindar Press, 1998.

Ruskin, John. *Les pierres de Venise.* Translated by Mathilde P. Cremieux. Paris: Renouard and Laurens, 1906.

Vio, Ettore, ed. *The Basilica of St. Mark in Venice.* Translated by H. Evans. New York: Riverside Book Company, 2000.

Vio, Ettore, ed. *St. Mark's: The Art and Architecture of Church and State in Venice.* Translated by H. Evans. New York: Riverside Book Company, 2003.
White, John. *Art and Architecture in Italy, 1250–1400.* New Haven, CT: Yale University Press, 1993.

SAN VITALE, RAVENNA

Style: Early Byzantine
Dates: 526–548
Architect: Unknown

In 402, the Roman Empire was divided into two parts in order to offer better resistance against the barbarian invasions. The Western Empire had its capital at Ravenna; the Eastern, in Byzantium (modern Istanbul). In 476, a barbarian of Turco-Mongolian origin, Odoacer, deposed the last emperor of the west, Romulus Augustus, and, in the name of the Eastern emperor who ruled in Byzantium, became king of Italy. Because the Eastern emperor distrusted Odoacer, he charged another barbarian, the Ostrogoth Theodoric (454–526) to overthrow him. Theodoric laid siege to Ravenna in 490 and after three years took the city and killed Odoacer. Theodoric governed northern Italy and the southern part of Yugoslavia for thirty-three years, during which time he restored antique traditions and employed a large number of artists.

In 527, Justinian (482–565) became the *Byzantine* emperor. Energetic, strong, and clever, he founded an era of great prosperity and was determined to reintegrate North Africa and all of Italy into his empire. After 15 years of warfare, the Byzantine army occupied Ravenna in 540. An Exarch, the chief administrator who had great power at his disposal, represented the emperor in most of Italy. But, in 568 the Lombards invaded Italy and reduced the territory governed by Ravenna to the area between the Adriatic coast and Rome.

During the period of Ravenna's prosperity in the fifth and sixth centuries, however, numerous churches were built in the city. They belonged to two types. The majority were *basilicas*, a building type with a long central space (the *nave*), illuminated by a *clerestory*, flanked by two or more *aisles*, all of which terminate in *apses*. Both Sant' Apollinare Nuovo, located in the city, and Sant' Apollinare in Classe, which was located at Ravenna's harbor, are basilicas. Other churches and religious buildings were planned as *centralized* buildings of octagonal or circular form. One of these, the Mausoleum of Theodoric (520) is covered by a massive monolithic limestone *dome* 40 inches thick that spans 36 feet. There are two octagonal baptisteries, the Orthodox Baptistery of the mid-fifth century and the Arian Baptistery from the beginning

San Vitale, Ravenna. Stunning 6th century mosaics of Junstinian and Theodora decorate the choir of the church.

of the sixth century. The most important of this building type is the octagonal church of San Vitale.

San Vitale was commissioned by Ecclesius, bishop of Ravenna, in 526 and consecrated by archbishop Maximian in 548. It was planned as a rotunda with a central, octagonal space, covered by a great dome, about 100 feet above the

floor, which is nicely *buttressed* by seven niches and a *choir*. The central space is surrounded by an *ambulatory* (a corridor) on the ground floor and by a "matroneium," a *gallery* reserved for women, on the second story. The overall form of the church expresses a hierarchy of volumes in their progression toward the center. The lightness of the proportions of the *columns* and pillars allow a flow of light that is reflected by the mosaics that cover the walls in the choir, the half domes over the niches, and the *barrel vault* covering the ambulatory. In front of the entrance door a small *narthex* (transverse entry hall or porch), the last element remaining from a rectangular *atrium* (forecourt) completes the building. On each side of the choir, two small *martyria* (chapels devoted to martyrs) function as annexes. Since the martyria, matroneium, and the narthex are characteristics of Byzantine churches, they may be a form of propaganda for the Orthodox faith, which was the state religion of Byzantium. It is even likely that the early Byzantine liturgy, rather than the Roman liturgy, was celebrated in San Vitale.

The dome, raised on small *pendentives* (spherical triangles) that connect its circular base to the eight-sided drum that supports it, was built using hollow clay vases in order to reduce its weight. An expressive lightness is visible on the exterior, the result of decorative *arcades* and the *pilaster* strips. Though it may have been influenced by Byzantine architecture, San Vitale is a product of Italian masons. It is related to the Early Christian monuments in Milan, such as San Lorenzo Maggiore (c. 480), and in Rome, such as **Santa Costanza** (350).

The choir of San Vitale is completely encrusted with mosaics whose colors and reflections utterly transform its space. *Vault*, tympanum, walls, and even the pavement compose a unique decorative ensemble that was created by a single group of artists. Old and New Testament themes are incorporated into a complex program. In the half dome of the apse appears Christ in Glory seated on the orb of the Universe while lower on the walls are Moses, Isaac, Abel, Melchisedec, and Abraham entertaining the three Angels under the Mamre oak tree. On the sidewalls, the figures of Justinian and his court and of Empress Theodora and her attendants represent the finest examples of Byzantine mosaic work of the sixth century. Ravenna is one of the rare remnants of sixth-century mosaic art that was once present throughout the Byzantine Empire but was destroyed by the iconoclasts (the religious groups who opposed figural representation in eastern churches) and by the later devastations of the Crusaders and the Ottoman Turks.

Further Reading

Bovini, Giuseppe. *Ravenna, An Art City.* Ravenna: Edizioni A. Longo, 1970.

Krautheimer, Richard. *Early Christian and Byzantine Architecture.* 2nd rev. ed. Harmondsworth: Penguin, 1975.

Mango, Cyril A. *Byzantine Architecture.* New York: Rizzoli International Publications, 1991.

von Simson, Otto G. *Sacred Fortress: Byzantine Art and Statecraft in Ravenna.* Chicago: University of Chicago Press, 1948.

SAN ZENO MAGGIORE, VERONA

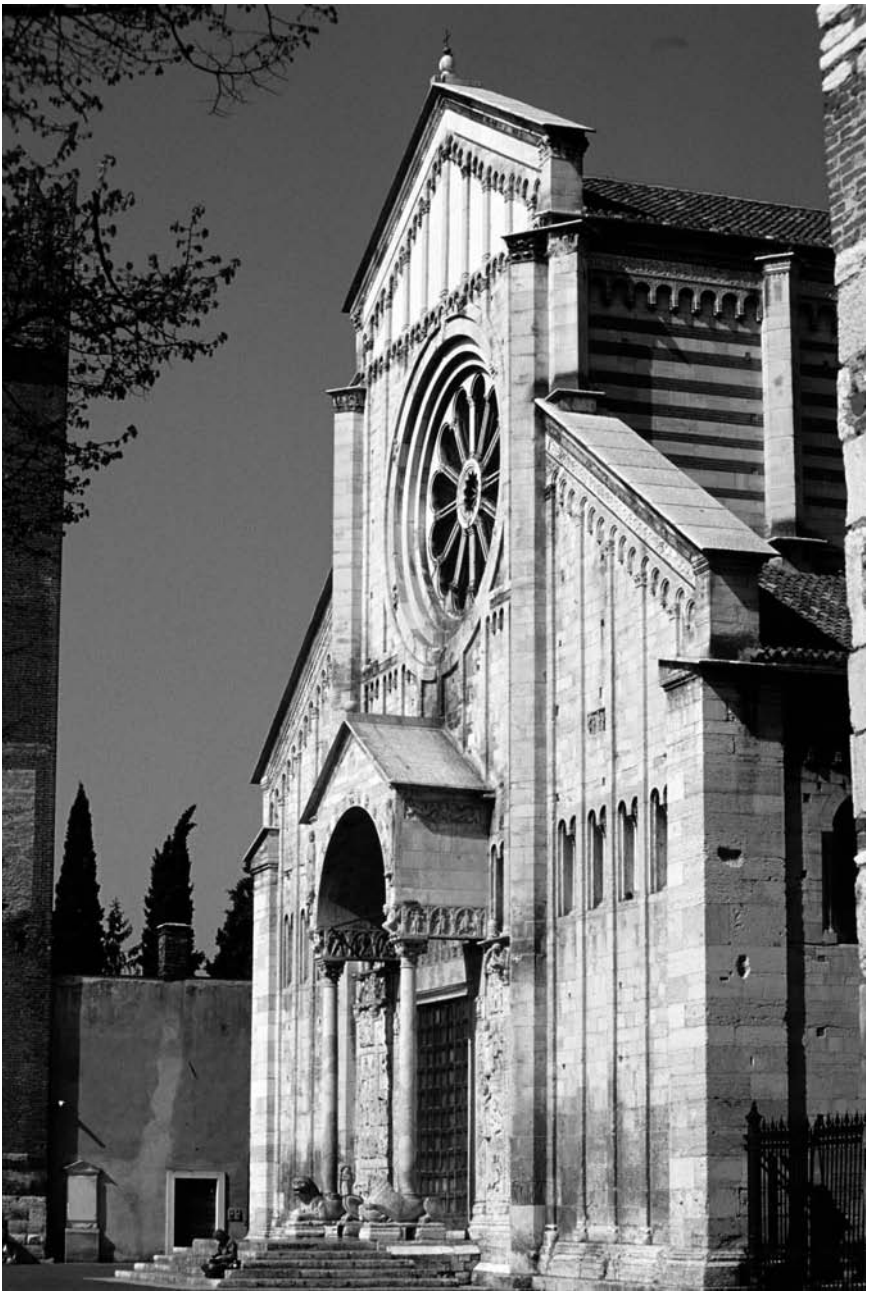
Style: Romanesque
Dates: Ninth–Fourteenth Centuries
Architects: Unknown; Giovanni and Nicolò de Ferrara

In the silhouette of the city of Verona against the background of hills covered by villas and cypresses, the belfry of San Zeno Maggiore stands alone to the west of the city center. Two upper floors of superimposed *arcades* and a pyramidal high-pitched roof are carried by alternating rows of white marble and red brick. The freestanding bell tower was built in 1045 and restored in 1120. It served as a landmark for a Benedictine *monastery* that became famous as the site of the tomb of Saint Zeno, the eighth bishop of Verona and its patron saint.

In the ninth century, the Ottonian German Emperor resided in the monastery, a good location for him to oversee international and national political affairs. A district of settlers quickly grew up around the emperor's accommodations, which would later be included inside Verona's city walls. The original church of San Zeno was built in the ninth century but an earthquake in 1117 made it necessary to build a new church, which was begun in 1120. Its façade was completed in 1138.

The church as it exists today is the product of many modifications. In the first decades of the thirteenth century, its length was increased and the façade was reworked. Two masters, Giovanni and Nicolò de Ferrerra, added a *Gothic apse* and *choir* that was raised 7 feet above the *nave* floor, which was built between 1386 and 1389. The new horizontal rows of alternating materials and colors are visible mainly on the sides of the apse. This was also the time when a beautiful new trefoil ceiling was added to the nave. The startling unity of the church today gives no indication of the delays in building and the various remodeling that took place over several centuries.

If one compares San Zeno to the church of Sant' Apollinare in Classe at Ravenna, one can see how Italian building technique progressed in the Middle Ages. The two buildings are the same type of *basilica* without *transepts* and both are covered by a wood ceiling. Sant' Apollinare is fragile because of the absence of reinforcing of its long upper walls, which are carried over a series of identical *arches* resting on *columns*. In San Zeno, the nave is broken up into a series of *bays*, and an alternate system of support carries the upper walls. Thick compound pillars, each with four *engaged columns*, alternate with single slender columns. In the *aisles*, the upper nave wall is connected to the exterior wall by a series of arches or interior *buttresses*, which give more solidity to the structure. Brick construction is replaced in San Zeno with a heavier type of



San Zeno Maggiore, Verona. A characteristic Lombard porch from 1140 marks the entrance.

masonry with brick and white marble laid in alternating courses. The only *vaulted* area of San Zeno is the Gothic choir, which occupies two bays. It is raised above a *crypt* that contains Saint Zeno's tomb. This archaic tradition, which goes back to Carolingian models of the ninth century, includes a balustrade, decorated with thirteenth-century figures, on the upper level of the choir, above the entrance to the crypt.

The interior of the church contains a profusion of twelfth- to fourteenth-century *frescoes* distributed in an irregular pattern with a spontaneity that adds to their beauty. When the presbytery (the area around the altar) was rearranged between 1450 and 1459, a Renaissance triptych by Andrea Mantegna was installed there. The "San Zeno Altarpiece" is a representation of the Madonna and Child with saints in a perspective system that continues the view of the church itself. Mantegna's painting helps one to understand the church interior as a perspective space in the Renaissance manner (see **Pazzi Chapel**).

The façade of San Zeno contains a collection of most impressive medieval artistic creations. The great thirteenth-century *rose window* represents the Wheel of Fortune, with an inscription that reads, "I, Fortuna, determine the fate of mortals." The porch by the artist Nicolò, which dates to the 1140s, has a gabled roof supported by two columns that stand on the backs of lions. The sculptures on the tympanum (over the door) and on either side of the door are examples of relief sculpture from the twelfth century made by Guglielmo. The subjects are taken from the story of Genesis and from the Life of Christ and form a continuous pattern with the bronze doors. These show figures from the Old and New Testaments and four scenes devoted to San Zeno. A century of artistic development distinguishes work from the beginning of the twelfth century from that of a century later. The façade is typical of Italian design, with its strict modular division into bays and the absolute control of the sculpted elements. It is greatly admired for its harmonious proportions.

Further Reading

Conant, K. J. *Carolingian and Romanesque Architecture 800–1200.* New Haven, CT: Yale University Press, 1974.

SANT' ANDREA, MANTUA

Style: Renaissance; Baroque
Dates: 1474–1485; vault finished in 1494; dome, 1733–1765
Architects: Leon Battista Alberti, Luca Fancelli, Filippo Juvarra

Towering over the *Piazza* delle Erbe, the enormous mass of Sant' Andrea, Mantua's major church, evokes the spirit of a huge Roman ruin. Situated

across from the Palazzo della Ragione (the palace of justice), and in close proximity to the central market, a clock tower, and a number of religious structures, the church dominates the core of Mantua's urban life. Its great *dome* rises above the surrounding rooftops, a quiet but powerful presence seen from city streets in all directions.

The *Baroque* architect Juvarra (1678–1736) finished the Renaissance building from 1733 to 1765 by adding the dome to a church designed in 1470 by Leon Battista Alberti. The building was Alberti's last major work, created late in life when he was devoting all his energies to the restoration of ancient Roman buildings. Alberti was a humanist and theoretician who wrote treatises on painting, sculpture, architecture, and (surprisingly enough) on the ideal Italian family. Although he was engaged as architect by some of the most

Sant' Andrea, Mantua. Alberti's splendidly proportioned façade resembles a Roman triumphal arch articulated with details in dark stone.

prestigious patrons of the Renaissance, Alberti was more interested in ideas and conceptual design than in the actual process of building. He disliked discussions about materials, techniques, and workmanship.

So it was that Alberti always needed an architect or mason familiar with the building trades to carry out his projects. In the case of Sant' Andrea, Alberti sent a detailed model to the stone mason Luca Fancelli who was in Mantua working on Alberti's design for the church of San Sebastiano. Fancelli appears to have faithfully executed Alberti's plans, and there is no evidence of significant problems or alterations during the period beginning in 1474 when Fancelli directed the work. Irregular financing of the construction caused delays so that the church was not yet roofed when Fancelli left Mantua in 1485. The vault over the nave was finally built in 1494, twenty-two years after Alberti's death.

Sant' Andrea was built to house Mantua's most prized *relic*, the Holy Blood of Christ. According to tradition, Saint Longinus, the Roman soldier who pierced the side of Jesus with his lance, had collected earth that had been saturated with the Holy Blood during the crucifixion from the base of the cross. Longinus settled in Mantua when his legion was disbanded and was martyred there in 37. The Saint had buried the relic to protect it, and its whereabouts were unknown until 804 when Sant' Andrea (Andrew the apostle) appeared to a Christian man and directed him to the place where the container holding the Holy Blood was hidden. Nearby were found the bones of Longinus, which are now preserved in the church. When the Hungarians invaded Italy in 923, the relic was once again hidden and its location forgotten. Sant' Andrea intervened yet again in 1048 and revealed to a German beggar the exact location of the relic. The Holy Blood attracted pilgrims from all over Europe who believed in its miracle-working power. It was even believed to have cured Pope Pius II of gout.

By the fifteenth century, the medieval church in which the relic was displayed was no longer adequate for its lofty religious function. Clearly a more contemporary and grandiose building was needed to house the Holy Blood and to accommodate the great number of pilgrims who came to worship at the site of the relic. Therefore, in 1470, the Second Marquis, Ludovico Gonzaga, head of the dynasty that ruled Mantua from 1328 to 1707, decided to build a new church. Ludovico was passionate and knowledgeable about architecture. He even owned a copy of the ancient Roman architect Vitruvius's *Ten Books on Architecture*. Since Alberti was one of the leading architectural experts in Italy at the time and had already designed the sanctuary of San Sebastiano for Mantua, the Duke accepted his unsolicited plan for the new church. Alberti proposed a great hall that was large enough to accommodate crowds of pilgrims but also functional as a church and was economical to build. He called it a "templum etruscum," a building type described by Vitruvius, which would be most appropriate for the city because the Mantuans traced their early history back to the ancient Etruscans.

Alberti designed an elongated rectangular hall, or *nave*, covered by a continuous semicircular *vault*. The nave is 240 feet long and the vault, with a span

of 70 feet, was the largest and heaviest to be constructed since Roman times. Six chapels flank the nave on each side and set up a visual rhythm based on their design and relative openness. Large ones, called "tribunalia," are completely open to the nave and are covered with *barrel vaults*. Alternating with the tribunalia are smaller, more isolated chapels, called "cellae," that are closed off from the nave except for their low portals and are roofed with domes.

Like its forms, Sant' Andrea's construction resembled that used in antiquity, that is, with neither iron reinforcing nor wood structure. The use of local brick rather than cut stone was, in fact, not only an echo of Roman building practice, but also a major financial consideration because local brick was much cheaper than cut stone, which would have had to have been imported. In plan, Sant' Andrea is similar to the great Roman *basilicas*, such as that of Constantine in Rome. Alberti prescribed the overall proportions for the nave at five to six (width to length), proportions that he claimed were used by the Etruscans.

It appears that Alberti's original design included only the nave enhanced by a monumental entrance and closed by an *apse* set in a straight wall. The *Latin cross plan* building of today is a modification of Alberti's design that was constructed in the sixteenth and seventeenth centuries; Juvarra's great dome was not added until the eighteenth century. Although the monumentality of the nave is still dramatic and awe-inspiring, much of Alberti's delicate detailing and proportional system is obscured by an accretion of Neoclassical ornament.

