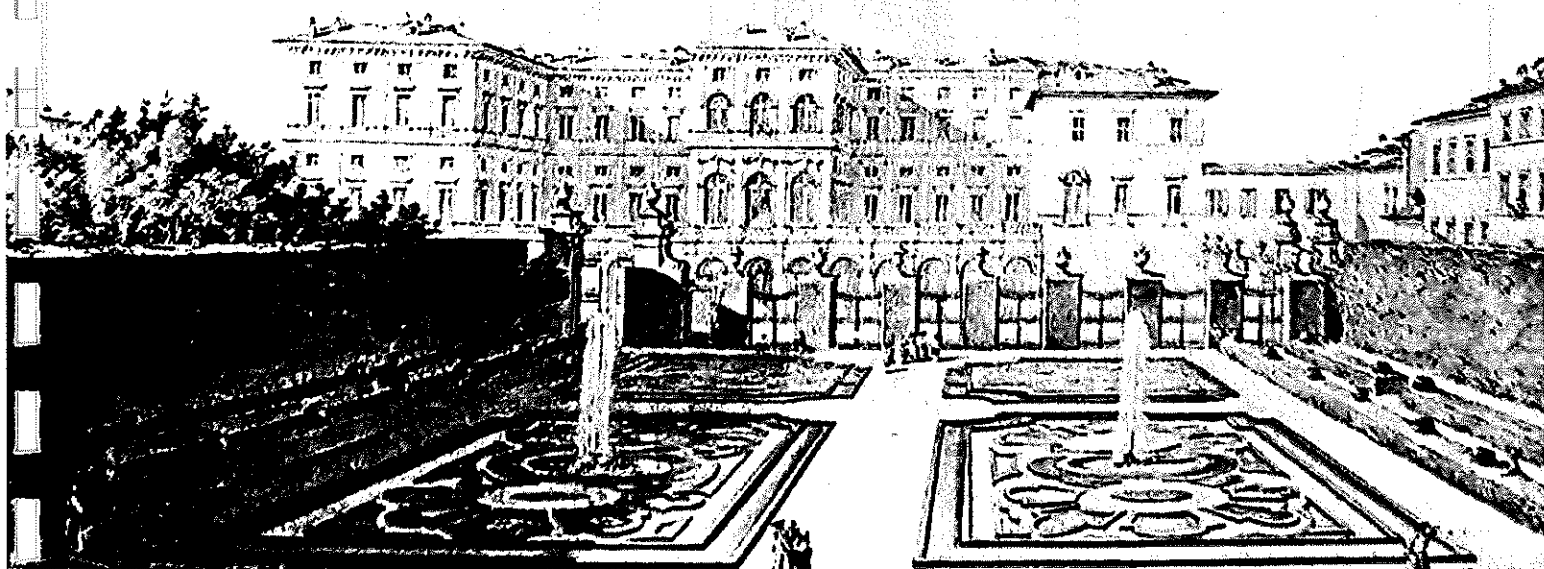


THE ORTO BOTANICO
and
THE SCALA d'ACQUA
of Rome



Course Participants

| | | |
|--------------------------|-------------------|------|
| Arkun, Burcum | UPENN | HSPV |
| Bradley, Becky | UPENN | CPLN |
| Bristor, Allyson | UPENN | CPLN |
| Cappeto, Jennifer | UPENN | HSPV |
| Condo, Francesca | LA SAPIENZA | ARCH |
| Didden, Amanda | UPENN | HSPV |
| Donahoe, Stacey | UPENN | HSPV |
| Ferrari-Toniolo, Stefano | LA SAPIENZA | ARCH |
| Glavan, John | UPENN | HSPV |
| Hegarty, Lauren | UPENN | HSPV |
| Johnson, Erika | UPENN | CPLN |
| Li, Han | UPENN | HSPV |
| Mastrantoni, Silvia | LA SAPIENZA | ARCH |
| Menchinelli, Giulia | LA SAPIENZA | ARCH |
| Miller, Angela | UPENN | CPLN |
| Montgomery, Sara | UPENN | HSPV |
| Oana, Andrea | UPENN | HSPV |
| Ohama, Mayu | UPENN | HSPV |
| Sardegna, Lisa | UPENN | HSPV |
| Senker, Jessica | UPENN | HSPV |
| Solow, Adam | UPENN | HSPV |
| Wilde, Eileen | BOSTON UNIVERSITY | HSPV |

***Return to Table of
Contents***

ACKNOWLEDGEMENTS

The University of Pennsylvania and the participants of the European Conservation course in Rome would like to acknowledge the support and guidance received from the following individuals and their institutions:

Dr. Lisa Ackerman, Prof. Giancarlo Avena, Prof. Carlo Blasi, Dott.sa Alberta Campitelli, Prof. Giovanni Carbonara, Arch. Roberto Di Paola, Prof. Adriano La Regina, Prof. Eugenio La Rocca, Arch. Ruggero Martines, Dr. Nicholas Stanley-Price.

We would also like to mention the following people who were responsible for organizing and teaching the course.

Arch. Marzia Alloni, Arch. Isabella Barisi, Ing. Luigi Bongiovanni Dott. Ernesto Borrelli, Prof. Enzo Borsellino, Dott. Massimo Brizzi, Prof. Allan Ceen, Dott. Stefano Coccia, Arch. Massimo de Vico Fallani, Dott. sa Anna Lucia Francesconi, John Hinchman, Prof. Frank Matero, Arch. Robert Pilbean, Dott. sa Ann Pulver, Arch. Gionata Rizzi, Arch. Francesco Scoppola, Arch. Francesco Siravo, Arch. Herb Stovel, Arch. Caterina Tantillo.

Finally we would like to thank the staffs at ICCROM, the Orto Botanico, and the Convento del Sacro Cuore. With special thanks to The Samuel H. Kress Foundation for their support.

TABLE OF CONTENTS

ACKNOWLEDGEMENTS

| | |
|--------------|---|
| INTRODUCTION | 5 |
|--------------|---|

| | |
|--|----|
| GARDENS AROUND ROME AND THE HISTORY OF THE ORTO BOTANICO | 11 |
|--|----|

| | |
|-------------------------------------|----|
| A DESCRIPTION: THE ORTO BOTANICO | 19 |
|-------------------------------------|----|

| | |
|---|----|
| HISTORY OF THE SITE: THE PALAZZO CORSINI | 30 |
|---|----|

| | |
|--------------------------------------|----|
| ARCHITECTURE OF THE SCALA d'ACQUA | 44 |
|--------------------------------------|----|

| | |
|--|----|
| LANDSCAPE ANALYSIS: THE ORTO BOTANICO | 67 |
|--|----|

| | |
|---|----|
| CONDITIONS AND ASSESSMENT: THE SCALA d'ACQUA | 82 |
|---|----|

| | |
|---|-----|
| PRELIMINARY CONSIDERATIONS TO SITE CONSERVATION: A SUMMARY | 115 |
|---|-----|

| | |
|--------------|-----|
| BIBLIOGRAPHY | 123 |
|--------------|-----|

| | |
|------------|-----|
| APPENDICES | 125 |
|------------|-----|

*This table of contents is interactive.
to link directly to the beginning of a chapter click on its name above.*

INTRODUCTION



*Project members discussing the condition survey.
(UPenn 2002)*

From June 17th to July 12th 2002, eighteen students from the University of Pennsylvania's Graduate School of Fine Arts participated in the 2002 Summer Penn Conservation Studies in Rome. The course, entitled The Orto Botanico of Rome: A Methodological Approach to the Conservation of Historic Landscapes and Monuments, was co-sponsored by the University of Pennsylvania's Graduate Program in Historic Preservation (UPenn), the International Centre for the Study of the Preservation and Restoration

of Cultural Property (ICCROM), and the University of Rome, "La Sapienza". Joining the Penn group in lectures and field work were architecture students of Francesco Scoppola, Professor of Architecture at La Sapienza.

The goal of the course was to introduce graduate students in architecture, planning and historic preservation to European conservation methodologies through a case study of the Orto Botanico, located on the slope of the Janiculum Hill in Rome. Topics addressed during lectures

The Orto Botanico and the Scala d'Acqua

and site visits included the topographic history of Rome, Italian garden history, and European conservation theory. During studio sessions, two projects occurred simultaneously. The majority of the group focused on an architectural and condition survey of Ferdi-



Palm trees and an open area in the garden. (UPenn 2002)



A view of the Triton Fountain in the Orto Botanico. (UPenn 2002)

nando Fuga's Scala d'Acqua, located within the Orto Botanico. A second team of students concentrated on the overall site.

The Orto Botanico di Roma ("Orto"), located west of the Tiber River and in the center of Rome, is a research institution that specializes

in botany and ecology. Administered by the Dipartimento di Biologia Vegetale of La Sapienza, the Orto's mission is to preserve bio-diversity and promote botanical research. Although the Orto offers several courses and events throughout the year which focus on specific types of vegetation and ecology, it is unlike a "giardino

botanico," as it does not concentrate its efforts on educating the public on botany.

The Orto Botanico consists of several thematic gardens, natural landscapes, greenhouses, and small service buildings. Its large collection of rare and exotic plant species is

spread throughout a twelve-hectare (originally 16 hectares) plot of land originally belonging to the Palazzo Corsini. The palazzo was constructed by the Riario family in the early 16th century and now houses the Accademia Nazionale dei Lincei.

The main gate of the Orto Botanico is located off Via Corsini at Largo Cristina di Svezia 24. The boundary of the Orto is formed by the Carabinieri police compound to the southeast, the Palazzo Corsini on Via della Lungara to the east, the Convento del Sacro Cuore to the north, and to the west by Villa Lante and land belonging to the city of Rome on the Janiculum Hill.

Methodology of the Site Survey

The primary goal of the site-wide survey was to evaluate the physical organization of the Orto as an evolved entity over time. It has been over twenty years since any survey has been made of the garden's physical layout, so an additional goal included the creation of an accurate and up-to-date map of the Orto Botanico that would clearly identify the Orto's landscape components: structures, vegetation, and paths to name a few.

Using existing aerial maps and plans, the research team began the first phase of the survey by dividing the garden into three sections. Working in pairs, the teams made on-site

field notes regarding paths, garden amenities (e.g. toilet facilities, waste receptacles), and plant species identification. The survey also marked the location of garden furniture, architectural features, and identifiable impedances (e.g. fallen trees, heavy overgrowth). At the end of the Phase One data collection, the team generated a digital base map using the computer programs ArcView 3.2 and AutoCAD 2002.

Following the initial survey, the team began Phase Two, which consisted of an intense conditions analysis of the Orto Botanico. Extensive photo documentation complemented the written description of noted specific conditions which involved documenting the apparent strengths and weaknesses of the garden. The results of this analysis were entered into the digitized base map created in Phase One.

In Phase Three, the site team researched the extensive historical background of the Orto Botanico and the Palazzo Corsini to better understand the transformations the landscape has experienced over time. Overlays of historic base maps helped identify patterns of both continuity and change in the garden throughout the years.

Phase Four of the site analysis involved a greater exploration of the Orto Botanico. Currently open to the public, the Orto is in the interesting position of being both a passive haven for scientific and botanical investigation, and an active recreational space for visitors. Field notes and interviews conducted with Orto employees provided insight into how the Orto Botanico

negotiates these sometimes conflicting roles. The team developed different stratified classification systems to illustrate the utilitarian, botanical, and aesthetic qualities of the Garden. Again, photo documentation aided in the mapping of the information collected. The product of this final phase included several maps illustrating both the complementary and conflicting characteristics within this complex environment.

Methodology of the Staircase Survey

Study of the Scala d'Acqua ("Scala") was undertaken to determine an approach to its conservation. The initial steps taken by the group were focused on understanding its form and siting within the Orto. The team completed

rough field sketches of the elevation, plan, and section of the Scala. These were later translated into plan and elevation of the Scala and the adjoining Nicchione, which currently exists behind a modern fence separating the Orto from property now owned by the city of Rome. This information was entered into AutoCAD 2002 and printed in sections to begin recording existing conditions of the Scala and Nicchione.



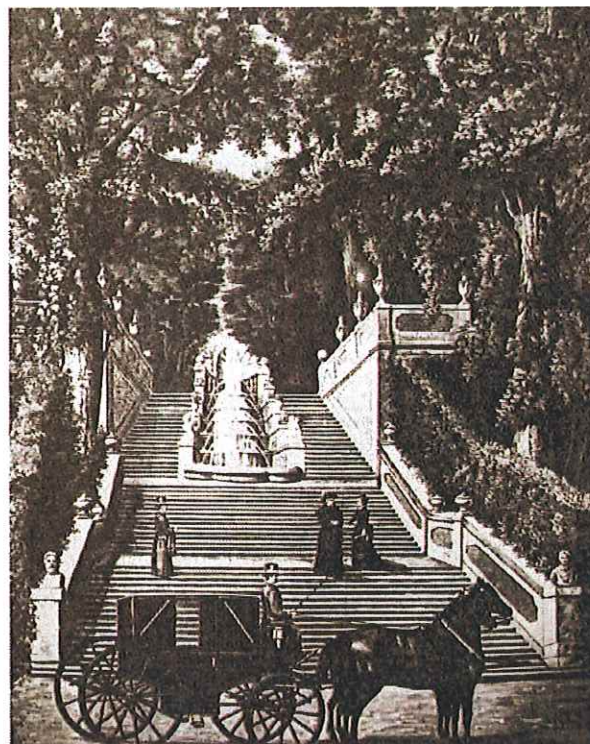
Team members on the staircase. (UPenn 2002)

The Orto Botanico and the Scala d'Acqua

The plan and elevations were broken into the following fifteen sections for ease in the identification and recording of conditions:

1. Stair One
2. Landing One
3. Stair Two
4. Landing Two
- 5-6. North and South Retaining Walls
- 7-8. North and South Terrace
- 9-10. North and South Fountain Stair
- 11-12. Fountain Basin
13. Cleared Area
14. Modern Stair
15. Nicchione

Masonry deterioration was mapped in plan and elevation using a glossary created specifically for this project. Conditions identi-



✓ *La Scalinata delle Undici Fontane in un acquarello di Paolo Pollastri del 1867.*

(Foto d'epoca. Firenze. Archivio Corsini).



The Scala d'Acqua at the time of the project.
(UPenn 2002)

fied included loss, delamination, detachment, cracks, and biogrowth. (See appendix 1)

Representative sections were documented by means of rectified photography, as a photo-mosaic created using digital photographs edited in Adobe Photoshop 6.0. Once the photo mosaics were completed, conditions were recorded on the north retaining wall, on Stair One, and a portion of the Nicchione. The condition survey was complemented by samples taken from

The Orto Botanico and the Scala d'Acqua

the site and analyzed at the ICCROM laboratory under the guidance of Ernesto Borelli.

Archival research of maps, photographs, and literature was pursued concurrent with the condition survey to record historical changes in the Scala d'Acqua area of the garden. Work at the site also utilized information from lectures on topics including cultural landscapes, archaeology, engineering of fountains, and the examination of other Italian garden architecture. A brief archaeological investigation led by archaeologist Stefano Coccia at the site uncovered evidence of previous structures at the Scala, as well as elements that may have been part of the original Fuga design.

Finally, a discussion was conducted to examine approaches to intervention and/or conservation of the Scala d'Acqua and its surround-

ing environment. In conclusion, the team provided proposals to the Orto Botanico and La Sapienza for immediate and long-term conservation and maintenance.