Only the façade of Sant' Andrea preserves Alberti's original design and beautifully executed ornament. Although it suggests the form of a Roman *triumphal arch*, the façade also mirrors the internal arrangement of the nave with a large barrel vaulted opening in the center flanked by a vertical arrangement of smaller openings based on the tribunalia-cella alternation of chapels on either side of the nave. The entire porch can be inscribed in a square and is subdivided vertically by exquisitely detailed *Corinthian pilasters* and horizontally by moldings of dark colored stone. A low triangular *pediment* crowns the porch, a reference—like the contrasting colors—to the type of church façade that was popular with contemporary architects in Florence. Above the pediment is a small arched structure nicknamed the "ombrellone" (umbrella). Its function and purpose are not understood, but it reduces the amount of sunlight that enters the nave, which, according to Alberti's theories, should be dimly lit to inspire awe and reverence in the worshipper.

Further Reading

Hartt, Frederick, and David G. Wilkins. *History of Italian Renaissance Art: Painting, Sculpture, Architecture.* 5th ed. Upper Saddle River, NJ: Prentice Hall, 2003.

Millon, Henry. *Italian Renaissance Architecture from Brunelleschi to Michelangelo.* London: Thames and Hudson Ltd., 1996.

Murray, Peter. *The Architecture of the Italian Renaissance.* New York: Schocken, 1997.

Simon, Kate. *A Renaissance Tapestry: The Gonzaga of Mantua.* New York: HarperCollins, 1989.

SANT' ANDREA AL QUIRINALE, ROME

Style: Baroque
Dates: 1659–1670
Architect: Gianlorenzo Bernini

A *Baroque* interior comprises a mixture of all the arts—architecture, sculpture, and painting. Bernini's ideal was to create a form he called "bel composto" (literally, a beautiful mixture) in which several visual media, for example, architecture, painting and sculpture, were intimately combined. Sant' Andrea exemplifies this ideal. The church was built for a Jesuit probationary *convent* as a place to train novices in privacy away from everyday society. It played an important role in the educational process as the young Jesuits were being prepared to go to hostile parts of the world and convert people to the Christian faith. They had to face martyrdom and come to believe steadfastly that the pain leading to death would be transformed into a spiritual ascension into heaven.

Bernini was put in charge of this exceptional church program. The site available on the convent grounds was very shallow. Pope Alexander VII wanted to build a wall to separate the church from the street in front of it, but Bernini sidestepped this suggestion and instead designed his church to fit into the comparatively broad but shallow space in front of the other convent buildings. He designed an oval rotunda, a Baroque paraphrase of the **Pantheon**; a *domed* central space surrounded, as in the ancient Roman model, by chapels—ten of them in this case. But, instead of the traditional emphasis on the long axis of an antique building or a church, Bernini aligned the long dimension of his oval parallel to the street, which made the short axis of the oval into the central axis of the church—and the focus on the main altar. This alignment accelerated the path from the entrance to the altar in an unexpected and dramatic manner. Moreover, marble *pilasters* blocked the long axis of the oval, thus making it lead nowhere. In this way, Bernini played with contradictions of the viewer's expectations. The chapels were erected first; the dome was built only after 1661. The altar chapel received its ornamentation in 1668, and the travertine street façade was finished at the end of 1670.

As a man of all the arts—outstanding sculptor, painter, and distinguished architect—Bernini controlled every detail of the church. His favorite pupil and architectural assistant, Mattia de Rossi, collaborated on the designs and faithfully carried them out even after the master's death. Bernini's role was like a stage director, not working on everything himself, but checking the quality and aesthetic value of the work of all the participants. Having been educated by the Jesuits, Bernini engaged in a constant and profound dialogue with Giovanni Paolo Oliva, General of the order.

Sant' Andrea al Quirinale, Rome. Four honey colored columns frame the altar while a white statue of Saint Andrew ascends into the white and gold dome.

The white and gilt dome, which measures 66 by 47 feet at the base and rises to a height of 66 feet, is supported on walls that take on a honeyed tone, which is created by multicolored marbles and stucco revetments. The worshipper entering the church escapes from the physical, secular world and participates in a manifestation of heaven. Four large *columns*, reminiscent of Palladio's in Venice, frame an altar recess lit from above. Over the altar, a painting by the Jesuit father Guillaume Courtois, called Il Borgognone, depicts Saint Andrew's martyrdom. However, there is no evidence of suffering in the saint's death. He is in a state of ecstasy and, with the help of flying angels he envisions his encounter with God the Father. God appears symbolically in the top of a *lantern* over the altar recess, reaching out toward Andrew and at the same time causing glistening rays of light to descend into the earthly level represented by the altar painting.

But Andrew's vision of God in the sanctified space of the altar recess is not visible to the congregation in the main body of the church. Instead, their attention is directed to the broken *pediment* above the columns framing the altar recess where the soul of Saint Andrew, depicted as a powerful figure in white marble, emerges in a dramatic ascension. He appears to be rising upward into the space of the large dome toward the crowning lantern, over the heads of the congregation, where the Dove of the Holy Spirit awaits him. A crowd of delightful angelotti (plump baby angels) flutters around the base of the lantern watching the arrival of the Saint into Paradise. The triumph of the martyr-Saint is celebrated lower down where figures of men and angelotti hang lush garlands around the base of the dome.

The "bel composto" of Sant' Andrea al Quirinale creates an atmosphere, an experience, a fusion of the arts where no single art form dominates the others. Everything is based on Bernini's concept and his control of the expression from flat plane (the painting) to three dimensions (the sculpture) and into space (the architecture). He proposed that the church be a "tableau vivant" showing the salvation of Saint Andrew. The selection of marbles, the creation of an overall honey-like color, the control of light, the movement of angelotti and angels spotted in distinctive parts of the church, the exaggeration of the frame around the altar that expands the altar painting into a soaring flow of angels; all these are components of Bernini's method of expressing religious propaganda in a Baroque manner. The intense technical and artistic thinking that transforms a church into a place to **see** the invisible more than merely to **think** about it is a process typical of Roman Baroque Catholicism.

Further Reading

Avery, Charles, and David Finn. *Bernini, Genius of the Baroque.* London: Bulfinch, 1997.

Careri, Giovanni. *Bernini: Flights of Love, the Art of Devotion.* Translated by Linda Lappin. Chicago: University of Chicago Press, 1995.

Wittkower, R., et al. *Art and Architecture in Italy, 1600–1750.* 4th ed. New Haven, CT: Yale University Press, 1999.

SANT' APOLLINARE IN CLASSE, RAVENNA

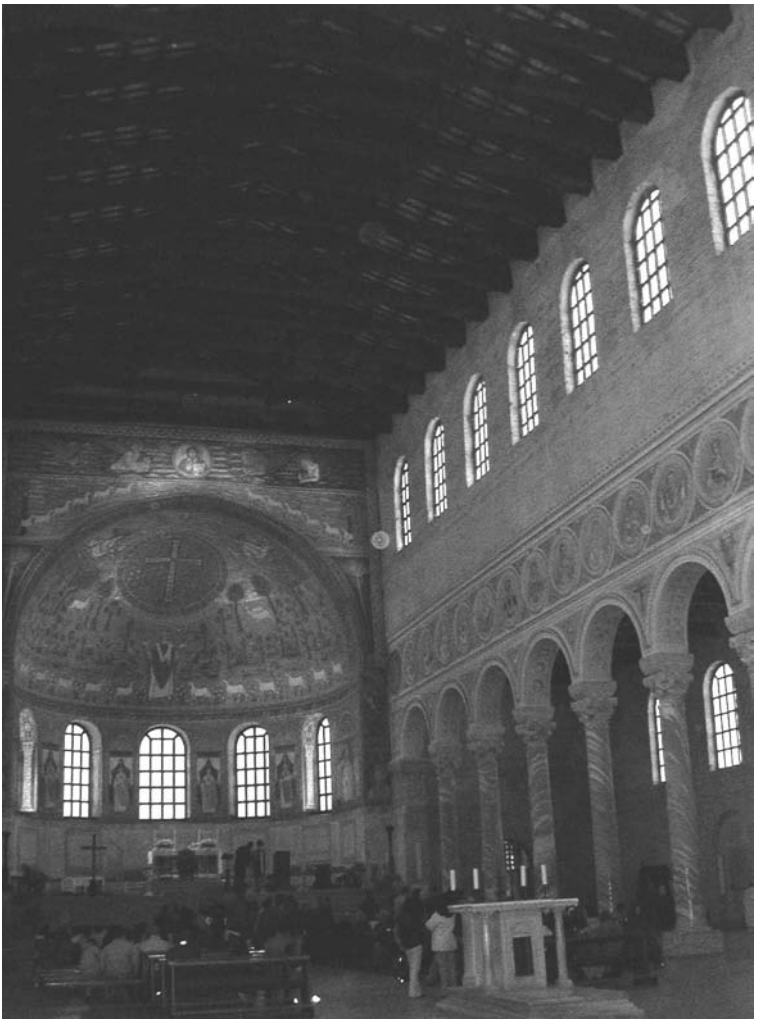
Style: Early Christian
Date: 549
Architect: Unknown

Ravenna is famous for its *basilican* churches, all of which conform to a basic, rather conservative plan. Long *arcades* separate a tall central *nave* from two *aisles* on each side, as in the cathedral, or a single aisle can flank each side of the nave as in Saint John the Evangelist (424–434), Sant' Apollinare Nuovo (c. 493–526), and Sant' Apollinare in Classe (consecrated in 549). In the latter two, the *choir* is a semicircular *apse* at the end of the nave. A *clerestory* high up in the nave walls and a wood roof complete the designs. No *transept* separates the nave from the choir, but a transverse entry hall, or porch, called the *narthex*, separated the church proper from the street. A freestanding cylindrical *campanile* of lofty design, isolated beside the church or adjacent to its façade, would complete the church complex.

Sant' Apollinare in Classe, three miles south of Ravenna's city center, was built after the *Byzantine* conquest of the city by Bishop Ursicino or his successor Vittore. It was paid for by the banker Julian Argentario, who was put in charge of the renovation of the city and its harbor, which was decreed by the Byzantine emperor Justinian. The church was consecrated in 549 by Archbishop Maximian, who is visible to the right of Justinian in the choir mosaic in **San Vitale**. The area of Classe refers to the Latin word "classis," meaning fleet or harbor.

In the first century BCE, the Roman emperor Augustus had created a military harbor outside Ravenna that was of great importance and could berth fifty ships. At that time, a sandy beach separated the shore from lagoons and swamps inland. Halfway between the city and the site of the church, where a modern channel now cuts inland, was a port-canal defended by walls and barracks. To the south, the district called Classis developed; it contained warehouses, markets, shops, and houses for about 10,000 sailors, most of whom had immigrated the eastern part of the Empire.

One suspects that Christianity developed first in Classis around Saint Apollinare, who was the first bishop of the area. The saint was buried south of Classe in a necropolis on a vast expanse of beach, which had been established during the reign of Augustus. The harbor was kept in good repair until the time of Justinian but lost its importance soon after. It had disappeared by the eighth century, perhaps as a result of the Lombard invasion. Sant' Apollinare



Sant' Apollinare in Classe, Ravenna. An Early Christian basilica with a tall nave, lit by clerestory windows and terminating in an apse, flanked by an aisle on either side.

in Classe, now isolated in a forest of pines, was a monastic establishment that served the cemetery of the old community.

In the Byzantine era, a Roman road ran right in front of the entrance *portico* (heavily repaired in 1909). On the side of the road opposite the church, a rectangular court decorated with fountains articulated its location. The interior of Sant' Apollinare in Classe is a long rectangular room of handsome proportions divided into a nave and aisles by two rows of twelve *columns* each that terminates in a raised apse glittering with mosaics. The wood roof enhanced the clarity of the space. Entry was through a remarkable group of nine

doors that opened on the front and sides of the building. To recreate the spirit of the original church, one must imagine the floor decorated in polychrome mosaic and the walls covered with marble veneer. These disappeared when it was necessary to raise the level of the columns and rebuild the walls because of ground subsidence during the Middle Ages. Perhaps the best way to recreate the original appearance of Sant' Apollinare in Classe is to imagine its floor mosaics resembling those of the abbey church at Pomposa (just twenty miles north of Ravenna) and to picture the decoration of the nave in a style similar to Sant' Apollinare Nuovo.

The apse mosaic in Sant' Apollinare in Classe, with its dominant green coloration, represents a heavenly landscape with an allegorical program showing the Transfiguration of Christ above and the power of Sant' Apollinare to lead souls to Christ below. Three sheep (symbols of Peter, James, and John) contemplate a cross inscribed in a disc containing ninety-nine stars flanked by the prophets Moses and Elijah. Directly below the cross, Apollinare gathers twelve baptized believers, symbolically represented as sheep, within a rich green field full of trees, flowers, and birds. Sant' Apollinare is represented according to the conventions of a funeral portrait, and below the apse mosaic images of four bishops of Ravenna commemorate the role of the church as their place of burial. The dignity of these figures accords well with the tradition of official portraits of the high prelates and emperors in the Byzantine Empire. The heavenly vision of Christ's transfiguration should be understood as an inspiration for the believer and the basis of his or her absolute trust in religious orthodoxy.

Further Reading

Bovini, Giuseppe. *Ravenna, An Art City.* Ravenna: Edizioni A. Longo, 1970.

Krautheimer, Richard. *Early Christian and Byzantine Architecture.* 2nd rev. ed. Harmondsworth: Penguin, 1975.

Zarnecki, George. *Art of the Medieval World: Architecture, Sculpture, Painting, the Sacred Arts.* New York: Harry N. Abrams, 1976.

SANTA MARIA DELLA CONSOLAZIONE, TODI

Style: Renaissance
Dates: 1509–1607
Architects: Donato Bramante; Baldassare Peruzzi; Michele Sanmicheli

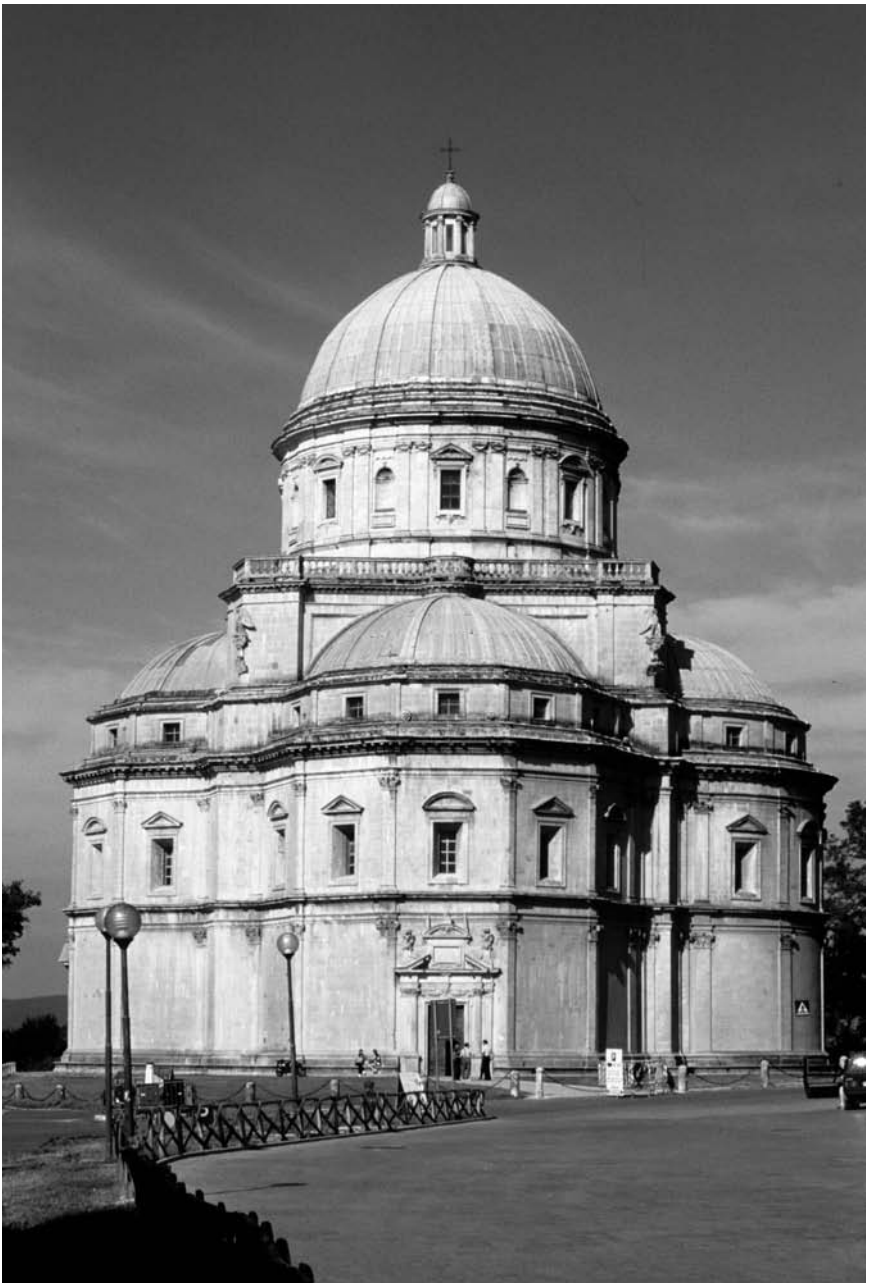
The famous architectural theoretician Leon Battista Alberti believed that the perfection of the circle, design themes inspired by nature, and the purity and simplicity of Platonic forms were confirmation that a church with a *dome* or a *central plan* would surpass any other possible form. Indeed, centralized plan churches, that is, churches based on plans derived from perfect Platonic shapes (circles, equilateral triangles, squares, hexagons, and octagons) were demonstrations of the perfection of God.

Outside the western end of the medieval hilltop city of Todi, at the base of a fortress owned by the ruling Atti family, one of the finest examples of such a centralized plan church stands in isolation overlooking the vast landscape of Umbria. This is Santa Maria della Consolazione, built on the site where, on May 17, 1508, a figure of the Virgin Mary was discovered hidden in spiny bushes. The discovery prompted the arrival of large numbers of pilgrims who were given indulgences (forgiveness of sin) by the Bishop of Todi on June 13. On July 13, the Atti family ordered a society of nobles to build a church on the site. They laid a foundation stone for the project on March 17, 1509, and commissioned local builders with limited experience to build the church.

A single *apse* was begun and then, in May 1509, a new contract was drawn up for the construction of three more apses resulting in a church made up of four apses built on the sides of a square central space whose corners supported a dome. Financial difficulties slowed construction of the building, so in May 1512 Pope Julius II put his "Architetto" Bramante in charge of revising the project.