*A view of Rome from
within the Orto Botanico.
(UPenn 2002)*



*GARDENS AROUND ROME
AND THE HISTORY OF
THE ORTO BOTANICO*



*Fresco of the Villa Lante,
1574-78, Palazzina Gam-
bara, Villa Lante, Bagnaia.
(UPenn 2002)*

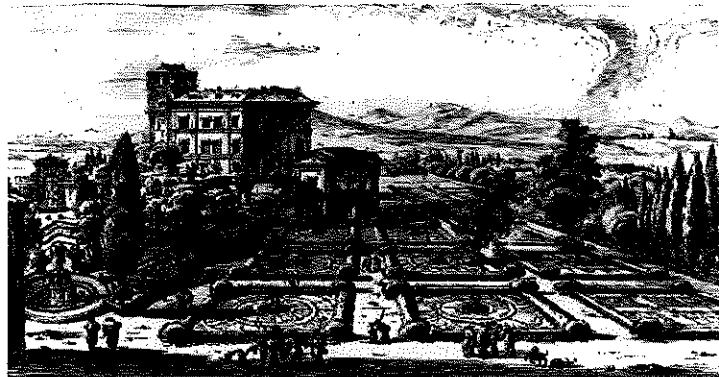
The Italian peninsula has long had a prominent reputation for its formal landscapes beginning with the gardens of the Roman Empire.

During this long complex history Renaissance garden design resulted in one of the most significant changes to the manufactured landscape. Renaissance ideals advocated a return to classical models of garden design that were

associated with pastoral life. Since none of the gardens from antiquity survived, what was known of them was primarily through written sources. In the fifteenth century many of these ideas were expressed in the work of Leon Battista Alberti, whose writing on architecture espoused the same proportion and regularity in the design of gardens as was to be found in architecture. A major concern of Alberti was the integration of

the house and garden in the Italian villa. Many Renaissance villas are composed of formal gardens near the house that transition to Arcadian wooded areas. Villa Lante, for example includes

defined between herbs, flowers, fruit trees and wooded areas. They also demonstrate a preoccupation with perspective as seen in terraces linked by paths and stairs.



Piranesi: N.

Veduta di Belvedere in Vaticano

*Veduta di Belvedere in Vaticano.
(Plate 54 Piranesi: The Complete Etchings)*

a wooded hunting area outside the bounds of the symmetrically composed garden space that surrounds the two houses.

Most importantly, these gardens reflected a new way of thinking about art and nature, the belief that nature can be tamed through design for the benefit of man. This ordering of nature also echoed the belief in the divine harmony of the universe (Lazzaro, 1990). Italian gardens of this time period represented the diversity of plant species, but also the contemporary concern for organizing this variety. As a result, Renaissance gardens are distinguished by their emphasis on hedge-lined paths, geometric subdivisions, grottoes, and water fountains. Boundaries were often

During the seventeenth century, Baroque gardens began to manipulate the features of earlier gardens. Order still existed in gardens, but now it was emphasized in dramatic spaces and axes, exotic plants, and elaborate ornaments.

The following examples of Italian formal gardens are important because they reflect some of the original theories and design intentions of the historic landscape of Rome's Orto Botanico. These gardens display a number of the Orto's historic features, many of which have since been lost or covered. Examining these gardens helps put the landscape of the Orto into historical context, and also provides examples and precedents for different practices and theories of garden restoration in Italy today.

VILLA LANTE Bagnaia

One of Italy's most exquisite Renaissance gardens, Villa Lante was originally built as a hunting lodge for the wealthy and influential Gamba Family in 1562. The gardens of the villa are laid out in a symmetrical plan with a central axis containing a number of cascading water features. These elements are magnificently detailed with sculpture and other architectural ornament. The complex water axis of Villa Lante can easily be compared to that of the Orto



*View of Water stair at Villa Lante.
(UPenn 2002)*



*View of Parterre Garden with fountain, Villa Lante.
(UPenn 2002)*

Botanico. Historically, the landscape behind the Palazzo Corsini included a symmetric axial perspective accentuated by water features such as the Fontana dei Tritoni and the Scala d'Acqua. The lavish fountains at the Villa Lante provide a glimpse into the Orto's former appearance as a formal garden.

CASTELLO RUSPOLI *Vignanello*

Castello Ruspoli has its origins in the 10th century when it was used as a fortress by Benedictine monks. The building was redesigned between 1531-38, possibly by Antonio da Sangallo the Younger. At the orders of Beatrice Farnese and her son-in-law, Sforza Marescotti, the medieval fortress was converted into the grand Renaissance castle that can be seen today.

Vignanello's most striking feature is its Greenery Garden. Divided into twelve compartments of decorative boxwood and precious lemon trees, the garden extends along the east-

ern side of the palace. A small fishpond and fountain can be found in the center of this arrangement. Since the family has continuously owned the Greenery Garden since the early 1600's, its composition has changed very little over the centuries. Located on the southern slope of the property, below the Greenery Garden, is a Secret Garden. Historically used by the matron of the family, this garden is planted with roses and decorative hedges, providing a private colorful room for members of the family. This living example of a 17th century secret garden provides clues as to what the now-vanished secret garden at Palazzo Corsini may have looked like.



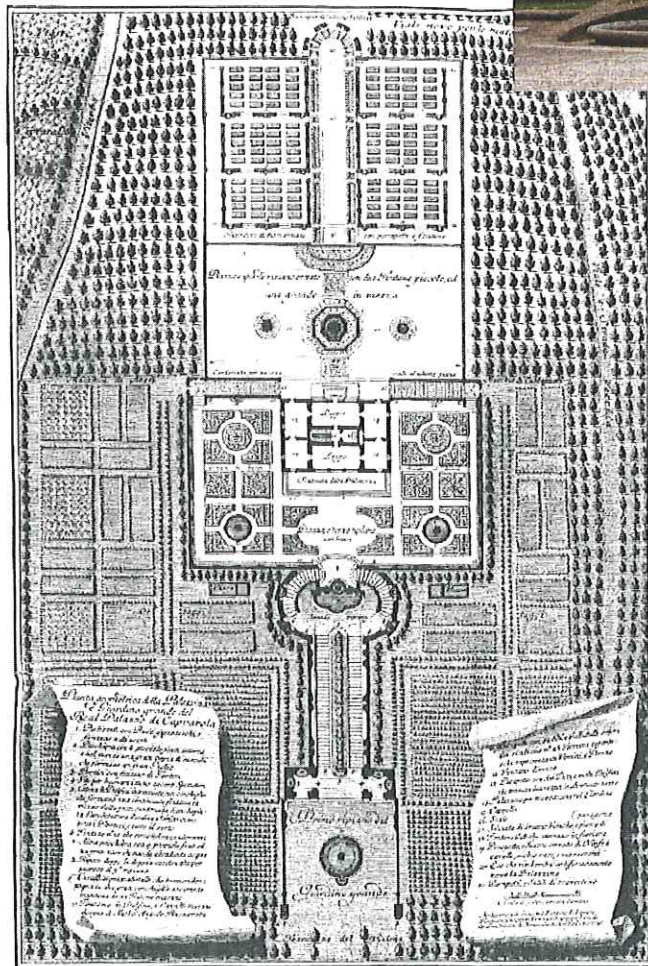
*View of the castle and Parterre Garden at Vignanello.
(UPenn 2002)*

VILLA FARNESE Caprarola

The gardens of Villa Farnese were commissioned by the Farnese family, one of the wealthiest and most powerful families in Rome during the 16th and 17th centuries. This villa, overlook-



View of the Water Stair leading up to the Belvedere, Villa Farnese. (UPenn 2002)



Upper Garden of the Villa Farnese, Caprarola, 1748. (Plate-97 The Italian Renaissance Garden)

ing the town of Caprarola, was built in the Middle Ages as a pentagonal-shaped fortress and was later converted into a palace during the Renaissance.

The landscape of Villa Farnese shares many important characteristics with the layout of the Orto Botanico. The main pathway of the villa's garden leads up to a belvedere that overlooks the estate. Similarly, at the Orto Botanico, the historic landscape was designed around a central axis that culminated at a hilltop casino overlooking Rome. Both gardens also share a number of water features, including a Baroque water stair designed with trapezoidal geometry to emphasize a perspective.