A model was built by Arnaldo Bruschi to define the new shape of the church, which was typical of Bramante's design approach. It had a low dome inspired by the **Pantheon** in Rome, a shape he would use in the future for **Saint Peter's Dome**. Bramante died in 1514, however, and work on Santa Maria della Consolazione progressed very slowly with a succession of architects taking charge of construction. Baldassare Peruzzi and Michele Sanmicheli, both former members of Bramante's studio, were two of them. The design for the dome was changed in 1587, and the church was not finished until 1607, nearly a century after the miracle of 1508.

The integrity of simple volumes explains clearly how the church was designed. A series of elementary volumes—a central cube, a cylinder, four half-cylinders (one circular, the others dodecagonal), a sphere, and four hemispheres—are beautifully orchestrated. The four apses structurally strengthen the base on which the central dome is built. The shapes of the interior are repeated precisely in the form of the exterior. At the corners of the central cube are *pendentives*, spherical triangles that make the transition from the square top of the cube to the round base of the circular drum that supports the dome. An even light typical of the Renaissance, both in art and architecture, suffuses the fluid space of the interior. This light is "universal," that is, its diffuse uniformity changes very little throughout the day and does not create shadows. So different from the dim glow in *Gothic* cathedrals, this "universal" light is indifferent to site, it is an abstract part of a "universal" architecture not based on peculiarities or on historical intricacies.



Santa Maria della Consolazione, Todi. A geometrically perfect centralized plan church of the High Renaissance.

Santa Maria della Consolazione, Todi. A universal light illuminates the geometrically perfect High Renaissance church.

The location of the church, outside the city, in a vast and luminous landscape is typical of the Renaissance intolerance of the loose, nongeometrical organization of the typical urban fabric of the time. Santa Maria della Consolazione does not belong to the city of Todi; it belongs to an ideal landscape that painters and architects of the Renaissance sought to model with perspective. But the location may also reflect changing political and economic conditions. By providing a gathering place for people outside the city tollhouses, where goods from all over the countryside were brought, the ruling class demonstrated control over a large territory. The city had ceased being closed off from the countryside by its walls; it now ruled the region beyond.

Further Reading

Adorni, Bruno. *La chiesa a pianta centrale.* Milan: Electa, 2002.
Bruschi, Arnaldo. *Bramante.* London: Thames and Hudson, 1973.
Keller, Harald. *The Renaissance in Italy: Painting, Sculpture, Architecture.* Translated by R. E. Wolf. New York: Harry N. Abrams, 1974.

SANTA MARIA DELLA PACE CLOISTER, ROME

Style: Renaissance
Dates: 1500–1504
Architect: Donato Bramante

A visitor to the central court of the Oakland, California, YMCA would find a replica of Donato Bramante's *cloister* of Santa Maria della Pace in Rome. Influenced by the French Beaux-Arts system of architectural education where she was the first female graduate, Julia Morgan created a variation of this landmark in 1913–1915. Four hundred years earlier, when the French army deposed the duke and occupied the city, Bramante had been forced to leave Milan, where he had worked for Lodovico Sforza. He went directly to Rome and arrived there for the Holy Year of 1500. Cardinal Oliviero Carafa, a lover of art and antiquities, commissioned Bramante's first Roman work, the cloister of Santa Maria della Pace. Greatly influenced by the study of Roman architecture that he conducted after his arrival in the city, Bramante was ready, at fifty-six years of age, to celebrate his architectural maturity in a rather grand manner. The cloister's high reputation among later Beaux-Arts professionals in Paris, such as Julia Morgan, was the result of its complicated proportional

system. Renaissance architects considered proportions their main tool in disposing and sizing the spaces, walls, openings, and *columns* of their buildings in a rational way, a way that would enhance the beauty of each and all of these parts of a building. According to Vitruvius (a Roman architect and theorist writing in the first century BCE) the proportional system of a structure should be musical. Bramante was influenced by such theories. For example, for the back wall of the cloister, containing a *gallery*, Bramante used the proportion of one to two, an octave in musical terms. The exterior wall of the cloister, opened by two *arcades* with windows, has the proportion of three to four, or a musical third, also recommended by the theorists.

The site where the cloister was to be built was nearly square, a fortunate and unusual occurrence in the haphazardly planned central district of Rome. Bramante's method of designing for the cloister was fairly direct: he divided the site into sixteen equal, smaller squares with a small piece left over occasioned by the irregularity of the street on the west side. The cloister itself occupied nine of the squares, which Bramante subdivided into four parts to determine the width of the four *arches* that made up the lower story of the arcades surrounding the open court. He based the vertical subdivision of the cloister on the octave (one to two), and the third (three to four). Then, repeating a solution he had previously experimented with in a two-storied cloister in Milan, Bramante subdivided the second story into eight *bays* (units marked off by the columns), thus doubling the four arches of the lower story. This abstract grid was now filled in with *piers*, columns, and *cornices* whose proportions

Cloister of Santa Maria della Pace, Rome. An abstract set of proportions governs Bramante's first Roman work.

were defined by the same square module and regular subdivisions that governed the whole design. For example, the second floor columns are three-quarters the height of those in the lower story.

Bramante's rather abstract manner of combining voids and bearing elements (columns and walls), which was based on ancient Roman prototypes is, in fact, not very different from some modern arrangements of space and surfaces, for example, those found in the buildings of Mies van der Rohe during the 1950s and 1960s. But certain aspects of the design were developed and defined by typical Renaissance practice, especially the Renaissance sense of perspective and the use of the *classical orders*. For example, the center of each side of the cloister is blocked by a pier that supports the arches. Instead of relating the cloister to other spaces in the convent or to the city outside, this blocks or interrupts the view, creating an inward focus and detaching the cloister from urban life. (In the United States, Julia Morgan had a different attitude; she connected her courtyard to the city of Oakland in which the YMCA was located.)

Bramante's application of his abstract set of proportions is so subtle and delicate that it could only be the result of his personal judgment. His choice of the classical orders and their deployment demonstrates how educated intuition could be involved in solving and working out a sort of intellectual game of design. In the cloister, he used the orders to express an idea related to the Virgin Mary, Mother of Peace—"Pace" in Italian, thus the name of the cloister—and Mother of the People to whom both church and cloister are dedicated. Bramante employed the *Ionic order* because it was the "feminine" order that conventionally signified the maternal role of the Virgin. This much was traditional symbolism, but the cloister had two stories rather than the more conventional one, which meant that the orders of decoration had to be superimposed on two levels.

There were strict canons of classical design for the vertical arrangement of the three orders. According to these rules, the slender Ionic order could not be on the bottom; by tradition it must be placed above the heavier *Doric*. In a provocative decision, Bramante solved the problem of distribution of the orders by using two Greek and two Roman orders. The *Tuscan* order was a Roman variant of the Greek Doric and the *Composite* order was a Roman elaboration of the Greek *Corinthian*.

Bramante used the Tuscan and the Ionic together on the ground level and the Corinthian and Composite orders on the upper floor. The arches on the ground level are supported by piers in the Tuscan order. Attached to their front surfaces are *pilasters* (flattened columns) raised up on pedestals and carrying Ionic *capitals*. In the second story, freestanding Corinthian columns alternate with *piers* bearing Composite capitals.

On the ground level, Bramante's maintaining of the proportions of the whole arcade causes the Ionic pilasters attached to the corner piers to become very slender compared to conventional proportions for the order. The corner piers could not be widened enough to allow for complete attached Ionic

pilasters without disturbing the equilibrium and proportionality of the whole abstract design. For similar reasons of geometry, moldings that should conform to the orders by conventional rules needed to be suppressed or simplified. Bramante had to bend the rules in order to reach a harmonic balance, a matter of individual taste that qualified him as a great architect.

Further Reading

Bruschi, Arnaldo. *Bramante*. London: Thames and Hudson, 1973.
Keller, Harald. *The Renaissance in Italy: Painting, Sculpture, Architecture*. Translated by R. E. Wolf. New York: Harry N. Abrams, 1974.
Murray, Peter. *The Architecture of the Italian Renaissance*. New York: Schocken, 1997.
Wittkower, Rudolf. *Architectural Principles in the Age of Humanism*. London: Academy Editions, 1998.

SANTA MARIA DELLA SALUTE, VENICE

Style: Baroque
Dates: 1631–1681
Architect: Baldassare Longhena

In the period when travelers or amateurs bought, as mementos of their voyages "vedute" (views), or "vedute ideale" (ideal views), or even "cappricci" (imaginary views), artists from Venice played a leading role. Antonio Canal (1697–1768), called Canaletto, and Francesco Guardi (1712–1793) took great pleasure in painting the fantasy offered by the two *domes* of the church of Santa Maria della Salute that appeared high above the Grand Canal immediately opposite the *Piazza* San Marco. The domes seemed to embrace a rotational movement that was exaggerated by the large scrolls, called volutes, at the base of the domes. This movement created the illusion that the domes were floating above a massive octagonal base. The domes of the Salute and those of three other churches—**Saint Mark's Basilica** and the two Palladian churches San Giorgio Maggiore and Il Redentore—are arranged in a circular pattern and appear to be equidistant from one another. Santa Maria della Salute stands out in this urban scenery.

Venetians built the church to celebrate the end of a plague in 1630. Dedicated as a votive temple to the Virgin Mary, the foundation stone was laid on the day of the Annunciation, February 1, 1631, which was also the anniversary of the legendary foundation of Venice. After a period during which Venice

Santa Maria della Salute, Venice. The two domes create a picturesque sight from across the Grand Canal, which inspired the painters Guardi and Canaletto.

was at odds with Papal power and policy and was suspected of Protestant leanings, the Republic was now going to prove its strict adherence and renewed fidelity to Catholicism with the new church.

A poorly organized competition delayed the choice of an architect until June 18, 1631, when the Senate selected Baldassare Longhena (1598–1682). Longhena had to fulfill some very specific demands. Like the Palladian church Il Redentore (1577–1592), erected in memory of the plague of 1576, Longhena's church had to provide space for a distinguished crowd of senators and rich merchants for ceremonies of homage to the Virgin. Unlike Il Redentore, the new church would be built on a very restricted site, but nevertheless it must appear to be one of the leading monuments of Venice.

Knowing perfectly well Palladio's work at Il Redentore, Longhena proposed to provide a variation on the system of a three-part church. In both Il Redentore and Santa Maria della Salute, there is, behind the *choir*, a retrochoir reserved for the clergy to say daily services. In front of it is the choir, which is covered by a dome and used by the clergy for official celebrations, and, in front of that, a *nave* for the public. But Longhena proposed a major change from Palladio's plan. Instead of following the *basilican* plan, with a long, rectangular nave, he transformed the nave into a large octagonal rotunda covered by a dome. The use of two domes of differing size—the larger one over the nave is 130 feet tall, about as tall as a thirteen-story apartment building—introduces an unclassical or anticlassical element that provides an unexpected yet much appreciated dissonance.

With academic finesse, Longhena based his rotunda on Early Christian precedents; **San Vitale** in Ravenna immediately comes to mind. However, because Longhena had been trained as a Renaissance architect, he felt obliged to design all the subunits according to contemporary standards of proportion and shape and to enforce a strict regularity.

He responded to Palladio's influence with formal details. For example, in the chapels he used Palladian thermal windows, semicircular windows divided into thirds by two rectangular pillars. Also Palladian is the differing treatment given to the three parts of the church. The main rotunda was, in Longhena's conception, a symbol of sublime mystery. To integrate it into the design of the other two parts of the building, he used a scenic progression of steps that lead up to the main altar and then to the *columns* that frame the retrochoir, which is hidden from direct view by the large main altarpiece. Longhena's sense of scenic design helped him to devise a design solution that was uniquely Venetian and independent of the development of Roman *Baroque*.

Further Reading

Critinelli, G. *Baldassare Longhena, Architetto del'600 a Venezia*. Venice, 1972.

Wittkower, R., et al. *Art and Architecture in Italy, 1600–1750*. 4th ed. New Haven, CT: Yale University Press, 1999.

SANTISSIMA SINDONE (HOLY SHROUD CHAPEL), TURIN

Style: Baroque
Dates: 1668–1690
Architect: Guarino Guarini

The site of the ancient Roman camp at Turin grew into a capital city with a promising future in the seventeenth century. From 1670 to 1674, when it expanded in the direction of the Po River, the city became the capital of a state ruled for nine centuries by the absolute monarchs of the House of Savoy. An important element in their power was the Holy Shroud (Santissima Sindone), which the ruling dynasty owned. It was believed that this piece of linen was the actual cloth that wrapped the body of Christ after the crucifixion and was then lost after the Resurrection.

First brought to the Champagne area of France in 1430, the shroud was exhibited in Turin in 1578, and in 1657, after the House of Savoy had moved the capital to that city, a vast chapel was planned to house it. The chapel was built at the eastern end of the cathedral of Turin and was elevated one story above the floor level of the church so as to be on the same level as the *piano nobile* (the main floor) of the Duke's residence, which was located behind the cathedral. This coincidence of levels was intended to symbolize the union of the church and state.

The gifted mathematician and philosopher Guarino Guarini (1624–1683) took charge of designing the chapel in 1668. He was a "cleric regular" in the Theatine Order, but his primary work was as an architect who focused all his attention on geometry and light in his buildings. Guarini was very daring in his designs, in which he combined a variety of intellectual approaches that were typical of *Baroque* architectural productions.

Seen from the west, from the courtyard of today's Royal Palace, the exterior of the Chapel of the Holy Shroud looks like a Chinese pagoda. Curved elements interlace to form a conical pile of openings surmounted by a spire of stacked, *arched* openings. From this, no one could imagine the shape of the *dome* or of the room that it covers.

The interior is a lofty space that rises into a construction that is almost transparent, a structure in which light and stone are exchanged, in which sunlight is given materiality and stone becomes luminescent. In order to understand how the dome was designed, one has to imagine little shallow-arched stone bridges spanning the circle that forms the base of the dome to create a hexagon. Light is introduced under the arch of each bridge and from the center

Santissima Sindone, Turin. Interlacing bridges of stone alternating with glass lighten the dome of Guarini's masterpiece.

of each bridge springs a similar smaller bridge. This pattern is repeated six times, continually decreasing in size, until it finally reaches the opening of the flamboyant *lantern*. The idea of a spherical dome disappears, to be replaced by translucent bodies flooded with light.

The genius of Guarini can be analyzed in mathematical terms: how can the surface of a sphere be measured? One way is to divide it into small triangles and gradually to reduce the size of the triangles to an infinitesimal minimum size. This is the basic principle of integral calculus, which was being developed at that time by Newton and Leibniz: the total of all the surfaces of the triangles approaches the surface of the sphere. In addition to mathematics, Guarini was interested in the materiality of light and devoted seventy pages to this phenomenon in his treatise *Placita Philosophica* of 1665. Scientists of the seventeenth century believed that light was material, made up of tiny corpuscles, minute particles that collided and became transformed. Matter and light could consequently exchange their properties.

This idea, expressed mainly through the *chiaroscuro* manner (contrasts of light and dark) exhibited in the work of painters who followed Caravaggio (1571–1610), influenced architects to mix light and matter in their buildings. This concept in Baroque architecture is a forerunner of modern architects' ideas about transparency, an integral part of contemporary design. Guarini, following the lead of the Roman Baroque architect Borromini, demonstrated how to take advantage of an immense scientific knowledge to transform space

and light in a building. Guarini also created, a few hundred yards south of the Chapel of the Holy Shroud, the church of San Lorenzo (1668–1687) in which he used "channels" of light and intersecting ribs to give loftiness to a graceful dome whose appearance is again impossible to divine from the exterior.

Further Reading

Meek, H. A. *Guarino Guarini and His Architecture.* New Haven, CT: Yale University Press, 1988.

Wittkower, R., et al. *Art and Architecture in Italy, 1600–1750.* 4th ed. New Haven, CT: Yale University Press, 1999.

SPANISH STEPS, ROME

Style: Baroque
Dates: 1723–1726
Architect: Francesco de Sanctis

Until the sixteenth century, the northern part of Rome, protected by the Aurelian Wall (270–275), was an uninhabited plain between the Tiber River and a hill called the Pincio. Because the principal entry into the city from the north was the Porta del Popolo, below the Pincio, visitors to the city would enter there. During the sixteenth century, the area inside the city gate was settled and became the *Piazza* del Popolo. Three straight streets, 4,000 feet long starting at the Piazza and running southward into the heart of the old city were built in between 1518 and 1549 by Popes Leo X and Paul III. These streets—the via di Ripetta, the Corso, and the via del Babuino—were called the Trident of the Piazza del Popolo.

Intersecting the Trident, at a right angle to the Corso, a street was built on the site of the former aqueduct that had brought water to the Baths of Agrippa. Called the strada Condotti (Street of the Conduit, i.e., Aqueduct) or, frequently, the via Trinitatis (Street of the Trinity), it ran from the Corso eastward across the via del Babuino to the slope of a hill on top of which stood a church dedicated to the Holy Trinity. The climb from the bottom to the top of the hill was 73½ feet.

In the Baroque age, during the seventeenth century, Roman officials developed an interest in the scenic attributes of the site and began to perform theatrical celebrations there in honor of the children of the Spanish Kings. In 1651, Gianlorenzo Bernini, the most famous Roman *Baroque* artist and architect, created a celebration for the birth of the King's daughter and son—the crown prince or dauphin (which also means dolphin). Bernini transformed

Spanish Steps, Rome. The stairway connects the Piazza di Spagna with the church of Trinità dei Monti, a run of more than 73 feet.

the hill into a huge mountain or volcano, with light and thunder at its summit. It exploded into flames around a colossal figure of a dolphin that emerged from the fire.

The French nation owned the top of the hill and the church of the Trinity while the Spanish nation had its embassy below on a triangular square called the Piazza di Spagna. Political rivalry between France and Spain explains the numerous arguments about building a staircase up the hill connecting the two sites. Cardinal Mazarin, the French prime minister until he died in 1661, left 8,000 scudi for the erection of a grand staircase with a figure of King Louis XIV at the top. Spain also proposed a staircase, but with a statue of a Spanish king at the bottom. The popes delayed a decision on what to do for half a century. Finally, Pope Clement XI decided to organize a discussion among five architects, which took place between 1717 and 1720. Releasing the money set aside for the project, Clement selected the architect who was already working for the French *cloister* of the Holy Trinity, Francesco de Sanctis (1693–1740). The staircase was built between 1723 and 1726.

According to the architectural program for the stairs, they had to be done with all possible charm and with a playful spirit. The flights of stairs had to be arranged by subtle inflections and connected by a mixture of straight and curved lines. Each flight of steps leads to terraces that offer benches for resting and enjoying the view. De Sanctis's major purpose in his design was to offer viewers the freedom to discover the many views of the city as they move along the stairs.

The Spanish Steps were made for people whose presence and movement added beauty to the built design. Contemplation is mixed in a subtle manner with the element of utility. By using convex and concave forms, de Sanctis demonstrated a genial capacity to combine irregularity and symmetry into a narrative composition that included the church of Trinità dei Monte at the top of the hill. Though not on axis with the via dei Condotti, the irregular contours of the stairs offer a very loose architectural frame for it.

In organizing the project, de Sanctis demonstrated a great capacity for visual control. He was one of the leaders of an urban culture that matured at the beginning of the eighteenth century. The Spanish Steps show how much progress in urban design had taken place since 1708 when, in Naples, Ferdinando Sanfelice (architect of **Palazzo Sanfelice**) designed and executed the steps leading to the church of San Giovanni a Carbonara.

Further Reading

Portoghesi, Paolo. *Roma Barocca, 2, Consumo di un Linguaggio*. Rome, 1966.

Wittkower, R., et al. *Art and Architecture in Italy, 1600–1750*. 4th ed. New Haven, CT: Yale University Press, 1999.

TEMPLE OF POSEIDON, PAESTUM

Style: Greek
Dates: Circa 480–470 BCE
Architect: Unknown

How could three enormous, well-preserved Greek temples have remained hidden, or at least unknown except locally, for a thousand years—from the ninth century until the middle of the eighteenth century—when King Charles VII of Naples decided to open a new straight road to the south and discovered them? In 1750, a group of French noblemen led by the future superintendent of works for King Louis XV and by the architect Soufflot, traveled to Paestum to measure the temples. Although the French publication of the temples in 1764 was rather poorly produced, the London publication by Thomas Major, called *The Ruins of Paestum or of Poseidonia*, was an outstanding presentation.

As architects who had been collecting illustrations of Greek temples began to have access to these publications, the drawings of Paestum immediately changed the scope of eighteenth century architecture. *Doric columns*, like those in the temples, without bases and with their archaizing appearance, were new to most architects (Greece was part of the Muslim Ottoman Empire at this time) and were interpreted as a new example of formal purity. The clarity with which the parts that were carried were distinguished from the parts that carried them opened the eyes of architects to new formal possibilities and began the transformation that led to the twentieth-century post-and-*beam* (trabeated) construction in reinforced *concrete* structures.

Leo von Klenze (1784–1864), a well-known German architect, made a remarkable sketch of the Poseidon Temple (also called the Neptune Temple) seen from the Temple of Hera (also called the *Basilica*) on May 15, 1855. For him, the Greek temple, composed of columns and *lintels* was the best and most beautiful form of architecture. He interpreted weight and load, or strength and resistance, as being symbolic of a dualistic approach, the one masculine, the other feminine. Von Klenze included the image of a man throwing a stone at a serpent in the foreground of his drawing as a symbol of the new way of conceptualizing architecture.

The city of Poseidonia, named after the sea god, was founded by Greek colonists who came from Ionia. By the middle of the sixth century BCE, a comprehensive city plan had been organized and laid out. The three temples that survive at the site were built between 530 and 470–460 BCE. Archaeologists in the eighteenth century, impressed by the dimensions and harmony of design of the largest temple, named it after Poseidon (Latin Neptune) the sea

Temple of Poseidon, Paestum. View of the corner columns of the temple thought by 18th century archaeologists to be dedicated to the sea god.

god. They reasoned that a city named after Poseidon would dedicate its largest and best temple to the same god. Later discoveries, however, have proved that the building was built in honor of the goddess of fecundity, the Argive Hera.

The Temple of Poseidon is an outstanding example of an Italian fifth-century Doric temple that creates an impression of airiness and eternal solidity. P. C. Sestieri claims it has "a quality never attained in any other period of the history of Greek architecture." (Sestieri 1965, 15) Measuring 80 feet by 180 feet 10 inches, the temple is hexastyle, which means that it has six columns across the front and rear façades, and fourteen columns on the flanks.

The term used to describe a plan with freestanding columns all around is peripteral. The columns and cult room, or naos, are raised above the ground on a base of three steps called the stereobate. The stone from which the temple is made has a marvelous color that turns to mellow gold when the light is right and helps to enhance its formal perfection.

Although it was built earlier than the Parthenon, the Temple of Poseidon has similar optical corrections included in its design and execution to correct for how people perceive things. For example, the horizontal lines in the building are all slightly bowed upward a little less than an inch in 180 feet because long horizontal lines appear to sag in the middle. On the front and rear façades, the columns are slightly wider than those on the sides and the ones placed on the corners are slightly elliptical. All these adjustments complicate the design of the *frieze*, the decorative band above the *colonnade*, which includes *triglyphs*, rectangular blocks with vertical grooves cut into their surfaces, and *metopes*, the flat, sometimes ornamented, panels between the triglyphs. In principle, the triglyphs and metopes should be uniform in size, but because of the variation in the column spacing, they cannot be. However, an appearance of regularity in the frieze was created with subtlety and skill. Another adjustment was applied to the columns. Each one has a bulge at the midpoint of the shaft, which narrows significantly toward the top, an adjustment in the shape of a column called entasis. The shape of the space between the columns, a distance called the intercolumniation, also has a beauty of its own.

Although only about half of the temple's interior survives, enough remains to distinguish the sekos, Greek for the residence room of the divinity, in the center from the vestibule in front, called the pronaos, and from the back porch, called the opisthodomos. To carry the weight of the timber ceiling, the walls of the sekos are sturdy, and a row of columns, parallel to the wall, was placed on either side of the interior of the cult room. To give a lighter aspect to the interior, each row was composed of two stories of superimposed columns, because shorter columns can be slimmer than a single story of taller columns. The figure of the god may have been a simple representation in terra cotta or an elegant marble statue. Except for the metopes on the western main façade, the temple has very little sculptural ornament. Its *pediment* shows no traces of the clamps and rods necessary to attach sculpted figures. Instead, it was covered with white stucco to make it appear to be made of marble.

Further Reading

Lawrence, A. W. *Greek Architecture.* Harmondsworth: Penguin, 1983.

Long, S. "The Early Publications of the Temples at Paestum." *The Journal of the Warburg and Courtauld Institutes* 13 (1950): 48–64.

Robertson, Donald S. *Greek and Roman Architecture.* 2nd ed. Cambridge: Cambridge University Press, 1969.

Sestieri, Pellegrino Claudio. *Paestum. The City, the Prehistoric Necropolis in Contrado Gaudo, the Heraion at the Mouth of the Sele.* Rome: Instituto Poligrafico dello Stato, 1965.

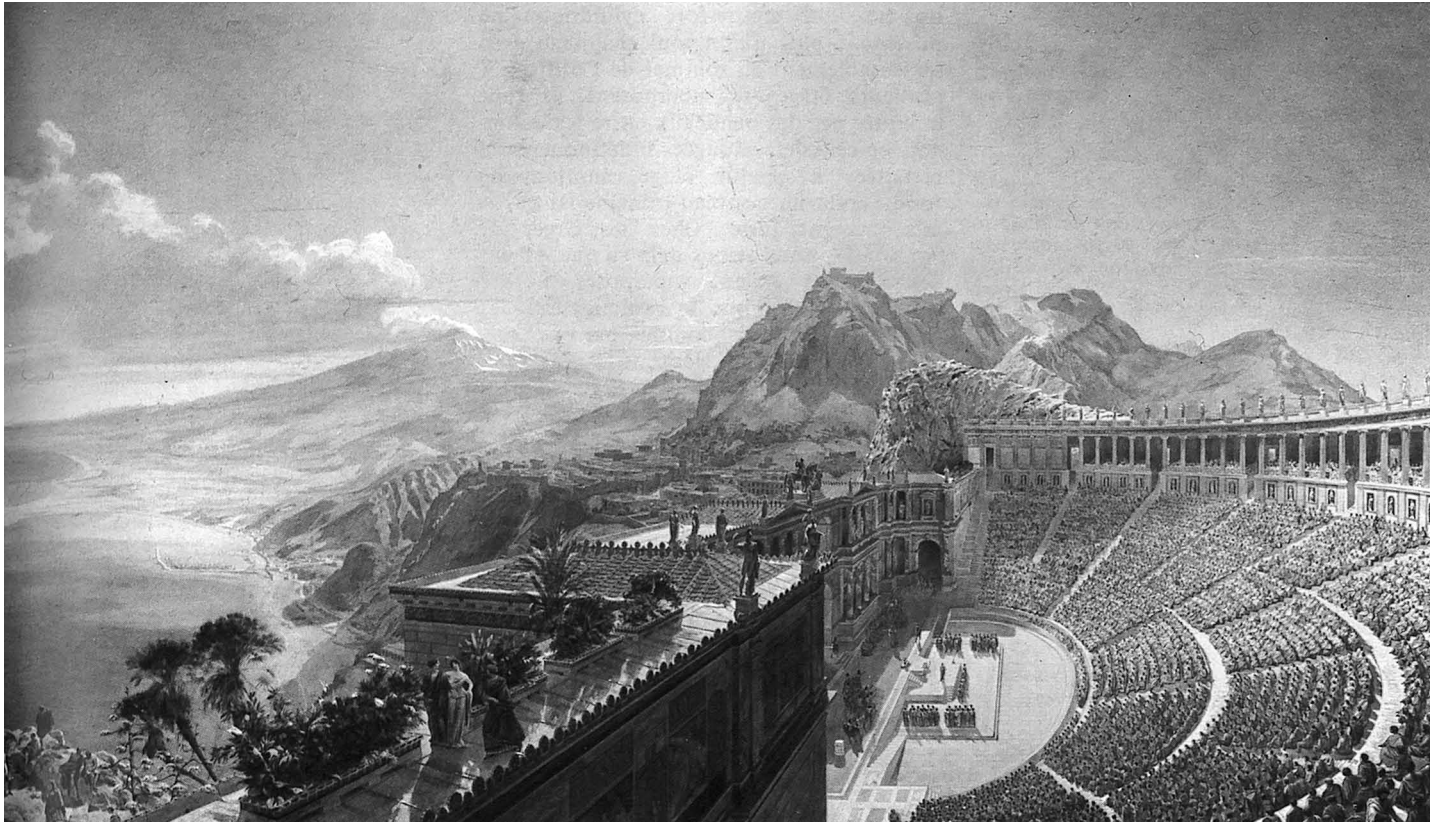
THEATER, TAORMINA

Style: Hellenistic; Roman
Dates: Third Century BCE and Second Century CE
Architect: Unknown

Travelers making the Grand Tour in the eighteenth and nineteenth centuries were overwhelmed by the landscape and the mythological aura that surrounded the ancient city of Taormina on the northeast coast of Sicily, slightly south of the Straits of Messina. The German Romantic architect Karl Friedrich Schinkel, visiting the site in 1804, wrote that the gigantic volcanic forms he observed brought to mind Homer's story of the struggle between Ulysses and the monstrous, one-eyed Cyclops Polyphemus. Schinkel discovered that a small bay nearby was linked by folk tradition to the ancient Greek hero and was even called the "Harbor of Ulysses." After visiting the theater, Schinkel described the view from its ruins thus: "Etna rises high in its total majesty above the plains of Catania, the sea closing the horizon." (Schinkel 1979; Catania 1804)

Thirty-two years after Schinkel's visit to Taormina, the French architect Viollet-le-Duc included the theater in his tour of Sicily. Viollet-le-Duc, who would later lead extensive restoration work on the major French medieval churches, could not resist his enthusiasm for the picturesque ruins of the theater and its impressive setting. After making detailed sketches of the site in June 1836, he painted a large watercolor showing the Theater restored to its ancient form. In contrast to Schinkel's Romantic ecstasy inspired by the awesomeness of Nature and the mythical associations of Taormina, Viollet-le-Duc restricted his painting to the representation of the building itself. He depicted several thousand spectators totally focused on the action in front of the stage building, which, in its restored form, blocked the panorama of Etna and the extensive stretch of iridescent water below. For Viollet-le-Duc, the glory of Taormina was to be experienced through its architecture rather than its natural setting.

Today, visitors from all over the world flock to Taormina to enjoy both the ruins of the Theater and its spectacular view of Etna and the sea. The siting of the theater is typical of Greek architectural practice: it is nestled into a hillside that provides the area for the "cavea", or semicircular auditorium,



Theater, Taormina as reconstructed in the mid nineteenth century by Viollet-le-Duc. Photograph of drawing courtesy of Centre des Monuments Nationaux.

with rows of seats cut from the living rock. This distinctive feature and the use of carefully squared (*ashlar*) masonry for the base of the scene building ("scaena") are evidence for dating the construction of the building to the *Hellenistic* period, from some time during the third century BCE.

The Taormina Theater does not resemble other Hellenistic theaters, such as the very large one at Syracuse, because it was remodeled and enlarged by the Romans in the second century CE. An inscription giving the date 108 has led some scholars to attribute the reconstruction to the reign of the emperor Trajan (98–117), while other specialists suggest that the work was done under his successor Hadrian (117–138). Both of these emperors presided over the Empire when it was at its zenith and they made it a practice to donate buildings to communities in Italy as well as in the provinces. The provision of public entertainments and the financing of elaborate buildings in which to house them were important components of the Roman political tradition. By the second century, the people expected imperial donations as tokens of the Emperor's beneficence and generosity.

Like every Roman theater, the one at Taormina has the following three primary parts and several secondary features:

1. The cavea, or seating area, is made up of semicircular steps, one above the other, which were the seats. Walkways, parallel to the seats, divide the cavea into five horizontal tiers; eight stairways from bottom to top further divide the seating area into nine wedge-shaped sections called cunei. These divisions facilitated the entrance and exit of the crowd and also marked the location of blocks of seats for the various strata of the local society grouped in hierarchical order. A *portico*, or covered *colonnade*, once ran completely around the top of the cavea to provide shade for spectators (the lower classes and women) who occupied the highest seats. The theater could also be roofed with fabric awnings on hot sunny days. Scholars calculate that the cavea at Taormina accommodated about 5,400 spectators.
2. Connected to either end of the cavea was the stage building, or scaena, which was a long rectangular structure equal in height to the seating area. The façade of the scaena was elaborately decorated with two stories of *Corinthian columns*. A rectangular niche in the center of the stage building contained three doors that opened onto the stage. On either side of this was a semicircular niche containing a single door that was clearly subordinate to the triad of doors in the center. The three niches were linked by a row of Corinthian columns on a low podium. Small *arched* niches, scooped out of the front wall of the scaena—probably holding statues—were visible through the spaces between the columns. The interior of the scaena was a long, narrow hall with a second series of doors in its back wall that opened outward to the area behind the theater. At either end of the stage building was a large hall connected to the cavea that made the theater a self-contained enclosed space.

3. A wood stage in front of the scaena overlooked the orchestra, the space between the base of the cavea and the front of the stage. Although the word orchestra, meaning "dancing place," was borrowed from Greek practice, the Roman orchestra was semicircular in shape and used for seating important viewers whereas the Greek orchestra was round and was reserved for the use of the musicians and dancers. Late in the history of the Taormina Theater, most likely in the third century, the orchestra was rebuilt in a circular shape so that it could function as an arena where gladiatorial and wild beast shows were staged.

Dimensions for the theater are only approximate: it is 164 feet wide, 394 feet long, and 66 feet high. A new survey of the ruins has been undertaken by the Australian Roman Theater Project; its results are scheduled to appear on the website listed below. An area of about 33 feet is missing from the center of the scaena. This gap was either the result of damage inflicted during World War II or of constant looting of useable materials from the site over the centuries. Although the loss of this part of the building is unfortunate, it has a positive side. The opening allows the visitor a spectacular view of Mount Etna and the sea. Because of the beauty of the environment, so admired by Schinkel, and the usefulness of the restored Theater, so well appreciated by Viollet-le-Duc, Taormina is host each year to the most important Italian film festival, the "David di Donatello Award." An international festival called "Taormina Art" runs continuously every summer.

Further Reading

The Ancient Theater Archive: www.whitman.edu/theatre/theatretour/taormina/taormina.htm.

Bieber, Margarete. *The History of the Greek and Roman Theater.* Princeton, NJ: Princeton University Press, 1961.

Sear, Frank B. "The *Scaenae Frons* of the Theater of Pompey." *American Journal of Archaeology* 97 (1993): 687–701.

THEATER OF SAN CARLO, NAPLES

Style: Baroque; Neoclassical
Dates: 1737; 1809–1811; 1816–1817
Architects: Giovanni-Antonio Medrano; Antonio Nicollini

Italy did not become a unified country until 1870 (see **Galleria Vittorio Emmanuele**). Prior to that date, in the eighteenth century when the country

was divided into numerous independent areas, Naples entered the Age of Enlightenment under Don Carlos of Bourbon (1716–1788). In 1737, he became King of the Two Sicilies and reigned until 1759. After a serious economic crisis, which endangered the royal ideology, Don Carlos had to rely on a group of social leaders who, since Naples was now independent from Austria and Spain (although Don Carlos was eventually compelled to become King of Spain after 1759) shifted their concerns from a local to a more European focus. But Don Carlos had great difficulties in combating feudalism (see **Trulli, Alberobello**) and the power of the Church. In 1742, for example, of a population of 350,000, there were 16,500 men and women in Holy Orders. The King initiated a process of laicization with the main objective being recovering acres of land that had been confiscated by the *convents*.

At the same time, the culture of Naples was transformed by such urban attractions as organized festivals and theatrical productions. Some foreigners accused the local politicians of devoting too much attention to leisure as a way of hiding their conservative policies; but they genuinely enjoyed the pleasures provided by the festivals. Don Calo's first concern was for the Theater of San Carlo that was built in just eight months after his arrival in Naples.

The musical and opera productions of Naples demanded a venue where audiences could listen to the compositions of Cimarosa, Paisiello, and Alessandro Scarlatti. New melodies, incredible creativity, original stage sets designed by the young Bibiena, and the experience of sudden transformations occurring in the hall itself fascinated Neapolitan society. Taking the best features from earlier theaters, the architect Medrano (1703 to about 1750) juxtaposed two equivalent spaces, a vast stage convenient for the performance of operas and a horseshoe-shaped hall with six rows of 184 boxes, each able to hold up to ten people. The horseshoe plan provided good visibility of the stage, but its vertical arrangement of the six rows, graded according to status, also reflected the social role that the theater played in Neapolitan life.

Social life was sometimes more important than the performance. The hall of the theater defined a social hierarchy where brilliant formal attitudes required recognition. San Carlo was known as one of the best theaters according to European standards. The French encyclopedia of Diderot and D'Alembert (1772) published its plan as a reference and a model. Neapolitan nobility had to pay for the first four rows of boxes; the fees were higher if the buyers were distinguished and wished to be placed close to the King. Of the sum of 100,000 ducats necessary to run the theater, 32,000 were provided by the king and 68,000 were obtained from the payments for the boxes. The interior, although rebuilt after a fire in 1816, is famous for its red and gilt decoration.