VILLA d'ESTE Tivoli

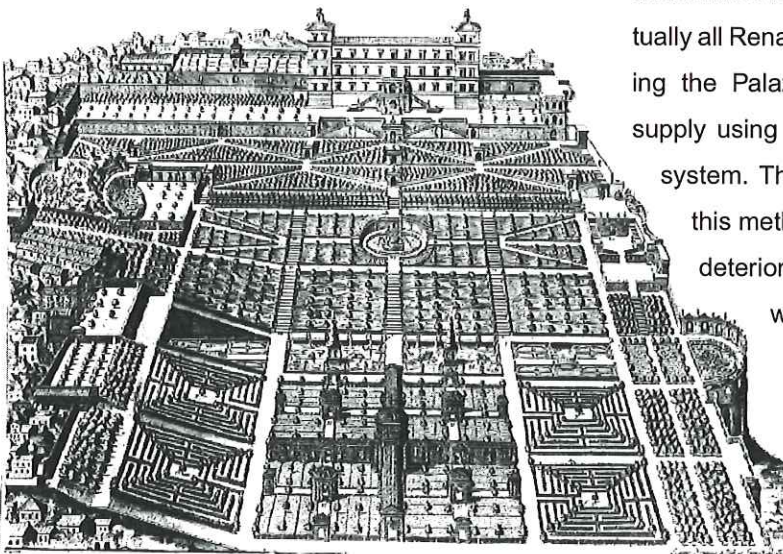
Located in the hill town of Tivoli, the Villa d'Este commands stunning views of the Lazio region of Italy. The Renaissance villa, commissioned by Cardinal d'Este in the 16th century, is most notable for its garden, which has a myriad of astonishing water features. Containing over 1,000 spouts, almost every vista in the garden includes some form of aquatic element. The most famous of these features, the Fontana dell'Organo Idraulico, is a Baroque fountain and niche. Almost defying description, this fountain contains a hydraulically powered organ that has recently been completely restored.

One of the most intriguing aspects of the Villa d'Este garden is that the water for the fountains is entirely supplied by an aqueduct system through simple engineering principles of gravity and hydrostatic pressure. Incredibly, no



View of the fountains looking towards the niche and organ. (UPenn 2002)

mechanical pumping is necessary to create the dramatic water displays. Additionally, the water from the Villa d'Este is not wasted once it leaves the garden. Instead, it is channeled back into an irrigation system that provides water to the entire valley below. The hydraulic scheme of the Villa d'Este, while intricate and enthralling, is not uncommon to Italian gardens of this period. Virtually all Renaissance and Baroque villas, including the Palazzo Corsini, received their water supply using the same aqueduct-based gravity system. The Scala d'Acqua is still supplied by this method, although age and subsequent deterioration has slowed down the flow of water through the system.



*Villa d'Este, Tivoli 1573.
(Plate-207 The Italian Renaissance Garden)*



✓ *The monumental greenhouse of the Palazzo Corsini.
(Plate-16,5 Roma e il Suo Orto Botanico)*

THE ORTO BOTANICO Rome

Rome's Orto Botanico has roots dating back to the 11th century. During this time period, Benedictine monks kept small medicinal gardens known as "Giardini dei Semplici"—literally, Gardens of the Simples—where plants and herbs found in local areas were grown for utilitarian purposes. The Giardini dei Semplici were medieval precursors to the Orto Botanico, and botanical gardens in general.

By the beginning of the 13th century, the Catholic Church in Rome identified the need

to build a large Giardino dei Semplici within the Vatican Walls. A number of gardens were constructed within the Vatican in the late 13th century under the commission of Pope Nicolo III (1277-1330). These early gardens were built to display a large variety of plants and included fountains and medicinal herbs. However, the first Giardino dei Semplici in the Vatican would not be constructed until 1484-1492, under the commission of Pope Innocent VIII.

In 1514, Pope Leo X gave the University of Rome "La Sapienza" the task of teaching its students about medicinal plants. They were put in charge of maintaining and cultivating the Vati-

can's Giardino dei Semplici, using the garden as a field laboratory. La Sapienza has remained the custodian of the Orto for almost 500 years

From 1601-1629, the Giardino dei Semplici was under the directorship of Giovanni Faber. Faber referred to the plant material in the garden as botanical, ultimately transforming the Giardino dei Semplici into an Orto Botanico. Shortly after this period, the Pope's residence moved to the Quirinale, and this Orto was abandoned. In the early 17th century, Pope Alexander VIII deeded an area around the Janiculum Hill to La Sapienza to develop into a new Orto Botanico.

In 1820, nearly two centuries after Pope Alexander set aside land for a new Orto Botanico, La Sapienza built a new Orto in the abandoned gardens

of Palazzo Salviati. The Orto remained there until 1876, when the Museum of Natural Sciences moved to the palazzo, forcing the Orto to move again. The Orto Botanico relocated to a temporary home at the Convent of Lorenzo V in Via Panisperna until 1883, when after lengthy negotiations, the Orto acquired the site behind the Palazzo Corsini.

The Orto's first director at the current site, Pietro Romualdo Pirota, greatly influenced the present day site. Pirota reorganized the landscape and introduced much of the flora that shape the Orto today, including the exotic palm tree collection conspicuous throughout the

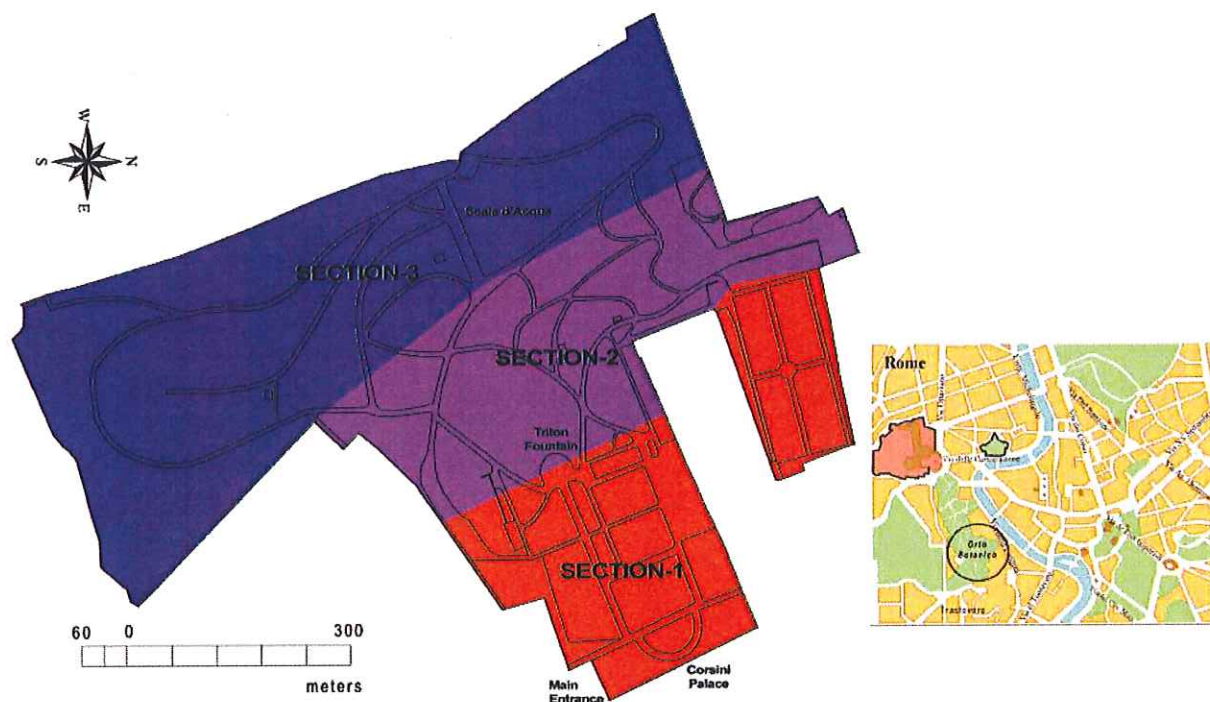
lower garden area. He oversaw the transformation that turned the old formal garden of the Riario and Corsini families into the scientific and educational resource that it is today.