In 1809–1811, Nicollini (1772–1850), a stage designer who belonged to the Neoclassical school in Naples, added a new façade to the theater. He used Florentine *rusticated* masonry for the wall surfaces (Nicollini was a Florentine) and, in a design influenced by the French architect Ledoux, a row of fourteen *Ionic columns* on the second floor. Nicollini was aware of a rivalry between Naples' San Carlo and Milan's La Scala so strong that it included everything

Theater of San Carlo, Naples. The façade was modified in 1809–1811 by Antonio Niccolini.

associated with the theater—even questions of architecture. Because La Scala had comfortable access for vehicles, Nicollini added a covered entrance for carriages to the façade of San Carlo. He also included a large number of meeting rooms inside the theater.

San Carlo Theater was part of an Enlightenment plan to improve the city of Naples. The greatly transformed Royal Palace, positioned at the beginning of via Toledo, marked a prestigious mile long street at the edge of old Naples (Spaccanapoli). Clearing the ground around the Palace was a task that lasted until 1890, when the Galleria Umberto, which imitated the **Galleria Vittorio**

Emmanuele of Milan, was finished. The soaring iron and glass Galleria is located just opposite the Theater of San Carlo.

Further Reading

Ciapparelli, P. *Il teatro di San Carlo.* Naples, 1998.
De Seta, C. *Napoli, La città nella storia d'Italia.* Rome, 1981.

TREVI FOUNTAIN, ROME

Style: Baroque
Dates: 1640–1644, 1732–1762
Architects: Gianlorenzo Bernini; Nicolò Salvi

The urban patterns established during the *Baroque* era completely changed the way we understand a city. In Rome, for example, Pietro da Cortona turned the church façade of Santa Maria della Pace (1656–1657) into the main and determining feature of a relatively small *piazza*. Similarly, the Trevi Fountain is not just a fountain in an urban space, but rather it is a large structure that fills one side of a square in much the same way a stage with an elaborate set fills the focal side of an auditorium in a Baroque opera house. The Trevi's architect, Nicolò Salvi, reinterpreted an earlier (1629) scheme by Bernini that was never completed. Salvi hid the side façade of the preexisting Palazzo Poli behind a huge, decorative *triumphal arch* out of which a statue representing the Ocean would release tumbling waters cascading down to a basin that occupies half the square. Sculptural figures, architecture, the play of water, rock-like escarpments, and a representation of nature frozen into stone combine to provide a most surprising, playful urban feature. The stability of the architecture provided a neutral background that contrasted with the irregularity of rocks and the motion of splashing waters. Nicolò Salvi's success is due to a generosity of spirit and to the approachability of his design and its ability equally to touch anonymous passersby and delight urban visitors.

The water delivered to the Trevi Fountain was brought from a spring twelve miles east of Rome by an aqueduct that Agrippa had built in 19 BCE. It was named Acqua Vergine (Aqua Virgo) after a young girl who had shown the spring to Roman soldiers. The name Trevi is a distortion of Trebium, the source of the spring near the via Tiburtina. An ancient fountain at the site of the Trevi had been restored by different popes (Nicolas V in 1453, who added a basin designed by Leon Battista Alberti, and Pius IV in 1561). In 1629, Pope Urban VIII was convinced to enlarge the square in front of the fountain which was moved so that it faced south and could be seen from the summer residence of

Trevi Fountain, Rome. Nicolò Salvi combined sculpture, architecture, and water in an operatic ensemble that dominates the small piazza in the heart of the city.

the popes, the Palazzo del Quirinale, on top of the Quirinal Hill. Houses were torn down in order to double the size of the original square, but when the basin for the fountain was installed, lack of material and the pope's death stopped the work for nearly ninety years, from 1644 to 1732.

During the Late Baroque period, Pope Clement XII (1730–1740) decided to finish the fountain and organized two competitions, in 1730 and 1732, to choose the architect. Each competitor was asked to provide both drawings and models. In a surprising decision, three entrants were awarded commissions: Alessandro Galilei to design a quarantine station at Ancona, and Luigi Vanvitelli and Salvi to design the fountain. In September 1732, Salvi was given sole responsibility for the Trevi Fountain. Construction was stopped in 1740 at Clement XII's death but started again in 1742; the fountain was nearly finished in 1747. Totally devoted to his task, but forced to experience the jealousy of contemporary sculptors and artists, Salvi died in 1751. The fountain was finally finished in 1762, when the crucial figure of the Ocean was installed.

In his Late Baroque masterpiece, Salvi showed a total sympathy with Bernini's ideals both for the architectural background and for the display of the enormous waterfall and the basin it splashes into. He treated the wall behind the fountain, its backdrop, as a false palazzo-like façade of nine *bays* framed by *pilasters* and *columns* whose *piano nobile* (Italian main floor, American second story) was supported on a tumbled rocky basement. Two bays on each side are

a simple repetition of Bernini's façade for the palazzo Odescalchi. They frame a large Palladian-style triumphal arch, showing Salvi's interest in sixteenth century architecture, already familiar to Bernini. Emerging from the central niche, the large sculptural figure representing Ocean is carried above the waters by a carriage drawn by two hippocamps (creatures that are half horse and half fish) guided by two tritons (creatures that are half man and half fish). The ferocious movement of the hippocamps, their whirling fish tails evoking the depths of the Ocean from which they rush, is used to demonstrate the power of the waters. The play of waters enlivens the rocky background to a surprising extent.

Salvi was inspired by Bernini's ability to evoke nature from lifeless stone: The base of the palazzo façade seems to be carried by a crumbling mass of disorganized rocks, out of which and around which sprout stone bushes and other plants. Ultimately, Salvi turned the square into an urban opera house whose spectators enjoy the grandiose spectacle of waters splashing down from under the figure of Ocean and give life and a sense of humanity to a city piazza.

Further Reading

Mallory, Nina A. *Roman Rococo Architecture from Clement XI to Benedict XIV, 1700–1758.* New York: Garland, 1977.

Pinto, John. *The Trevi Fountain.* New Haven, CT: Yale University Press, 1986.

TRULLI, ALBEROBELLO

Style: Vernacular
Date: Nineteenth Century
Architect: Unknown

Across the vast area of the Pugliese highlands, from the city of Barletta to the southernmost Cape of Leuca, a large number of rural houses are built in the form of a cluster of limestone domes. In all, they number about 50,000; in the area around Martina Franca, there are 14,000 and a community like Alberobello contains 2,000. Also commonly called "casedde," the more popular name "trullo" (plural "trulli") is derived from the Latin words "turris," "trulla," or the Greek "tholos," transformed by the Byzantine rulers into "torullos," meaning *cupola* or *dome*.

Building a trullo required only the most primitive technology and no wooden scaffolding or formwork to erect the dome. A thick and simple cylindrical wall, about 3 feet thick and 6 to 10 feet high was a satisfactory base for the construction of the conical roof and offered total stability. A ring of stones

Trulli, Alberobello. Domed houses of rustic masonry, dating mostly from the 19th century, are characteristic of several towns in Puglia.

was placed on the top of the cylinder wall and on top of them was set another ring, which projected slightly (*corbelled*) over the row below. Ring after ring the circles became smaller each time and at the very top, the dome was closed by a large cylindrical stone. Local limestone from the highland was plentiful so there was no need to quarry it.

The history of the town of Alberobello helps to explain the peculiarities of the trulli. In the Middle Ages, the place was a vast oak forest, a "selva." The King of Naples and Aragon gave the forest to the Counts of Conversano in 1481 as a grant for resisting Turkish troops who were threatening Italy. The Counts allowed the peasants to clear the forest and cultivate the land, but gave them no property or civil rights. Their houses had to be built of dry masonry, that is, flat slabs of limestone, without mortar, so that they could be disassembled at any time should the Count or the King decide to clear the property and expel the inhabitants for whatever reason. Ostensibly, because of complaints from surrounding feudal lords, the count was obliged to demolish the houses and scatter the stones in 1644. He was taken to Madrid in 1648 and imprisoned for sixteen years, dying sick but free, in Barcelona in 1665. King Ferdinand IV of Spain freed the inhabitants of Alberobello in 1797, at which time the population of the community was only 3,500.

From its primitive beginning, the shape of the trullo has gone through several adaptations. The conical roof is sometimes supported by *pendentives* connected to a square base, and the houses are no longer built by peasants; instead, there are specialized "maestri-caseddari" (masters of "casedda" building).

Small ancillary domes help to refine the interior distribution of space around the main trullo where the family gathers in winter in front of the fireplace. The dome may be hidden by an attic, accessible by a ladder, where food and tools are kept. All the houses have a bedchamber in a separate trullo. The historical fight for the peasants' freedom gave a sense of independence to the trulli villages. Whitewashed walls and the ring of small limestone slabs covering the domes under the sunshine and the unpredictable plans of the trulli explain the beauty of this architecture without architects.

Further Reading

Allen, Edward. *Stone Shelters.* Cambridge, MA: MIT Press, 1971.

Blanchard, P. *Southern Italy: South of Rome to Calabria*, *Blue Guide*. London: W. W. Norton Company, 2000.

Marraffa, Mariano. *I Trulli di Alberobello*, *La Storia della Città Attraverso I Secoli.* Rome: Editrice Adriana, 1967.

Trulli Houses: http://www.geocities.com/trullihouses/.

TUSCOLANO II PUBLIC HOUSING, ROME

Style: Contemporary
Dates: 1950–1954
Architects: Adalberto Libera; Saverio Muratori

South of Rome, before reaching Frascati (the ancient city of Tusculum), the via Tuscolana meanders through nondescript suburbs. A visit to the area requires courage and stubbornness but anyone interested in the disastrous state of Italy after her defeat in World War II will be rewarded by the experience. The problems of social, that is, public housing and the failure of the promises of modern architecture are very obvious here.

After the war, the incapacity of Mussolini's Fascist government to eliminate poverty convinced President Fanfani to launch a vast program of public housing. The program, called INA Casa, was founded on February 18, 1949, and lasted for fourteen years, until 1963. Most of INA Casa was based on the clever use of nonindustrial techniques and materials and on the idea of restoring the culture of the inhabitants. Public housing, as is frequently the case in Italy with cooking, newspapers, or administration, was to express local approaches and a keen social control. An architect, Mario Ridolfi, had prepared the ground for enhancing local capacities when he published his *Manuale dell'*

Tuscolano II Public Housing, Rome. Façade detail. An INA Casa project containing 3,150 apartments intended to house 12,000 inhabitants.

Architetto (The Architect's Manual) in 1946. In this book, he explained how to develop traditional technologies.

However, the Italian Modern Movement in architecture, which had been allied with the Fascist movement, faced criticism after the war and therefore had to search for new goals. The INA Casa housing project of Tuscolano II (1950–1954) contained 3,150 apartments and was to house 12,000 inhabitants. Two well-known architects from the 1930s worked with a new spirit. With his design, Saverio Muratori (1910–1973) respected the urban fabric with a simplified version that addressed the poor solar orientation of modern buildings, which he combined with a bizarre skeleton that was used as the

basic formal system for the plan. He attached his buildings to the ground in an attempt to enhance social intercourse within the project.

Adalberto Libera (1903–1963) was fascinated, in the years from 1943 to 1946, by the attitude of the body in a house and its functional counterparts. A trip to Morocco in 1951 had opened his eyes to the Muslim habitat and to the way that certain great young American architects (for example, Candilis and Sadrach Woods) used it to develop new solutions for housing design. He proposed a "horizontal town" of 200 houses as an alternative solution to Muratori's housing project. Libera designed patio-type houses connected by crisscrossing alleys and small *piazzas*. The use of *concrete* canopies, the calmness of the exteriors, and the simplicity of the houses clearly proved that the Modern Movement was going through a careful reevaluation. A tight urban fabric was replacing the loneliness of the isolated towers and slab buildings of the recent past. Social concerns helped to reconcile the inhabitants with the traditional city and to propose its contemporary equivalent. Unfortunately, isolation and the absence of public transportation, the failure of shops, and new trends in contemporary society have limited the promises of this urban settlement.

Further Reading

Garofalo, Francesco, and Luca Veresane. *Adalberto Libera.* New York: Princeton Architectural Press, 1992.

VELASCA TOWER, MILAN

Style: Contemporary
Dates: 1956–1958
Architect: BBPR Office

About 1,500 feet from Milan's **Cathedral** rises the Torre Velasca, one of the first skyscrapers in Italy (the Pirelli Building, also in Milan, was constructed at the same time). Built between 1956 and the beginning of 1958 with a *concrete* structure, its form, 330 feet high, is reminiscent of a medieval tower. But its machicolations—the projecting defensive galleries that crown most medieval fortifications—have been translated into huge diagonal concrete *beams* or struts that support the upper six stories. This section, *cantilevered* beyond the twenty lower stories, allows larger floor plans at the top of the tower. Bearing elements, *columns* of subtle geometric shape, envelop the tower and express its verticality. Because of the color of the walls, which looks so natural and roughhewn, the building conforms to the traditional hue of Lombard architecture. Structural dynamism and forms that suggest a complete

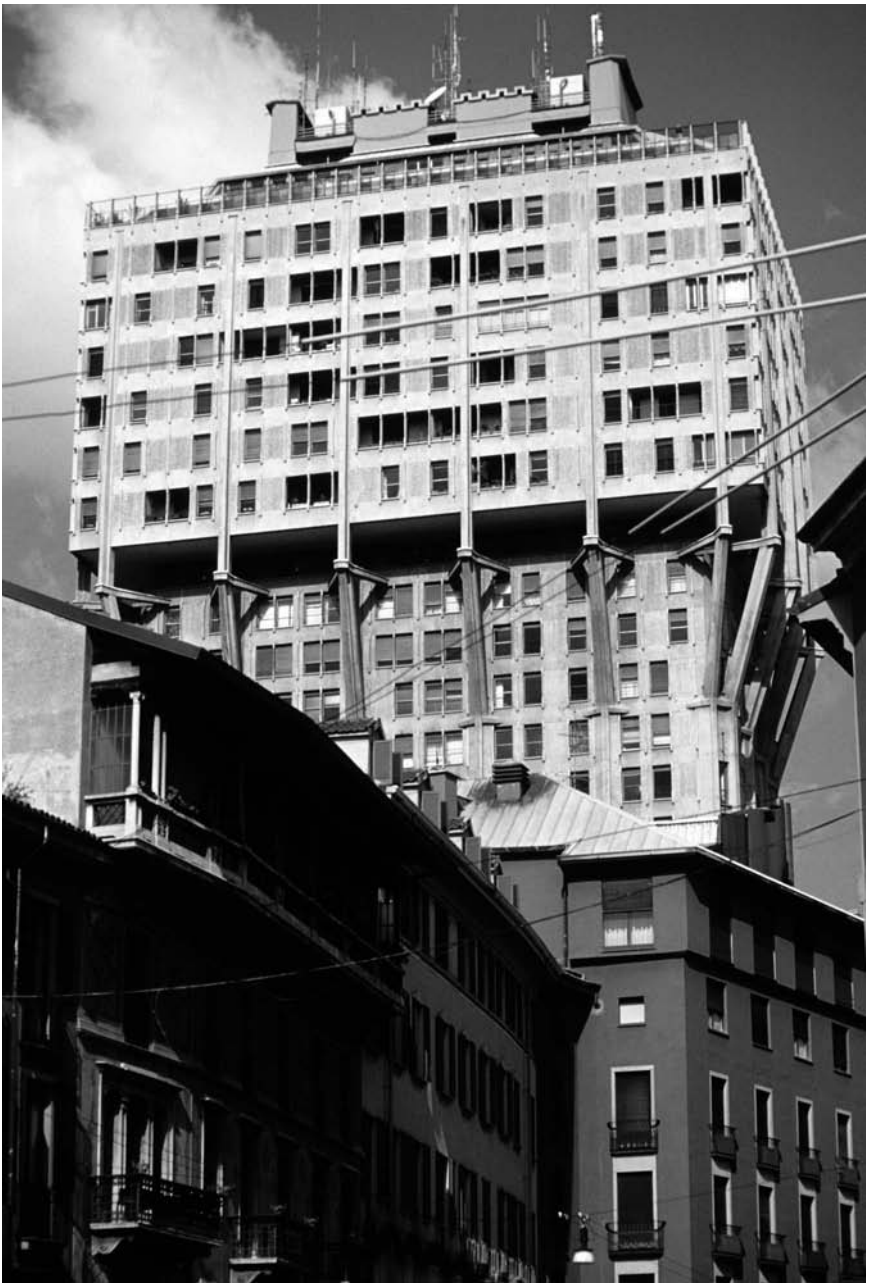
integration into local building traditions make this skyscraper both an innovation and a respectful continuation of its historical context.

The architects responsible for the Velasca Tower belonged to the respected group known as BBPR (Gianluigi Banfi, Lodovico Barbiano di Belgioso, Enrico Peressutti, and E. N. Rogers) who had been involved in the postwar period of prosperity that turned Milan into a major industrial and business center. The city had been damaged by military bombardments, hence a series of skyscrapers were built during the 1950s. In response to all the building, there began a kind of competition among the architects because they were all convinced that they had to create a new language that was based on the most advanced techniques and materials, yet was fair to the local spirit of Milanese architecture. They all wanted to revive the "old creative virtues" of the Milanese tradition.

E. N. Rogers, a member of the BBPR group, was a charismatic leader who was also in charge of several architecture magazines: *Style* (1941–1947), *Domus*, and *Casabella* (1953–1964). He argued for the translation of the historical heritage into modern terms. Believing in history and contextual climate, Rogers was looking for an "eternal present," like Siegfried Giedion, the master-thinker of modern architects. Of course, Rogers was accused of "revisionism" because the architecture he was defining was not only functional but was also immersed in memory and local patriotism.

The Velasca tower is a mixed-use skyscraper that combines two underground storage facilities with twenty-seven aboveground stories. The ground and second stories are commercial; the nine stories above them are devoted to offices, housing, and working studios, one floor of interchange, and eight stories of housing. These top floors contain twenty-seven apartments, those on the uppermost level being duplexes. In a block heavily damaged by World War II bombardments, the BBPR group was charged with building a ring of eight-story buildings surrounding a large underground parking facility on top of which would be erected the skyscraper. Their engineer, the gifted Arturo Danusso, conducted a great number of tests before building commenced. The decision to abandon steel and to use concrete was more in line with the goals defined by E. N. Rogers. The resulting vertical expression and cantilevered upper section, which was connected to the lower part by the diagonal struts, validated the advanced technical ideas of Italian engineers.