Palm trees in the lower garden area of the Orto Botanico. (UPenn 2002)

The Orto Botanico and the Scala d'Acqua

A DESCRIPTION: THE ORTO BOTANICO

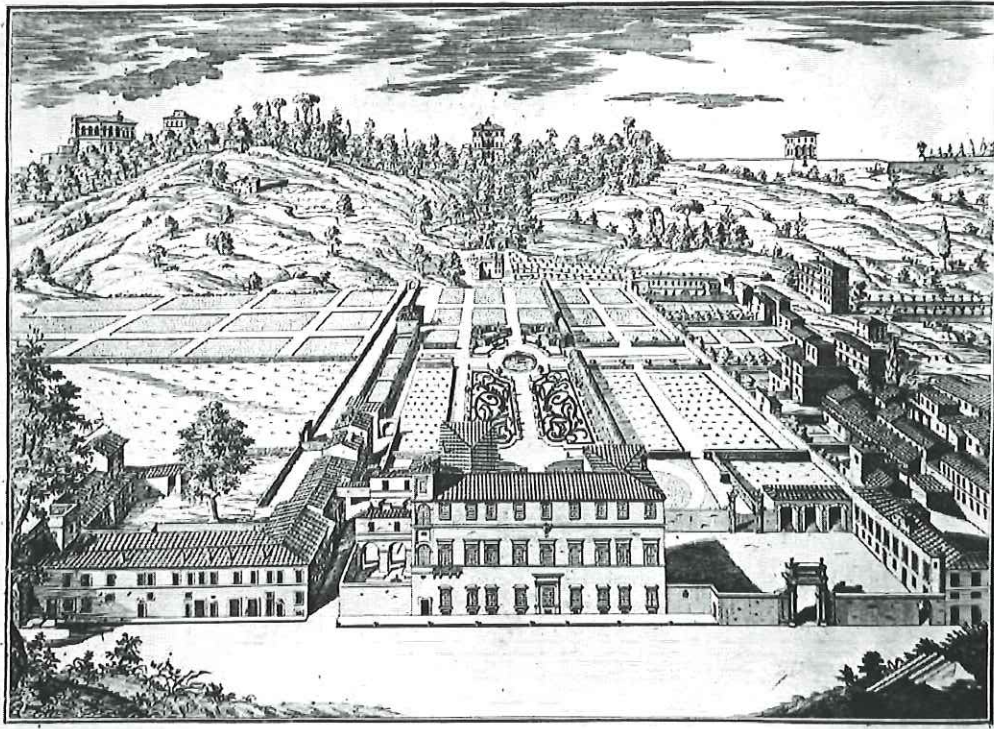


A locator map for the site within Rome and a Site plan of the Orto showing three topographically distinct sections. (UPenn 2002)

Located below the Janiculum Hill adjacent to Trastevere, the Orto Botanico lies quietly among many historic sites. While a mix of residential areas and tourist attractions frame the garden, the Orto faces many physical and psychological barriers that help retain its status as one of Rome's best-kept secrets. The Orto's affiliation with the University of Rome-La Sapienza helps attract students for scientific research and fieldwork, but its hidden location discourages

spontaneous visits. Although one of the largest green spaces within this section of Rome, four major sites frame the Orto, each creating barriers to entry.

The Palazzo Corsini, which is located on the east side of the Orto Botanico on Via della Lungara, currently displays the 17th and 18th century collections of the Galleria Nazionale d'Arte Antica. Despite the fact that historically the Orto was once part of the garden of the Pala-



✓ *Palazzo Corsini and gardens with the Janiculum hill in the background*
Anonymous engraving, early 18th century.
(Belardi, Palazzo Corsini alla Lungara, 2001, p.20)

zzo Corsini, the two exist side by side with little administrative or interpretive interaction.

Forming the northern boundary of the Orto Botanico is the Convento del Sacro Cuore. The convent operates its own working garden which runs alongside the pine forest of the Orto Botanico. A thick line of vegetation and a wire fence create a physical barrier between these two gardens, creating further isolation between the Orto and its surrounding neighbors.

Rising above the Orto Botanico to the west is the Janiculum Hill, the site of an unsuccessful French attack on Rome in 1849. Now a park honoring General Garibaldi and his wife,

Anita, this area offers a birds-eye view of the Orto, framed by a panorama of Rome in the background. This park is popular with tourists and locals and is well traversed. Although the Orto is built into the Janiculum Hill, the steep topography and dividing wall create another physical barrier.

The irregular southern boundary of the Orto is bordered by the Carabinieri and Villa Torlonia, located at the base of Via Corsini. This road attracts little foot traffic, and heavy vegetation growth makes it nearly impossible to discern the Orto's presence in this area.

The Orto Botanico and the Scala d'Acqua



A view from the garden entrance looking west towards the Janiculum Hill. (UPenn 2002)

there is still a recognizable scheme to the planting. The third section (3) climbs steeply up the Janiculum Hill and contains several additional thematic gardens, such as the Rock Garden, the Japanese Garden, and the Rose Garden. The Scala d'Acqua designed by Ferdinando Fuga is also located in this section. This area is typified by a more naturalized landscape that contains thick undergrowth, forested areas, and currently overgrown pathways.

The Orto Botanico

The Orto Botanico can be divided topographically into three distinct sections (See site plan, p. 19). The first section (1) is a flat area extending from the exterior gates of the Palazzo Corsini to the Fontana dei Tritoni. This section contains a collection of palm trees and thematic gardens such as the Mediterranean Garden, the Aromatic Garden, and the Garden of Simple Plants. A second section (2) begins behind the Fontana dei Tritoni and gradually increases in elevation. Vegetation is slightly denser in this area, but



✓ *The garden today looking west from the third floor of the Palazzo Corsini. (UPenn 2002)*



Looking east from the Triton Fountain towards the Palazzo Corsini. (UPenn 2002)

First Section (1)

The first of the three sections begins at the front entrance of the Orto Botanico, follows the perimeter of the Palazzo Corsini exterior gates, and then extends in a western direction toward the Janiculum Hill. This relatively flat area contains thematic gardens, several 18th and 19th century greenhouse buildings, and the mid eighteenth century Fontana dei Tritoni.

From the entrance gate, a large gravel and travertine path leads visitors to the main axis of the garden. The Succulent Garden is located east of the north-south pathway and runs alongside the gates of the Palazzo Corsini. It is roughly arranged in a semi-circular design and contains a pebbled path that provides closer access to the plants in the garden.

The surrounding area of this Succulent Garden—which is predominately populated with cacti—is not thematically designed and is almost entirely covered by grass. Several antique sculptural remnants, including bust and column fragments, are scattered alongside the north-south path.

A Palm Promenade runs along the main axis of the Orto Botanico in an east-west direction between the rear gate of the Palazzo Corsini and the Fon-



One of the antique sculpture remnants located on the main north-south path. (UPenn 2002)

tana dei Tritoni. Although the Scala d'Acqua is not clearly visible on the horizon, it is positioned on the same primary axis.

Heading west, three paths perpendicularly bisect the primary corridor. Four circular tufo basins mark the first path and contain stagnant water and aquatic vegetation. The second bisecting path creates a major cross-axis between the Monumental Greenhouse to the north and the Aromatic Garden to the south. Currently, the greenhouse contains orchids and other arid-plant types. Adjacent to the structure is a small garden that consists of vegetation characteristic to the Mediterranean region. Additional buildings used for maintenance are located in the neighboring northeastern corner of the Orto Botanico.

To the south, raised planting beds made of brick and tufo geometrically shape the Aromatic Garden. Braille signs located within this garden help educate blind visitors about the various herb species. Adjacent to the Aromatic Garden is a telephone, public toilet, and service shed. The cross-axis path comes to an end at an



✓ *The monumental greenhouse.*
(*Roma e suo Orto Botanico*, 1984, pl. 19.4)

automobile parking lot that lies directly alongside the southern boundary of the Orto Botanico.

The Fontana dei Tritoni marks both the termination of the principal east-west corridor and the intersection of the third perpendicular path. This is a large, sun-exposed area where the primary landscaping consists of palm trees planted in rows. Travertine benches are placed alongside the gravel pathway that surrounds the fountain. The bisecting trail leads north to the Arancera, which is covered by climbing plants and presently functions as a lecture hall and classroom.