With widely spaced columns placed on the exterior surface of the building façade, the plan allows freedom to adapt the interiors either to open-plan offices or well-designed apartments. The position of the tower in a courtyard-like space within the block is quite surprising because the skyscraper does not have the usual open-air plaza facing a large avenue. The architects obviously did not want to rebuild the city the way it was before World War II but they paid distinguished homage to Milan and its traditional urban fabric. BBPR erected their surprising "*Gothic*" tower in a kind of virtual space hidden within an urban block. Their lyrical approach and their translation of a traditional concept into modern form celebrate the BBPR group's design ability.



Velasca Tower, Milan. A skyscraper that looks like a medieval tower and incorporates traditional Lombard materials to preserve the local spirit of Milanese architecture in the 20th century.

Further Reading

D' Amia, G. "Tour Velasca, BBPR, Milan 1958." *Moniteur Architecture AMC* 133 (2003): 100–104.

Milan: http://milano.arounder.com/city_tour/IT000005339.html.

VIADUCT OF THE POLCEVERA, GENOA

Style: Contemporary
Dates: 1961–1964
Architect: Riccardo Morandi

Crowded by mountains onto the shore of the Ligurian Sea, Genoa was unable to develop fully without a tunnel system for its railroads or enormous bridges for its freeways. One of these bridges carries the superhighway, called the autostrada, which connects Genoa and Savona and proceeds on to Turin. This bridge or viaduct, which crosses the valley of the Polcevera, is 3,600 feet long and 180 feet (roughly eighteen stories) above the ground. The Polcevera valley, the most direct connection from Milan to Genoa, is densely filled with buildings, two railroad lines, two large freight yards, and several factories. The viaduct is comprised of three large spans of 664, 686, and 466 feet and six smaller spans of an average length of 240 feet. Creating the viaduct—one of the largest works of civil engineering in an industrial metropolis—required the talent of a gifted engineer named Riccardo Morandi (1902–1989).

Morandi's fame was based on his experiments with prestressed *concrete* structures; that is, reinforced concrete in which steel bars or cables are stretched, or tensioned, to counteract stresses the structure will have to resist. He earned his engineering degree at the Applications School for Engineers in Rome in 1927 and became immediately involved in Sicily, working in areas affected by earthquakes. Morandi developed a method that was in sharp contrast to the sense of monolithic structures imagined by Pier Luigi Nevi (see **Palace of Labor**). Whereas Nervi used the continuity of undulating structures (for him, they were equivalent to *vaults*), Morandi favored a subtle sense of dynamism. Nervi looked at structures that engineers refer to as "hyperstatic" and from his research developed forms with *classical* harmonious overtones. Morandi preferred light structures referred to as "isostatic," tensile schemes that produced very sophisticated forms. Morandi had a feeling for abstract geometry that fit into the ideals of the modern Italian architecture of the 1950s.

Viaduct of the Polcevera, near Genoa. Designed and built by Riccardo Morandi (1961–1964).

While he was designing the Polcevera viaduct, Morandi was also finishing the 5.4-mile-long bridge across the Sound of Maracaibo in Venezuela (1957–1962). Genoa's viaduct uses the same components as the Venezuelan bridge. Three big pillars shaped like a double "A" carry the freeway on diagonal prestressed bars which are in turn carried by an independent double "V" from the ground up. This subtle structure of great beauty is connected to a second system by smaller slabs, measuring 118 feet, which create a feeling of slenderness. The V-shaped structure carries the western end of the viaduct with the same system of smaller connecting slabs. The Polcevera viaduct has a dynamic quality that makes it seem to jump across the valley, revealing both the intricacies of the industrial landscape and the natural beauty of the mountains above Genoa and the Ligurian Sea.

Further Reading

Boaga, Giorgio and Benito Boni. *The Concrete Architecture of Riccardo Morandi*. New York: Frederick A. Praeger, Publishers, 1966.

Poretti, S. "La Costruzione," in *Storia dell' architettura italiana, il secondo Novecento*. Milan, 1997.

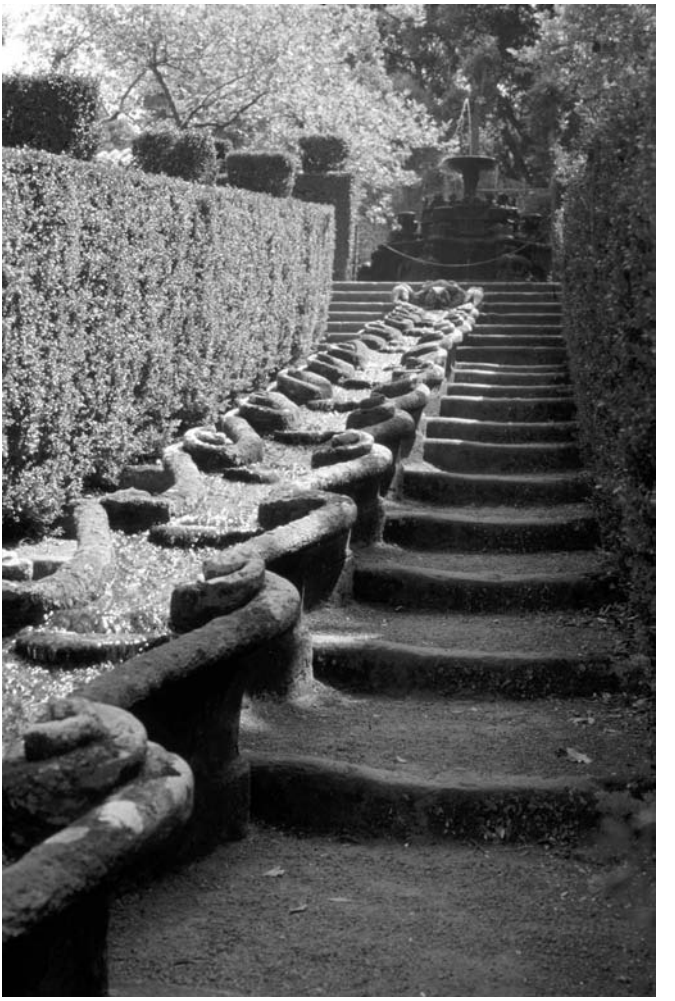
VICTOR EMMANUEL GALLERY. *See* Galleria Vittorio Emmanuele (Victor Emmanuel Gallery), Milan.

VILLA LANTE GARDENS, BAGNAIA

Style: Mannerist
Dates: 1560–1600
Architect: Vignola

Garden architecture that required the work of famous architects defined the luxury of an aristocratic retreat in the sixteenth century. A garden could be enclosed, making it a secret garden or "hortus conclusus," or a garden could be walled in but be large enough to suggest a long promenade through mythology. A Mannerist garden also meant nature submitting to all the powers of art.

Beginning in the late Renaissance, Florentine princes developed gardens around their *villas*; Rome was also famous for remarkable gardens that were



Villa Lante, Bagnaia. A water chain in the large gardens of the villa.

mostly designed for popes and cardinals of the Catholic Church. The courtyard of the Belvedere in the Vatican, for example, was designed with skillfully arranged terraces joined by ramps or stairs. It contained a "forum," or public square, for receptions, a theater, and at the top of the terraces was a refreshing garden. Bramante designed the Belvedere in 1505 with the intention of rivaling antique Roman grandeur and to provide an atmosphere for the fulfillment of official duties while also discussing the values of art among a collection of antiquities.

Although the Belvedere gardens are gone, the related gardens at the Villa Lante in Bagnaia, sixty miles north of Rome, still exist. They occupy a lovely site on the slope of an oak-covered mountain called Monte Cimino. In the second decade of the sixteenth century, Cardinal Raffaele Riario created a

hunting preserve here. Later owners of the property, Cardinal Gambarra (in office from 1561 to 1587) and Cardinal Montalto developed the estate into a replica of Mount Parnassus, the garden of the Muses.

At the entrance to the garden, at the base of a hillside, is the fountain of Pegasus, which includes figures of the Muses. Next is a large labyrinth of oak trees, reminders that according to the Roman poet Ovid honey flowed from oaks during the Golden Age. At the top of a hill is the Deluge fountain that symbolizes the end of the Golden Age and also provides a sweeping view of the formal garden below.

Although there are no documents proving his presence, the intervention of Vignola (1507–1573) in the design of the garden is unmistakable. His development of the courtyard of the Villa Lante garden is based on the plan of the Vatican Belvedere. The ten acres of the Lante garden are divided into five terraces that follow the slope of the hill. Elements characteristic of Vignola's other designs and evidence of his involvement in the garden are: the formal rigidity of the plan; the clever perspective given to the stepped terraces; and the equilibrium established by the ramps, stairs, colonnades, and *loggias* (covered rooms unenclosed on one side) that open onto the landscape.

On the uppermost terrace, water emerges from the Fountain of the Deluge into a small open-air theater placed between the two Loggias of the Muses. The play of the waters through the shadows of the trees is astonishing. It glides, stumbles, splashes up, or cascades down in small jets or in a continuous flow. The "water chain" is a gliding slope in the center of a flight of stairs, which is made up of volute-shaped interconnected basins that contain the flow of the water as it rushes down the incline. Water plays many games, flowing in the balustrades and in ornamental vases. Movement and time elapsing—the sense of time and destiny—profoundly permeate the garden. On the third terrace, the waters flow in an unreal manner down the center of the "Cardinal's stone table," across the surface of which it may have once spread like transparent crystal glass.

At the bottom are four basins encircling the Fountain of the Moors, a group of figures attributed to Giambologna. This final flat area, a large *parterre* at the base of the hillside, was redesigned in the seventeenth or eighteenth century in formal French style. From the parterre, the view of the distant landscape beyond Bagnaia provides a striking contrast to the closeness of the upper terraces of the garden. Two casinos (small rectangular buildings) located above the parterre offer a pleasant retreat for visitors—as they surely did for the original owners of Villa Lante.

The garden is as large as the whole town of Bagnaia. The medieval village, built on a ridge, is connected to the garden by a lively *piazza* next to a fortress that is now its center. Three straight streets, looking very modern when compared to the tortuous medieval streets, run from the square to the garden. Sixteenth-century planning could improve an existing landscape by simple transformation. The flow of trees on the slopes and down in the valleys, in a natural landscape of nice coloration, adds to the charm of the site.

Further Reading

Hobhouse, Penelope. *The Garden Lover's Guide to Italy.* New York: Princeton Architectural Press, 1998.

Mosser, Monique, and Georges Teyssot. *The Achievement of Western Gardens.* Cambridge, MA: MIT Press, 1991.

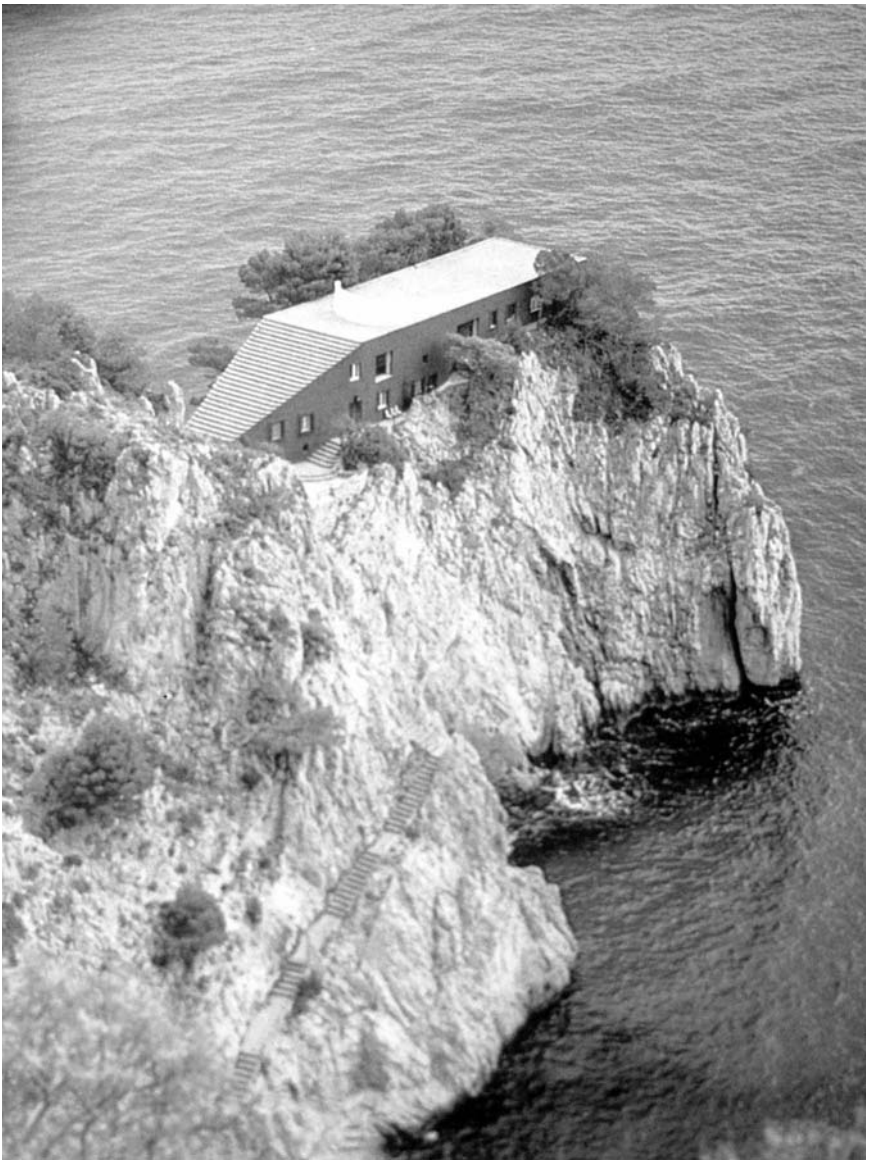
VILLA MALAPARTE, CAPRI

Style: Contemporary
Dates: 1938–1942
Architect: Adalberto Libera

The island of Capri became fashionable when it was rediscovered by Fascist politicians, who, in 1937, celebrated the second millennial anniversary of the reign of the Emperor Augustus with pictures of the *Villa* Jovis built by his successor Tiberius. These pictures helped to popularize Capri as "the city of leisure" and ultimately to influence the famous writer Curzio Malaparte (1898–1957) to build a retreat there. He had been a troublesome member of the Fascist Party and was put in jail in 1933 for threatening Mussolini's power, after which he was exiled to the volcanic island of Lipari and later (1934–1935) sent to the most hospitable island of Ischia, only an hour by boat from Naples. After this, his obsession was to find a refuge on a cliff above the southern shores of Capri. He applied for a building permit on March 14, 1938.

With the help of some high-ranking politicians, Malaparte received the permit for a villa designed by the architect Adalberto Libera (1903–1963). The site, on the narrow cape Ponta Massullo, offered few possibilities. To reach it today, one walks eastward from the city of Capri on the path leading to the Matromania Grotto. When the shore comes into view, a visitor proceeds a thousand feet toward the south and comes upon a view of overwhelming beauty. Situated on the flattened top of a cliff is the thin, red, rectangular block of the Villa Malaparte, accessible by an extremely long staircase that snakes up the side of the escarpment.

Access to the top of the villa is via another great flight of stairs in the shape of an inverted triangle that increases in width from the bottom to the top. This staircase leads to a roof terrace with no railing, which makes it look like the top of an ancient fortress. There is no ornamentation on the terrace, only a freestanding curved white wall. Since very few trees grow near the house, the pure lines of the roof terrace recreate the aspect of a Greek theater and contrast with the ruggedness of the cliff. The terrace provides spectacular views of the deep blue sea all around and the Amalfi Coast in the distance.



Villa Malaparte, Capri. The spectacular site of the villa can be appreciated in this view from above.

The feeling projected by the villa is one of ancient architecture, of a building done long ago. Malaparte made a joke of the ancient aura of his villa, telling visitors that he had needed only to work on the landscape.

The Villa Malaparte raises a problem of attribution of authorship. Curzio Malaparte had asked Adalberto Libera to design the house in 1938. The choice was clear; Malaparte did not want to engage in the picturesque imitation of

the traditional architecture of Capri, and Libera was a well-known modern architect. In the face of such a fantastic natural setting, only modern design criteria would be appropriate for the retreat he dreamed of. Libera designed a "rectilinear villa," a powerful gesture that commanded the difficult site. The use of stone and of square windows conveyed a sense of primitivism.

Building in Italy both before and during World War II gave great authority to the constructor-builder—especially if he was a man of Capri who was more accustomed to building a house adapted to the peculiarities of the site. Malaparte himself was not an easy client to work with. Perhaps he interpreted the design process in architecture the way that a writer would, first through inspiration and then by working through a series of modifications in much the same way as a writer slowly improves his text. His desires for the villa were not stated initially, and a slow process of refinement and trials was necessary to achieve them.

The relationship between Malaparte and his architect quickly deteriorated, partly because in 1938 Libera was much more interested in the functionality of the house than Malaparte's poetic intent. Marida Talamona has studied the indifference of the architect to Malaparte's changing approach. Later, Libera even omitted the villa in Capri from his résumé when he submitted documents for a paper by Gio Ponti in the journal *Style* (1942). The respected Italian historian Manfredo Tafuri argued for an intermediate position that acknowledged the roles of both architect and client. He characterized Malaparte's ideas as a series of afterthoughts and suggested that there had been a close collaboration with Libera from early on in the design stage.

The documents relating to the design of Villa Malaparte do not differentiate between rational decisions about how to build a house and the emotional desires and decisions of the owner. A few of the details of the finished villa could easily be traced to Malaparte's preoccupations. The pyramidal staircase was known to Malaparte from his exile on the island of Lipari where it was used as the approach to a chapel of the Annunciation. Was the imitation of the staircase a way for him to imagine his house as a refuge or, better yet, as a prison?

The interior of the villa opens with a large *atrium*, a reference to ancient Roman house designs. In a large volume of severe emptiness, the floor of the living room, made of primitive, cut gray sandstone evoked the birth of early Greece. A wood sculpture, *Danza* (the Dance) by Malaparte's friend Pericle Fazzini, is a link to contemporary sculpture. Behind the atrium, the domus (house) is divided into two rooms, suggesting that modernity should be linked to the permanence of Mediterranean standards. Escaping from Libera's design, the villa is a walk through the ideas of a man of letters.

Further Reading

Garofalo, Francesco, and Luca Veresane. *Adalberto Libera.* New York: Princeton Architectural Press, 1992.

VILLA ROTONDA, VICENZA

Style: Mannerist
Dates: 1567–1569; 1580; 1680–1689
Architect: Andrea Palladio

In a Virginia landscape that was still idyllic, Thomas Jefferson, inspired by Palladio's *Villa* Rotonda, built his residence and named it Monticello. As a cultivated amateur architect, Jefferson was aware both of the vogue for Palladio in English and European architecture of the late eighteenth century and the possibilities for enlargement and modification built into the villa designs by Palladio himself. In *The Four Books of Architecture*, published in 1570, he suggested schemes to be used or developed by amateur builders and this availability added to the success of his style.

Two centuries later, Jefferson borrowed the Rotonda's scheme of a central vertical *domed* space intersected by four wings that opened through *colonnades* or rows of windows to the four directions of the hilly landscape. Although Jefferson believed he was reuniting Man and Nature he was, in fact, providing the American house with that extension into nature that would become typical of Frank Lloyd Wright and many other modern architects such as Peter Eisenman, Charles Moore, William Turnbull, and others.

Paolo Almerico (1514–1589), who commissioned the Villa Rotonda, was a count and a canon of the Cathedral chapter of Vicenza and Referendary to Pope Pius IV. He had studied literature and canon law at the university in Padua during the period of the Reformation, a time of turmoil in the region around the city of Vicenza where he built the villa. Artisans and peasants had embraced Anabaptism as a protest against authority while the upper class adopted Erasmian ideals and some converted to Presbyterianism. When he retired, Paolo Almerico wished, in order to escape from this turmoil, to build a place for contemplation and entertainment on a property he owned, a half hour's walk south of the walls of Vicenza. In that place, the gentle hills, tamed by human improvement, offered views of richly cultivated land and of a little plain.

For Paolo Almerico's residence, Palladio combined two main elements of his architectural vocabulary. First, a dome was selected, not only because Almerico was a churchman, but also because he believed that the Latin word "domus," which actually means "house," connected the ancient Roman house with the dome. The second of Palladio's elements was the colonnaded temple-like *portico*. Palladio adapted the scheme to the beauty of the site and, unusual for him, incorporated the temple portico on all four sides of the central rectangular block of the villa, as four wings projecting from the central rotunda. He aligned the porticos with the four directions that represented the main

Villa Rotonda, Vicenza. From each of its four sides the villa offers extensive landscape views.

Villa Rotonda, Vicenza. View of one of the four porticos.

views of the surrounding landscape. As Palladio wrote in *The Four Books of Architecture*, Almerico's residence "enjoys the most lovely view on all sides, some screened, others more distant, and others reaching the horizon (so that) *loggias* were made on each face." (Palladio 1965, 41) As a belvedere, a structure designed to command views, the house is raised on a podium. Straight staircases lead from the gound to the loggias and the *piano nobile* (the main floor) atop the podium. From the house the view is of a vast theater of hilltops where other villas are scattered—a place of pure contemplation.

Although the four wings express the horizontal dimension of the villa, the dome expresses its vertical direction, as if space has been expanded upward. Four short corridors lead from the porticoes to the circular center of the house under the dome. In the corners created between these corridors and the square body of the house are four pairs of rooms, a small and a large one. None were designed for a particular function; rather, the rooms provided a variety of spaces, some of which (the small ones) were more convenient in winter, some getting better light at certain times of the day. Almerico lived mainly in his urban residence and, as was conventional at the time, when he went to the villa, furniture was installed specifically for his visit, explaining the lack of specific function for the rooms, or what seems so to the modern person.

As in Renaissance buildings (see **Santa Maria della Pace Cloister**), proportions of rooms were carefully considered. In this case, a system of proportions based on the harmonies of the musical scale (octaves, thirds, fourth, etc.) was used. These mathematical, harmonic ratios of height to width to length define the variety of sizes of the rooms in the Villa Rotonda. Doors, some positioned in the center or near the windows, are aligned in a planning technique known as enfilade. By carrying one dimension of a room on to the next, Palladio created a "musical" composition of rooms with him as composer. As always in his architecture, the mathematical organization he gave to the plan created the most appealing variety inside and out. He combined numbers, proportion, and—abstractly—music, to convey the idea of beauty.

Further Reading

Ackerman, James S. *Palladio.* Harmondsworth: Penguin, 1974.

Boucher, Bruce. *Andrea Palladio: The Architect in His Time.* Rev. ed. New York: Abbeville, 1998.

Holberton, Paul. *Palladio's Villas: Life in the Renaissance Countryside.* London: John Murray, 1991.

Palladio, Andrea. *The Four Books of Architecture.* New York: Dover Publications, Inc., 1965.

Glossary

Words in *italics* denote a term with its own entry in the glossary listing.

abbey: An establishment for celibate persons, who have taken religious vows, directed by an abbot or abbess; a *convent* is a *monastery* under the direction of a superior, a priory is a monastery under the direction of a prior.

aisle: A passage or lateral division parallel to the *nave*, usually separated from it by an *arcade* or *colonnade*.

ambulatory: An aisle used primarily for movement rather than worship; used to describe the *aisle* that curves around the central space of a centralized plan building (see *central plan*).

amphitheater: A "double theater" with an elliptical seating area around an arena used primarily for gladiatorial shows and animal hunts.

apse: A recess, usually semicircular but sometimes rectangular or polygonal, that contains an altar; usually at the east end of a *nave*, *aisle*, or *ambulatory*, or the east side of a *transept*.

arcade: A row of adjoining arches supported on *columns* or *piers* (see also *colonnade*).

arch: A curved structure that is used to span an opening. It may be semicircular, a segment of a circle, pointed, or even lobed and is usually made up of trapezoidal or wedge-shaped blocks called *voussoirs*. Extended horizontally, the arch forms a *vault*; rotated around its center, it forms a *dome*.

architrave. See *order*.

ashlar masonry: Carefully cut blocks of masonry with smooth even facing.

atrium: The central hall and reception area of a Roman house with a *compluvium*, open to the sky, and an *impluvium* below to catch rainwater. In Early

Christian and medieval architecture, the courtyard enclosed by *porticoes* in front of a church.

baldacchino: A canopy-like construction over an altar.

Baroque: A style in art and architecture developed in Europe from the early seventeenth to mid-eighteenth century, emphasizing a dramatic sequence of spaces, irregular forms, exaggerated proportions, abundant decoration, and a balance of parts rather than a strictly symmetrical arrangement.

barrel vault: A simple continuous *vault*—essentially an *arch*, usually semicircular but sometimes pointed, extended horizontally. Also called a tunnel vault (see also *groin vault*).

basilica: A building type characterized by a long central space (*nave*) flanked by side *aisles* separated from it by rows of *columns*. Basilican naves usually end in an *apse* that contains the main altar. Originally, an ancient Roman building type, basilicas have been used for churches from the Early Christian period to the present.

battlements: Parapets or fortifications with alternating openings called *crenellations* and raised portions called merlons.

bay: A subdivision of a building, typically marked by structural elements such as *columns*, *buttresses*, or *pilasters*.

beam: A horizontal structural member that spans between two vertical supports such as *columns* or bearing walls. Also called a *lintel*, especially when it spans a door or window opening.

buttress: A short wall that braces a main bearing wall or other support, usually built at right angles to it. Most buttresses are built directly against the wall or the *columns* that define it, but in *Gothic* churches, some buttresses are built at a distance from the wall they brace and are connected to its upper parts by *arches*, called *flying buttresses*.

Byzantine: A style of architecture associated with the Eastern Roman Empire that was contemporaneous with Early Christian through *Gothic* architecture in the West. Byzantine architecture is characterized by *domes*, frequently five of them arranged on a *Greek cross* plan, and mosaic decoration.

campanile: A detached bell tower; a belfry.

canon: A member of the clergy on the staff of a cathedral or collegiate church; canons are not necessarily priests or monks.

cantilever: A horizontal structural member that projects past a vertical support without external bracing.

capital: The head or crowning feature at the top of a *column* (see *order*).

central plan: A plan that is symmetrical about two or more axes; usually either a circular, octagonal, or *Greek cross* (equal-armed) shape.

chiaroscuro: The arrangement of light and dark areas in a painting or a building.

choir: The area of the church in front of the main altar originally reserved for the clergy and the ordained, especially monks. During the 1960s, the high altar in most Catholic churches was moved closer to the congregation, in most cases past the choir, which then serves as a chapel.

classical: Refers to Greek and Roman antiquity. The classical *orders* were invented by the Greeks and reintroduced in architecture during the Renaissance. Classicism refers to a style of later art and architecture that takes its inspiration from ancient Greece or Rome or from the classical theory and ideals of the Renaissance.

clerestory: Windows high in the exterior walls of a building.

cloister: A covered passage surrounding an open court that was the center of circulation and meditation in a monastery or convent. Most of the rooms of the *monastery* or *convent* could be reached from the cloister, which typically had no views of the outside world.

Cluniac: A style of *Romanesque* and Early *Gothic* architecture associated with the *Abbey* at Cluny in southern Burgundy and its daughter houses. The architects of Cluny were innovative builders whose common ideal was to create handsomely decorated *vaulted* churches with *aisled naves*, tall *transepts*, and *ambulatories* with numerous radiating chapels. At the height of its influence, the Abbey controlled about 1,450 daughter houses and thus spread its unique style and building technology throughout Western Europe.

coffer: A sunken panel, usually in a ceiling or vault.

colonnade: A row of evenly spaced *columns*, which are connected with *beams*; an *arcade* is a special type of colonnade in which *arches* replace the beams.

column: A vertical structural element. A pillar is a relatively thick round column; a *pier* is a relatively thick square or rectangular column.

compluvium: The rectangular opening in the roof of the *atrium* in a Roman house.

Composite order: An order used by the Romans that combined the design elements of the *Ionic* and *Corinthian orders* (see *order* for descriptions of the orders).

concrete: Roman building material made up of a mixture of lime mortar, volcanic sand, water, and aggregate (pieces of brick, small stones, crushed pottery). Modern concrete combines cement, water, and sand or gravel; reinforced concrete contains steel bars or cables to increase its strength in tension.

convent. See *abbey*.

corbel: A projecting, *cantilevered* bracket supporting a balcony, *cornice*, etc. Corbelling is used to build a conical *dome*.

Corinthian order. See *order*.

cornice: An ornamental molding that projects from the top of a wall or part of a wall, especially the part of an *entablature* above the *frieze*. Cornices are usually horizontal, although the cornice on a *pediment* (called the raking cornice) is at an angle.

crenellations. See *battlements*.

crossing: The part of a church where *nave*, *transepts*, and chancel intersect.

crypt: The level under the main part of a church; frequently at least partially underground.

cupola: The Italian term for a *dome*.

dome: A round, typically hemispherical *vault* used to cover a structure or part of it. A dome is, in effect, an *arch* rotated about its center. Since most domes cover square shapes, either *pendentives* (spherical triangles) or squinches (a group of progressively larger, *corbelled* arches) are used to make a transition from the corners of the square to create the circular base of the dome.

Doric order. See *order*.

engaged column: A half-round *column* embedded in or attached to a wall.

entablature: In classical architecture, a horizontal element consisting of three subdivisions (*architrave*, *frieze*, and *cornice*) supported by *columns* in a classical *order*.

exedra: A semicircular or rectangular recessed area.

flamboyant: A late-*Gothic* decorative style; its name derives from the flame-like *tracery* in windows.

flying buttress. See *buttress*.

fresco: Mural painting in which the colors are applied to wet plaster.

frieze. See *order*.

gallery: In a medieval church, the second story above the side *aisles* that opens onto the *nave*. In *Gothic* architecture, the gallery eventually becomes little more than a passageway, but in *Romanesque* and Early Gothic architecture, the galleries extend to the outer walls of the side aisles. In secular architecture, gallery has many meanings depending on its context: 1. a long narrow platform open in front except for a balustrade or colonnade constructed on the side of a building at some elevation above the floor; 2. a large room or space in which business is conducted; 3. a long passage, often *vaulted* that connects multiple shops or rooms; 4. a room for the exhibition and sale of artworks; 5. a balcony in a theater.

Gothic: Refers to much European architecture, especially religious architecture, during the period from the mid-twelfth century to the end of the fifteenth century. It represents a dramatic change in the way large buildings were constructed and required a level of technical sophistication in construction not seen since the Roman Empire. The most characteristic detail of Gothic architecture is the pointed *arch*, central to the new form of construction, which in the larger churches consisted of a stone skeleton with *ribbed groin vaults* and stained glass windows. In Italian Gothic architecture, in contrast to northern Gothic, *flying buttresses* are rarely seen.

Greek cross plan: A plan based on a cross with arms of equal lengths (see also *Latin cross plan*).

groin vault: A vault formed by the intersection of two *barrel vaults* of similar shape.

Hellenistic: The designation of the culture that developed following the death of Alexander the Great in 323 BCE; the Hellenistic period lasted until the Battle of Actium in 31 BCE, when Augustus Caesar defeated the last Hellenistic monarch, Cleopatra VII of Egypt and her ally Mark Antony.

impluvium: The shallow rectangular catch basin under the *compluvium* in the center of a Roman *atrium*.

insula: A city block in a Roman town; also used to designate a multistory apartment house.

Ionic order. See *order*.

keystone: The center stone in an *arch* or *vault*, usually the last to be put in place and without which an arch cannot stand, thus the "key" to the arch or vault.

lantern. A small cylindrical or polygonal turret, with windows all around, introduced atop the center of a *dome* or in a roof to provide light to the area below.

Latin cross plan: The most common plan shape for a medieval church in the West, it is patterned on the usual Christian symbol with a long upright that is intersected near the top by a crossbar (see also *Greek cross plan*).

lintel: A beam that spans an opening between two vertical supporting members such as *columns*.

loggia: A *gallery* with an open *colonnade* or *arcade* on one side.

martyrium/martyria: A church or chapel built over the tomb of a martyr.

metope. See *order*.

monastery. See *abbey*.

narthex: The vestibule or front porch of a church, it usually stretches across the entire front of the building. At one time, only baptized Christians were allowed past the narthex into the church.

nave: The central vessel of a church up to the *crossing*, the nave was originally intended for worshippers that were neither ordained nor part of the clergy.

oculus: A round opening at the top of a *dome* or a round window in a wall; from the Latin word for "eye."

ogee or ogival arch: A flame-shaped *arch* whose sides are two reverse S curves that meet in a point.

order: A combination of *column* or shaft (with its base and capital) and the *entablature* it supports (*architrave*, *frieze*, and *cornice*). The composition, syntax, and proportions of the four most commonly used orders—*Doric*, *Ionic*, *Corinthian*, and *Composite*—were defined by the ancient Greeks and Romans, and the fifth most-used order, the *Tuscan*, was later developed by the Italians. Variations on the characteristics of the five orders remain within fairly strict limits for followers of the *classical* tradition. Doric is the simplest of the five orders and the only one whose shaft has no base; it has a simple, pillow-shaped *capital*. The Doric frieze is immediately recognizable by series of squarish blocks, alternately *triglyphs*, which are decorated with three vertical grooves, and *metopes*, which usually are ornamented with relief sculptures. The Ionic order is slimmer and more elegant, and the capital is decorated with volutes, spiral shapes that resemble rams' horns. Corinthian capitals are decorated with leaves of the acanthus plant, and Composite capitals combine characteristics of the Ionic and Corinthian orders.

The shafts of any of these orders may be decorated with vertical grooves called flutes. The Tuscan order resembles the Doric, but rests on a base and its shaft is smooth.

parterre: In formal gardens, regularly shaped ornamental beds framed by low hedges often containing objects such as urns or topiary work.

pediment: A triangular element representing the gable end of the roof in temples, it is used at various scales above *porticoes* and windows in *classical* buildings.

pendentive. See *dome*.

peristyle: A *colonnaded* courtyard in a Roman house or Christian *abbey*.

piano nobile: The main floor of a house, above the ground floor; the American second story.

piazza: An open space in a city, usually oblong and surrounded by buildings.

pier. See *column*.

pilaster: A flat column-like strip attached to a wall; pilasters can be the shaft of any of the *order*s.

portico: A roofed *colonnade*.

quatrefoil: A *Gothic tracery* design composed of four lobe-shaped forms.

relic: An object, usually a body part or piece of clothing, that belonged to a saint or other holy person. Relics were believed to have super-natural power, especially curative, and were enshrined in elaborate containers made of precious materials called reliquaries.

rib: A projecting band at the edges where *vaults* intersect. Ribs are characteristic of *Gothic* architecture, and were long thought to be an essential part of a Gothic skeleton, though it is no longer certain exactly what structural role they play.

ribbed groin vault. See *vault*.

Romanesque: A relatively new term introduced by Henri Focillon in the 1930s to describe what had, until then, been called Early *Gothic*. The Romanesque period was a result of a revived monied economy, the reestablishment of cities, and the general renascence of culture after 1000 CE. It was a period of rediscovery of Roman building techniques, thus the name, and of a scale of architecture not seen for nearly seven centuries. Because it was a period of experimentation and amateur building (in the best sense), Romanesque architecture is remarkably varied and vital, and in its earliest stages has a folk quality. It is characterized by relatively thick walls, which require less expert construction than Gothic architecture, relatively small windows and consequently dark interiors, and a close connection to nature in feeling and decoration, though late Romanesque buildings tend to be very sophisticated and demonstrate a shift to the use of highly trained architects and builders.

rose window: A round, wheel-shaped window in the façade of a *Gothic* church.

rustication: Masonry in which the joints between stones are exaggerated and in which the surface is frequently rough, suggesting stone taken from the quarry and placed without the outer surface being smoothed (dressed).

sanctuary: The sacred part of a church corresponding to the area beyond the crossing around the main altar. In pagan contexts, a sacred space containing shrines, offerings, and other religious paraphernalia usually with a temple as its major focus.

scarcella: In the Pazzi Chapel, a small, *domed* room opposite the entry; it contained an altar.

tablinum: The open room at the back of the *atrium* in a Roman house from which the owner interviewed his friends and clients; the marriage bed, family records, and other important possessions were kept there.

tetrastyle: Having four *columns*.

tracery: The ornamental and structural stone framework in windows, especially of *Gothic* buildings.

transept: The parts of a church that correspond to the transverse arms of the cross-shaped plan.

triglyph. See *order*.

triumphal arch: A freestanding *arch*, usually adorned with sculpture, built to commemorate an event or person in ancient Rome; in some of the most famous arches, a tall central opening is flanked by two lower openings. Beginning in the Renaissance, the use of triumphal arches was revived in architectural designs, garden ornaments, and for honorific occasions such as the visits of royalty, political marriages, and noble births.

truss: A frame composed of numerous smaller pieces that substitutes for *beams* or other large structural members.

Tuscan order. See *order*.

vault: An arched ceiling structure, usually made up of stones or brick although *concrete* and tiles may also be employed. Structurally, vaults are related to *arches* and when built of stone, like stone arches, are made up of *voussoirs* (trapezoidal stones). The shape of vaults depends on the shape of the arches that form their cross section (see *barrel vault*, *groin vault*, and *ribbed groin vault*).

villa: A detached dwelling, typically larger than a house but smaller than a manor, located in the countryside.

voussoir. See *arch*.