Continuing north, the path leads to the Small Pond area—which is filled with water lilies and other aquatic plant species—and then on to a small building and the Exhibition Greenhouse. The building acts as a location for educational classes and lectures, while the greenhouse is currently empty. A small path branches east from this greenhouse to the Garden of Simple Plants, which consists of waist-high, brick planting beds containing a variety of medicinal herbs. Adjoining the Garden of Simple Plants is an open space created by brick pavement. Additional garden beds and greenhouses are laid out in a squared geometric pattern to the east.

Second Section (2)

The second section of the Orto Botanico covers the central portion of the garden and slowly rises in elevation in the direction of the Janiculum Hill. Winding paths, water features, and a variety of planted species compose this middle area. Evident plant orders include palm, pine, and cypress trees, as well as diverse flora.

A dense area consisting of medium-sized plants and trees frames the Fontana dei Tritoni to the southeast, while a wide green area with towering palm trees slopes gently uphill behind the fountain to the west. The palm area is completely encircled by gravel pathways.



A paved path with heavy tree canopy located in section-3 of the Orto. (UPenn 2002)

A dense pine section lies to the north of the palm section, covering the area with large tree canopies. Within the shade, a water creek runs down a mild slope between two small lily ponds. Stepped rocks mark the path along the border of the creek. Evergreen growth characterizes the garden while continuing north in this section, and tall cypress and pine trees are planted throughout the hillside. The elevation rapidly increases as one travels the pathways leading to the northwest corner of the Orto Botanico. The northern boundary adjoining the Convento del Sacro Cuore is identified by a hedge line and dense evergreen growth.



The Japanese Garden. (UPenn 2002)

Third Section (3)

The third section of the Orto Botanico stretches steeply up the Janiculum Hill toward the statue of Garibaldi, and covers the western most portion of the garden. The southern segment of this area features a spectrum of organized specialty gardens. Naturalized vegetation overgrowth and heavily forested areas are characteristics of the remaining portion of the third section. The Scala d'Acqua is situated in the central portion of this section, leading to the Nicchione located outside the western boundary of the Orto Botanico.

The two paths of the third section meet at the northwest corner of the Orto Botanico and create a walkway to the Roman Woodland. The



The Bamboo Garden. (UPenn 2002)



The Rose Garden. Roses were a prominent feature of Baroque gardens. (UPenn 2002)

woodland contains remnants of the forest that once covered this area of Rome. Deciduous trees are precariously located among grassy patches. The western boundary consists of an iron fence on top of an ivy-covered brick wall.

A Japanese Garden is located in the southwest corner of the Orto Botanico. This garden is composed of an organized series of minor paths, waterways, and topiary. A pagoda overlooks small ponds and provides a clear vista of Rome's skyline.

Beyond the Japanese Garden, a winding path leads up the hill to a closed entrance of the Orto, located off of Viale del Parco di Villa Corsini. Although this entrance is no longer in use, the gate house remains and an observa-

tion landing provides another view of the city. A collection of irises, comprised of potted urns planted in the steep slope, is located between the observation landing and the upper path. This area leads into the Rock Garden, which is situated below the irises on the western most path. A small stream weaves throughout the area and empties into a larger pond.



The Fontanone dell'Acqua Paola as seen from inside the Orto. (UPenn 2002)

The Orto Botanico and the Scala d'Acqua

As in the northwest corner, the two paths merge at the bamboo forest. The bamboo, planted in the early 1990's, is one of the most striking features of the Orto. Over 150 species grow successfully in the garden. However, bamboo is a very invasive species, and has overwhelmed both sides of the path, creating a tunnel effect. This tunnel runs east/west on the southern side of the garden. Continuing east, the visitor reaches the Fern Garden. An internal network of paths provides access to the Fern

Garden and planted beds slope steeply on both sides. A small stream winds through the ferns.

The Rose Garden is the last thematic garden in the third section and is northwest of the Fern Garden. It consists of a geometric arrangement of minor paths and square beds that climb the hillside. A rose trellis creates the western boundary of the Rose Garden. Continuing north, the remaining portion is covered by moderately dense vegetation. However, there is no discernible order to the planting.



The Scala, although small in relation to the site, plays a significant role in the interpretation of the garden. (UPenn 2002)

The Scala d'Acqua

The Scala d'Acqua is centrally positioned within the third section of the Orto Botanico. At the base of the stairs, the vegetation is primarily low in height, but dense and wild in growth. It frames both sides of the stairs as it climbs in grade towards the Janiculum Hill. Two travertine benches are positioned at the base of the stair. Dominating the elevation landscape are two large plane trees originating from Asia that are estimated to be about three hundred years old. Their enormous size provides a thick canopy over the Scala's lower tier.

On the north side of the second stair, a small fig tree rises above the tangled mass of vegetation. The southern side of this tier also has a thick growth of low-lying plants, which cover a small inactive water reservoir. The fountain basins of the Scala d'Acqua are filled with stagnant water, hanging ferns, mosses, and various water plants. A forest of Holm oak begins at the second stair landing and continues beyond the Nicchione, reaching the crest of the Janiculum Hill. The forest becomes denser as the slope rises and also extends into the northern region of the Orto Botanico. Several large Holm oaks surround the upper level of the northern side of the



A view from the top of the North Terrace looking at one of the historic plane trees set among excessive overgrowth. (UPenn 2002)

Looking east from the top of the Modern Stair towards the Fountain Stair. (UPenn 2002)

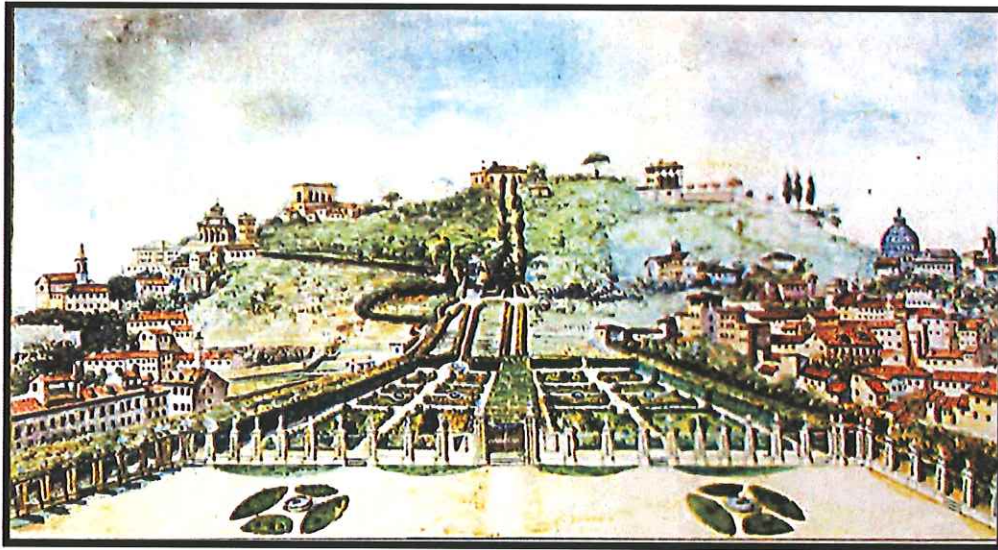


stairs, while one large plane tree dominates the canopy on the south side at the top of the Scala d'Acqua.

Between the end of the Scala d'Acqua and the base of the modern stair is a narrow path of bare soil and vegetation. Remnants of a paved walkway suggest that a more formal planting bed may have been present at one time. At the top of the modern staircase, a network of

paths radiate out in a southeastern direction. To the north, the Roman Woodland begins to take shape; in contrast, planned thematic gardens lie to the south. At the western boundary, an iron fence covered with climbing plants separates the Nicchione and the surrounding city property from the rest of the Orto Botanico.

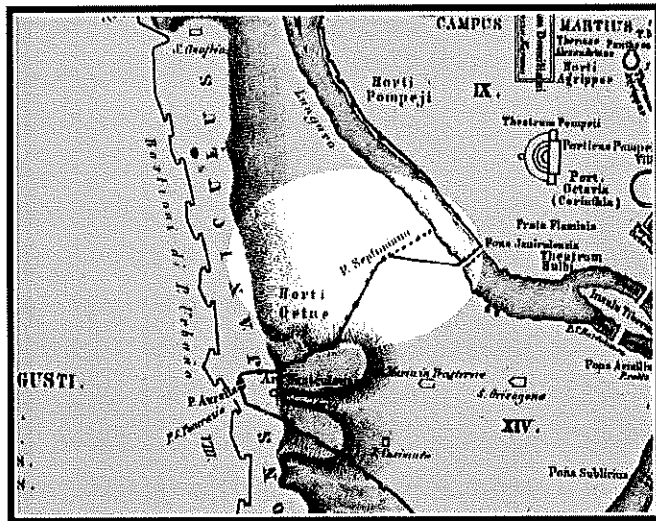
HISTORY OF THE SITE: THE PALAZZO CORSINI



*View of the garden looking from the Palazzo Corsini west to the Janiculum Hill 1872.
(Plate 18.1 Roma e il Suo Orto Botanico)*

The history of the Orto Botanico and the Scala d'Acqua is inexorably interlinked with the evolution of the city of Rome. First recorded as an area of simple farms and gardens, the Orto became the backdrop for meticulously planned gardens of some of the wealthiest and most powerful families in Europe. Ironically, the Orto's present use is reminiscent of its humble origins. The remnants of the garden's past are physically separated from the Orto by two gates: one closing off the Palazzo Corsini, the other the Nicchi-one, once the conclusion to the famous Scala d'Acqua designed by Ferdinando Fuga in the 1740s.

Although it is difficult to ascertain the exact nature of changes within the garden, an analysis of written documents, maps, views, photographs, as well as the site and the physical fabric including archaeological remnants have yielded new clues about the Orto and the Scala d'Acqua. By tracing the garden's history through different periods, it is possible to better understand its current manifestation as the Orto Botanico.



*A portion of a map representing Ancient Rome. The white area indicates the area of the Orto Botanico.
(Le piante di Roma / a cura di Amato Pietro Frutaz)*

Ancient and Medieval Periods

The area around the Orto Botanico has been the scene of human activity for thousands of years. During Roman times, the area was known as the *Horti Getae*, and was cultivated mainly as small farms and villas. Natural springs within the Orto, fed by the Acqua Felice, provided water for dwellings and irrigation (Bongiovanni: 07-08-02). At least two aristocratic suburban villas were present in this area during the 1st and 2nd century A.D.: that of Agrippa on the Janiculum Hill, and the Domus Clodiae, located on the site of the current Farnesina across from the Palazzo Corsini (Ceen: 06-20-02). Roman sculptures discovered in the Corsini gardens in the 18th century, and two black-and-white mosaic floors found in 1877, suggest the possi-

bility of a villa on the Orto's present day site (Francesconi: 07-04-02).

The Orto Botanico was not included within the Aurelian walls when they were built as defensive fortifications in 275 A.D. This may have been because the Orto area was sparsely inhabited due to its flat terrain, making it susceptible to frequent flooding (Bongiovanni: 07-08-02). The Aurelian walls separated the Orto site from Trastevere, which during Roman times was a flourishing working-class neighborhood inhabited primarily by dockhands and artisans (Ceen: 06-20-02).

With the fall of Rome in the 5th century A.D., the population of the city declined drastically. While areas along the Tiber and within the Aurelian fortifications were continuously inhabited, buildings in regions outside the walls—like the Orto Botanico site—were abandoned or demolished (Coccia: 07-01-02). These areas were the last to be inhabited again when Rome's population rebounded during the Renaissance (Coccia: 07-01-02).

During the Medieval period, the land around the Janiculum Hill was likely used for vineyards and orti, which were small sustenance gardens generally cared for by monastical orders. Very few details are known about the Orto Botanico area during this period, but it was recorded that the land was used as a vineyard when it was sold to the Riario family in the late 15th century.

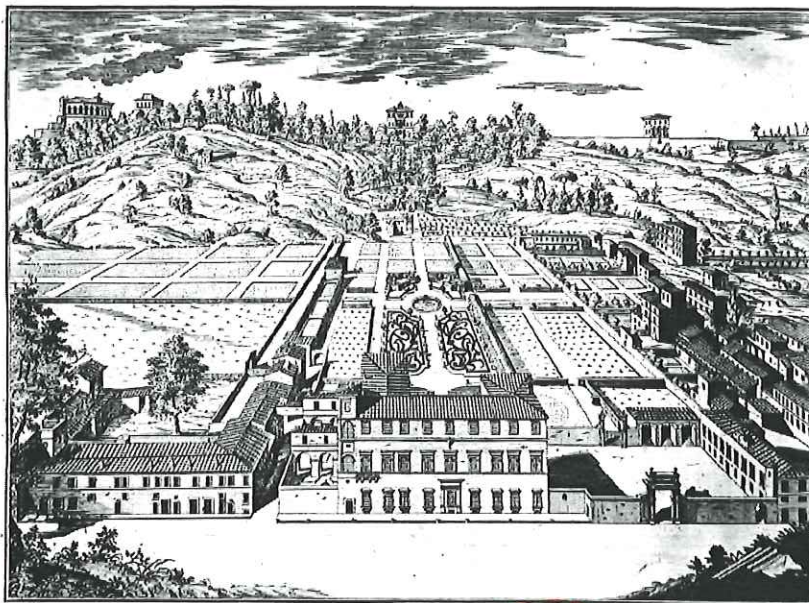
Riario Family: 1492-1659

The next major phase in the history of the Orto landscape begins in 1492, when Cardinal Raffaele Sansoni Riario purchased a vineyard, including houses and minor buildings, from Fra Augostino Maffei. This vineyard was described as being in the neighborhood of Trastevere outside the Porta Settimiana.

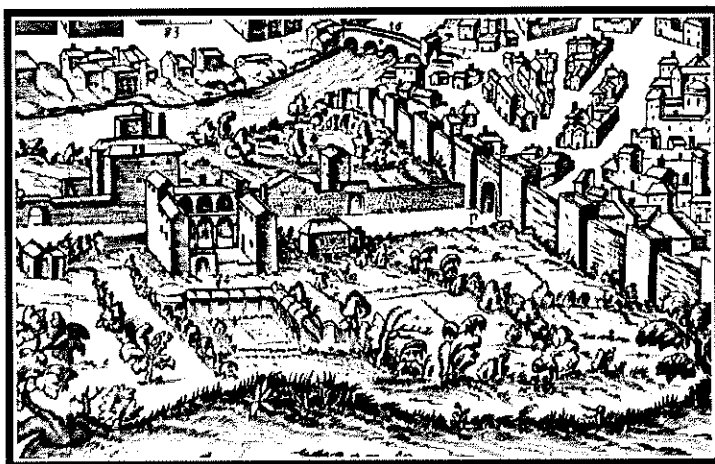
The Riarios were one of the most powerful families in Rome during the Renaissance, and constructed several important palazzi in the city. During the Renaissance period, wealthy families competed with each other to construct impressive city residences and suburban villas, displaying their power and wealth through architec-

ture and their extensive art and antiquity collections. These palazzi included large gardens designed to highlight ancient Roman statuary, a trend started by Pope Julius II and soon copied by his cardinals (de Vico Fallani: 06-24-02). The Riario family was well known throughout Renaissance Italy as patrons of the arts and sciences, and their garden played host to a number of eminent thinkers and artists, including Galileo.

Construction of the Via della Lungara, where the new Palazzo Riario was to be located, began sometime after 1492 under Pope Alexander VI, and was finished by his successor, Julius II, by 1512. It is possible that Cardinal Riario convinced the papal powers to build this road in order to provide access to his palazzo. Another wealthy Roman, Augustino Chigi, was also con-



✓ View of the Villa Riario and Parterre Gardens, 1600.
(Plate 20.1 Roma e il Suo Orto Botanico)



View from the top of the Janiculum Hill to the Palazzo Riario. Detail of Pinnard Map 1555. (Le piante di Roma / a cura di Amato Pietro Frutaz)

structing a palazzo later known as the Farnesina (1508-11) across from the Riario lot during this time period.