Bibliography

Ackerman, James S. *The Architecture of Michelangelo*. Chicago: University of Chicago Press, 1971.

———. *Palladio.* Harmondsworth: Penguin, 1974.

Adams, L. S. ed. *Federico da Montefeltro and Sigismondo Malatesta: The Eagle and the Elephant*. New York: Peter Lang Publishing, 2003.

Adorni, Bruno. *La chiesa a pianta centrale*. Milan:Electa, 2002.

Allen, A. M. *A History of Verona*. London: Methuen, 1910.

Allen, Edward. *Stone Shelters.* Cambridge, MA: MIT Press, 1971.

Argan, Giulo Carlo, and Bruno Contardi. *Michel-Ange, architecte.* Paris: Gallimard, 1991.

Arslan, Edoardo. *Gothic Architecture in Venice*. Translated by Anne Engel. London: Phaidon, 1972.

Avery, Charles, and David Finn. *Bernini, Genius of the Baroque.* Boston: Bulfinch Press, 1997.

Aymonino, C. *Global Architecture*, 45, *Carlo Aymonino, Aldo Rossi: The Housing Complex at the Gallaratese Quarter.* Tokyo: A. D. A. Edita, 1977.

Bellucci, Gualtiero. *Assisi, Heart of the World.* Assisi: Edizione Porziuncola, 2005.

Benevolo, Leonardo. *History of Modern Architecture*. 2 vols. Cambridge, MA: MIT Press, 1971.

Bieber, Margarete. *The History of the Greek and Roman Theater.* Princeton, NJ: Princeton University Press, 1961.

Blanchard, P. *Southern Italy: South of Rome to Calabria, Blue Guide.* London: W. W. Norton Company, 2000.

Blunt, Anthony. *Borromini.* Cambridge, MA: Belknap Press, 1979.

———. *Neapolitan Baroque and Rococo Architecture.* New York: Abner Schram, 1975.

Boethius, A. *Etruscan and Early Roman Architecture.* Harmondsworth: Penguin, 1978.

Bonvini-Mazzanti, M, "su Federico da Montefeltre," *Ricerchre e studi sui "Signori del Montefeltro" di Piero della Francesca e sulla "Città Ideale."* Urbino: 2001.

Borelli, Federica. *The Etruscans: Art, Architecture, and History.* London: British Museum Press, 2004.

Borsi, Franco. *Bernini.* New York: Rizzoli, 1984.
Boucher, Bruce. *Andrea Palladio: The Architect in His Time.* Rev. ed. New York: Abbeville, 1998.
Bovini, Giuseppi. *Ravenna, An Art City.* Ravenna: Edizione A. Longo, 1970.
Brown, Frank E. *Roman Architecture.* New York: George Braziller, 1967.
Bruschi, Arnaldo. *Bramante.* London: Thames and Hudson, 1973.
Campbell, C. Jean. *The Game of Courting and the Art of the Commune of San Gimignano 1290–1320.* Princeton: Princeton University Press, 1998.
Careri, Giovanni. *Bernini, Flights of Love, the Art of Devotion.* Translated by Linda Lappin. Chicago: University of Chicago Press, 1995.
Carratelli, G. P. *The Greek World, Art, and Civilization in Magna Graecia and Sicily.* Milan: Rizzoli International Publications, 1996.
Caselle, S. *La Confraternita del SS. Nome di Gesù.* Chieri, c. 1978.
Chambers, David S. *The Imperial Age of Venice, 1380–1580.* London: Harcourt Brace Jovanovich, 1970.
Chierichetti, S. *The Cathedral of Monreale.* Palermo: AR.CO, 1972.
Ciapparelli, P. *II teatro di San Carlo.* Naples, 1998.
Clarke, John R. *The Houses of Roman Italy, 100BC–AD250.* Berkeley: University of California Press, 1991.
Comoli-Mandracci, V. *Torino, La città nella storia d'Italia.* Rome-Bari: Editore Laterza, 1973.
Conant, K. J. *Carolingian and Romanesque Architecture 800–1200.* New Haven, CT: Yale University Press, 1974.
Conforti, Claudia. *Giorgio Vasari architetto.* Milan: Electa, 1993.
Crippa, Maria Antonietta. *Carlo Scarpa.* Cambridge, MA: MIT Press, 1986.
Critinelli, G. *Baldassare Longhena, Architetto del'600 a Venezia.* Venice, 1972.
Dal Co, F. *Carlo Aymonino: Projects in Ancient Cities.* Ithaca, NY: Cornell University Press, 1987.
———, ed. *Storia dell'architettura moderna italiana.* Milan, 1997.
D'Amia, G. "Tour Velasca, BBPR, Milan 1958," *Moniteur Achitecture AMC* 133 (2003), 100–104.
Demus, Otto. *Studies in Byzantium, Venice, and the West.* London: Pindar Press, 1998.
Desideri, P., P. L. Nervi Jr., and G. Positano, *Pier Luigi Nervi.* Zurich: Patmos Verlag, 1982.
de Tolnay, Charles. *Michel-Ange.* Paris: Pierre Tisné, 1951.
De Seta, Cesare. *Napoli, La città nella storia d'Italia.* Rome-Bari: Editore Laterza, 1999.
Dittelbach, T., and D. Sack. *The Lower Church of the Palermo's Palatine Chapel.* Kunselsau, 2005.
Etienne, Robert. *Pompeii, The Day a City Died.* Translated by C. Palmer. New York: Harry N. Abrams, 1992.
Fanelli, Giovanni, and F. Trivisonno. *Città antica in Toscana.* 2nd ed. Florence: Sansoni Editore, 1983.
Fei, Silvano, Grazia Gobbi Sica, and Paolo Sica. *Firenze, Profile di Storia Urbana, An Outline of Urban History.* Florence: Alinea, 1995.
Frampton, Kenneth. *Modern Architecture, 1920–1945.* New York: Rizzoli, 1983.
Frankl, P., and P. Crossley. *Gothic Architecture.* New Haven, CT: Yale University Press, 2000.

Frutaz, A. P. *II complesso monumentale di'Sant' Agnese e di Santa Costanza.* Rome: Tipographia Poliglotta Vaticana, 1960.
Funari, M. *Formal Design in Renaissance Architecture from Brunelleschi to Palladio.* New York: Rizzoli, 1995.
Gabucci, Ada. *The Colosseum.* Los Angeles: Getty Trust Publications, 2002.
Garofalo, Francesco, and Luca Veresane. *Adalberto Libera.* New York: Princeton Architectural Press, 1992.
Geist, Johann F. *Arcades, the History of a Building Type.* Cambridge, MA: MIT Press, 1983.
Giedion, Siegfried. *Space, Time, and Architecture: The Growth of a New Tradition.* 5th ed. Cambridge, MA: Harvard University Press, 2003.
Gillerman, D. M. "The Evolution of the Design of Orvieto Cathedral." *Journal of the Society of Architectural Historians* 53 (1994): 300–321.
Gotz, Heinz. *Castel del Monte: Geometric Marvel of the Middle Ages.* New York: Prestel Publishing, 1998.
Goy, Richard J. *The House of Gold, Building a Palace in Medieval Venice.* Cambridge: Cambridge University Press, 1993.
Grabar, Andre. *The Golden Age of Justinian*. Translated by S. Gilbert and J. Emmons. New York: Odyssey Press, 1967.
Grant, Michael. *The Roman Forum.* London: Weidenfeld and Nicolson, 1970.
Grohmann, Alberto. *Perugia, La città nella storia d'Italia.* Rome-Bari: Editore Laterza, 1981.
Gros, Pierre. *L'Architecture romaine*. Paris: Pocard, 1996.
Guidoni, Enrico, and Giulia Petrucci. *Caprarola.* Rome: MultiGrafica Editrice, 1986.
Gurrieri, Ottorino. *II Palazzo dei Priori di Perugia.* Perugia: Benucci, 1985
Hastings, Gilbert. *Siena, Its Architectuer and Art.* London: The De La More Press, 1902.
Hartt, Frederick. *Giulio Romano.* New Haven, CT: Yale University Press, 1958.
Hartt, Frederick, and David G. Wilkins. *History of Italian Renaissance Art: Painting, Sculpture, Architecture.* 5th ed. Upper Saddle River, NJ: Prentice Hall, 2003.
Hermansen, Gustav. *Ostia: Aspects of Roman City Life.* Edmonton: University of Alberta Press, 1981.
Heydenreich, L. H., and P. Davies. *Architecture in Italy 1400–1500.* New Haven, CT: Yale University Press, 1996.
Heydenreich, L. H., and W. Lotz. *Architecture in Italy 1400–1600*. Translated by M. Hottinger. Baltimore: Puffin, 1974.
Hibbard, Howard. *Bernini.* Reissue ed. Harmondsworth: Penguin, 1991.
Hitchcock, Henry-Russell. *Architecture: Nineteenth and Twentieth Centuries.* New Haven, CT: Yale University Press, 1977.
Hobhouse, P. *The Garden Lover's Guide to Italy.* New York: Princeton Architectural Press, 1998.
Holberton, Paul. *Palladio's Villas: Life in the Renaissance Countryside.* London: John Murray, 1991.
Hopkins, Keith, and Mary Beard. *The Colosseum.* Cambridge, MA: Harvard University Press, 2005.
Howard, Deborah. *The Architectural History of Venice.* Rev. ed. New Haven, CT: Yale University Press, 2004.
Keller, Harald. *The Renaissance in Italy: Painting, Sculpture, Architecture*. Translated by R. E. Wolf. New York: Harry N. Abrams, 1974.

King, Ross. *Brunelleschi's Dome: How a Renaissance Genius Reinvented Architecture*. New York: Penguin Books, 2003.
Kirk, T. *Architecture of Modern Italy*. 2 vols. New York: Princeton Architectural Press, 2005.
Krautheimer, Richard. *Early Christian and Byzantine Architecture.* Harmondsworth: Penguin Books, 1975.
Kronig, W. *The Cathedral of Monreale and Norman Architecture in Sicily*. Translated by D. H. Wilson. Palermo: S. F. Flaccovio, 1966.
Laras, Ann. *Gardens of Italy.* London: Frances Lincoln, 2006.
Lawrence, A. W. *Greek Architecture.* Harmondsworth: Penquin, 1983.
Loerke, William C. "A Rereading of the Interior Elevation of Hadrian's Rotunda." *Journal of the Society of Architectural Historians* 49, no. 1 (March 1990): 22–43.
Long, S. "The Early Publications of the Temples at Paestum." *The Journal of the Warburg and Courtauld Institutes* 13 (1950): 48–64.
Lotz, Wolfgang, and D. Howard. *Architecture in Italy, 1500–1600*. New Haven, CT: Yale University Press, 1995.
Macadam, Alta. *Tuscany. Blue Guide.* 3rd ed. New York: W. W. Norton Company, 1999.
MacDonald, William L. *The Pantheon: Design, Meaning, and Progeny.* Cambridge, MA: Harvard University Press, 1976.
MacDonald, William, and John A. Pinto. *Hadrian's Villa and Its Legacy.* New Haven, CT: Yale University Press, 1995.
Mack, C. R. *Pienza: The Creation of a Renaissance City.* Ithaca, NY: Cornell University Press, 1987.
Mallory, Nina A. *Roman Rococo Architecture from Clement XI to Benedict XIV, 1700–1758.* New York: Garland, 1977.
Mango, Cyril A. *Byzantine Architecture.* New York: Rizzoli International Publications, 1991.
Marraffa, Mariano. *I Trulli di Alberobello, La Storia della Città Attraverso I Secoli.* Rome: Editrice Adriana, 1967.
Mauro, N. *Borromee Islands.* Milan, 2000.
McKean, John. *Giancarlo di Carlo.* Paris: Editions du Centre Pompidou, 2004.
Meek, H. A. *Guarino Guarini and His Architecture.* New Haven, CT: Yale University Press, 1988.
Meeks, Carroll L. V. *Italian Architecture 1750–1914.* New Haven, CT: Yale University Press, 1966.
Meiggs, Russell. *Roman Ostia.* Oxford: Clarendon Press, 1975.
Millon, Henry. *Italian Renaissance Architecture from Brunelleschi to Michelangelo.* London: Thames and Hudson Ltd., 1996.
Mosser, Monique, and Georges Tèyssot, eds. *Histoire des jardins.* Paris: Flammarion, 2002.
Muccini, Ugo. *Palazzo Vecchio: Guide to the Building, Apartments, and the Collection.* Florence: Scala, 1989.
Muratori, S. *Studi per una operante storia urbana di Venezia.* Rome: Instituto Poligrafico dello Stato, 1960.
Murray, Peter. *The Architecture of the Italian Renaissance.* New York: Schocken, 1997.
Najemy, John. *A History of Florence 1200–1575.* London: John M. Blackwell, 2006.
Nicolin, P., and C. Aymonino. *Carlo Aymonino, Aldo Rossi: Housing Complex at the Gallaratese Quarter.* Tokyo: ADA Edita, 1977.

Nussbaum, N. *German Gothic Church Architecture*. New Haven, CT: Yale University Press, 2000.
Palladio, Andrea. *The Four Books of Architecture*. New York: Dover Publications, Inc., 1965.
Piano, Renzo, and G. Bianchi. *Renzo Piano & Building Workshop*. Genoa, 2004
Picon, A., ed. *L'Art de l'ingenieur, constructeur, inventeur*. Paris: 1997.
Pinto, John. *The Trevi Fountain*. New Haven, CT: Yale University Press, 1986.
Piranomonte, Marina. *The Baths of Caracalla*. Translated by Sandra Ciuffini. Milan: Electa, 1998.
Pommer, Richard. *Eighteenth-Century Architecture in Piedmont: The Open Structures of Juvarra, Alfieri, and Vittone*. New York: New York University Press, 1967.
Portoghesi, Paolo.*Bernardo Vittone, Ingegnere*. Rome, 1966.
———. *Caprarola*. Rome: Grafiche Manfredi, 1996.
———. *Roma Barocca, 2, Consumo di un Linguaggio*. Rome, 1966.
———. *The Rome of Borromini*. New York: G. Braziller, 1967.
Possamai, Paolo. *Caffè Padrocchi*. Milan: Skira, 2000.
Prager, Frank, and Gustina Scaglia. *Brunelleschi, Studies of His Technology and Inventions*. Cambridge, MA: MIT Press, 1970.
Rice, David Talbot. *Byzantine Art*. Harmondsworth: Penguin, 1968.
Riccetti, Lucio. *Il duomo di Orvieto*. Rome and Bari: Laterza, 1988.
Richardson, L. R., Jr. *A New Topographical Dictionary of Ancient Rome*. Baltimore: Johns Hopkins University Press, 1992.
———. *Pompeii, An Architectural History*. Baltimore: Johns Hopkins University Press, 1988.
Robertson, Donald S. *Greek and Roman Architecture*. 2nd ed. Cambridge, MA: Cambridge University Press, 1969.
Rosatelli, Eraldo. *The Cathedral of Orvieto: Faith, Art, Literature*. Perugia: Quattroemme, 2000.
Rossi, Aldo. *The Architecture of the City*. Cambridge, MA: MIT Press, 1984.
Rosso, Franco. *Alessandro Antonelli, 1798–1888*. Milan: Electa, 1989.
Ruskin, John. *Les pierres de Venise*. Translated by Mathilde P. Cremieux. Paris: Renouard and Laurens, 1906.
Rykwert, Joseph. *Gregotti Associati*. Translated by R. Tannenbaum. New York: Rizzoli, 1996.
Saggio, Antonino. *Giuseppe Terragni, Vita e Opere*. Rome: Editori Laterza, 1995.
Samona, Giuseppe, ed. *Piazza San Marco, l'architettura, la storia, le funzioni*. Padua: Marsilio, 1970.
Schevill, Ferdinand. *Siena, The History of a Medieval Commune*. New York: C. Scribner's Sons, 1909.
Schinkel, Karl Friedrich. *Reise nach Italien, Journal eines Reisendes*. Berlin: Rutten and Loenig, 1979.
Scotti, R. A. *Basilica. The Splendor and the Scandal: Building St. Peter's*. New York: Viking, 2006.
Sear, Frank. *Roman Architecture*. Ithaca, NY: Cornell University Press, 1982.
Sear, Frank B. "The *Scaenae Frons* of the Theater of Pompey." *American Journal of Archaeology* 97 (1993): 687–701.
Sestieri, Pellegrino Claudio. *Paestum. The City, the Prehistoric Necropolis in Contrado Gaudo, the Heraion at the Mouth of the Sele*. Rome: Instituto Poligrafico dello Stato, 1965.

Simon, Kate. *A Renaissance Tapestry: The Gonzaga of Mantua*. New York: Harper Collins, 1989.

Tafuri, Manfredo, ed. *Giulio Romano*. Translated by F. Berry. Cambridge: Cambridge University Press, 1999.

———. *Vittorio Gregotti, Buildings and Projects.* Translated by R. Sadleir. New York: Rizzoli, 1982.

Taylor, Rabun. *Roman Builders: A Study in Architectural Process.* Cambridge: Cambridge University Press, 2003.

Vio, Ettore, ed. *St. Mark's: The Art and Architecture of Church and State in Venice.* Translated by H. Evans. New York: Riverside Book Company, 2003.

_____. ed. *The Basilica of St. Mark in Venice*. Translated by H. Evans. New York: Riverside Book Company, 2000.

von Simson, Otto G. *Sacred Fortress: Byzantine Art and Statecraft in Ravenna*. Chicago: University of Chicago Press, 1948.

Waley, Daniel P. *Mediaeval Orvieto: The Political History of an Italian City-State 1157–1334.* Cambridge: Cambridge University Press, 1952.

Wallace-Hadrill, A. *Houses and Society in Pompeii and Herculaneum.* Princeton, NJ: Princeton University Press, 1994.

Ward, Alastair. *The Architecture of Ferdinando Sanfelice.* New York: Garland, 1988.

Ward-Perkins, J. B. *Roman Imperial Architecture.* New Haven, CT: Yale University Press, 1992.

White, John. *Art and Architecture in Italy, 1250–1400.* New Haven, CT: Yale University Press, 1993.

Wittkower, Rudolph. *Architectural Principles in the Age of Humanism.* London: Academy Editions, 1998.

Wittkower, R., et al. *Art and Architecture in Italy, 1600–1750.* 4th ed. New Haven, CT: Yale University Press, 1999.

Woodhead, A. G. *The Greeks in the West.* New York: Praeger, 1962.

Yegul, Fikret K. *Baths and Bathing in Classical Antiquity.* Reprint ed. Cambridge, MA: MIT Press, 1996.

Zevi, B. *Architettura della modernità.* Rome: Tascabili Economici Newton, 1994.

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