This lack of road access may explain why Cardinal Raffaele did not begin work on the palazzo until 1510, when he employed one of Pope Julius II's architects—a disciple of Bramante—to design a villa for the property (Dinelli: 1984). The Palazzo Riario was constructed at the corner of the lot along Via della Lungara. The principal entrance faced the street and river and had a symmetrical façade with nine windows. The garden side featured two wings of different lengths (Tantillo: 2002).

The garden constructed behind the palazzo was most likely designed following Bramante's example. Bramante was a hugely influential architect during this time period, and one of

the first to design a garden using Renaissance ideals of centrality and classical motifs. Bramante gardens were distinguished by a central axis leading to terraces linked by steps, with each change of step marked by a wall decorated with niches, grottos, or statues (de Vico Fallini: 06-24-02).

Maps and drawings from this period show a garden at the Palazzo Riario that stressed symmetry and geometry. A central axis ran from behind the palazzo through the garden, which was divided by a series of parterres.

This axis was used in later modifications of the garden and partially survives in the present day as the long Palm promenade leading up to the Fontana dei Tritoni. However, as a result of subsequent alterations to the original palazzo, the Renaissance axis today appears off-center.

Some form of terraced landscape was likely present at the location of the current Scala d'Acqua in the garden from the early 16th century when the site was used as a vineyard. A preliminary archaeological survey undertaken with the supervision of Stefano Coccia in July 2002 suggests the retaining walls located to either side of Landing 2 date from the 16th or 17th century, and could be a construction from the original Palazzo Riario garden.



A birdseye view of the Villa Riario and its garden looking west. Detail of Du Perac Map 1577. (Le piante di Roma / a cura di Amato Pietro Frutaz)

The earliest documentation of a structure in the Scala d'Acqua area appears on the 1577 Etienne Du Perac map of the Riario Palazzo. Although the longitudinal axis from the palazzo does not extend up the hill, a large retaining wall, possibly containing one or more grottoes, is shown close to the present location of Fuga's Scala. Traces of stalactitic rock typically used as a backdrop for grottoes still exists in the pre-Fuga retaining walls, thus supporting this conjecture. A building at the top of the hill could possibly be the casino purchased by Riario in

1592/93. The 1623 F. De Paoli plan of Rome shows a similar arrangement; however, in this view the retaining wall is oriented to face the casino and not the palazzo. Other maps from this era—the 1555 Pinard, the 1593 Tempesta, and the 1625 Maggi—do not show the area where the Scala d'Acqua is located.

In 1592, the Riario family purchased the Casino dei Quattro Venti—the House of the Four Winds—from the Odescalchi family. The casino stood on the top of the Janiculum Hill on axis to the Palazzo Riario.

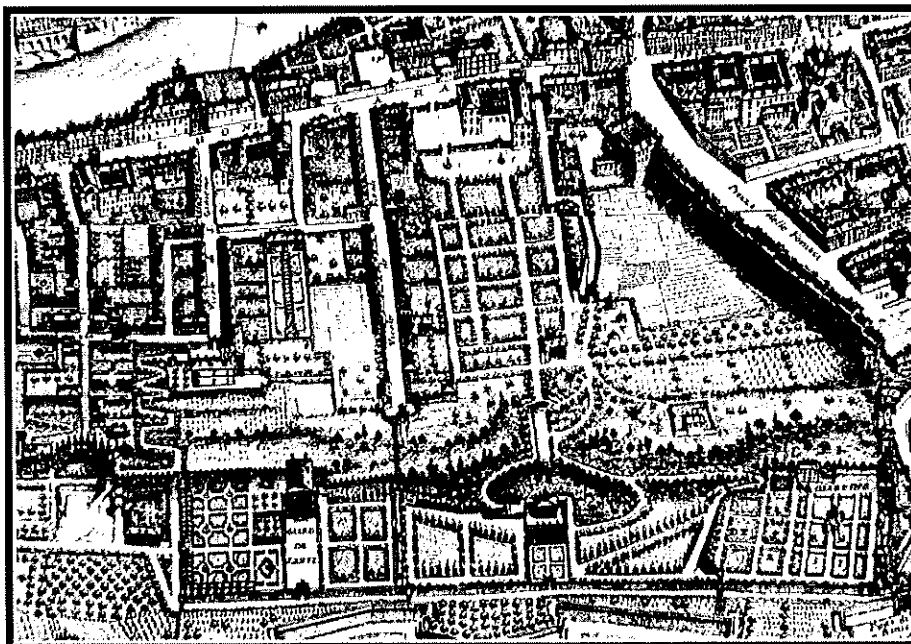
Christina of Sweden: 1659-1689

Over a period of thirty years from 1659-89, the Riario family rented their villa to Christina Alessandrina, the former Queen of Sweden. Christina abdicated her throne in 1654 in reaction to the Protestant Reformation that swept through Sweden, converting to Catholicism a year later. Pope Alexander VII saw in Christina a valuable symbol for the Catholic Counter-Reformation, and subsidized her time spent in Rome. After Pope Alexander VII's death, Pope Clement IX awarded her the Palazzo Riario.

The Palazzo Riario became a cultural

and intellectual center of Rome during Christina's residency. Christina was an active patroness of art, literature, philosophy, and science, and set up something akin to a royal court at the palazzo. In order to support this court lifestyle, many alterations were made to the palazzo and gardens. These included closing the main entrance on the Via della Lungara, and possibly constructing the formal, French inspired parterres seen in historical renderings (Tantillo: 2002).

Changes made to the Scala d'Acqua area of the gardens are recorded on maps dating from this time period. G.B. Falda's 1676 map shows a longitudinal axis leading from the palazzo to what could be a Nicchione, with some sort of construction at the site of the lower stair



Birdseye view of the Villa Riario and garden during the period of Christina of Sweden. Detail of Falda Map, 1676. (Le piante di Roma / a cura di Amato Pietro Frutaz)

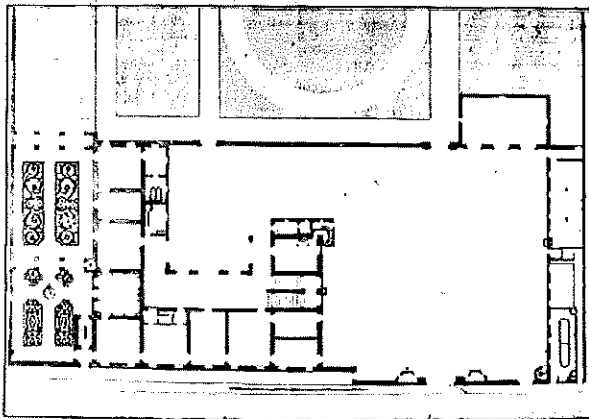
of the Scala, but it is difficult to ascertain any details from this map. Archaeological investigations, which examined the materials and construction methods used, support the theory that the Nicchione predates Fuga. Traces of a water pipe on the back of the Nicchione also indicate it originally held a fountain. Curved paths from either side of the Nicchione area lead up to the casino; these paths remain consistent on maps up through the 1880s.

An anonymous map from 1736 details the pre-Fuga construction at the Scala d'Acqua. The map shows a single staircase with several landings or terraces on the longitudinal axis, leading to a fountain or possibly a grotto in front of a retaining wall, possibly an earlier nicchione.

A small square shown to the left of this stair could be a cistern. Two staircases to the north and south of the central axis lead up behind the wall to a large fountain. The Nicchione



*Pianta della proprietà Riario allegata all'atto di compravendita del 1736. Inizi XVII sec.
(Roma, Archivio di Stato; da Costamagna)*



✓ *Plan of the Palazzo Riario with the secret garden to the left side. (Firenze, Archivio Corsini)*

is shown in plan with what could be a fountain in the center and two side compartments whose use is unknown. Retaining walls extend from each side of the Nicchione.

After Christina's death in 1689, the Riario family continued to rent out the palazzo until it was sold to the Corsini family in 1736.

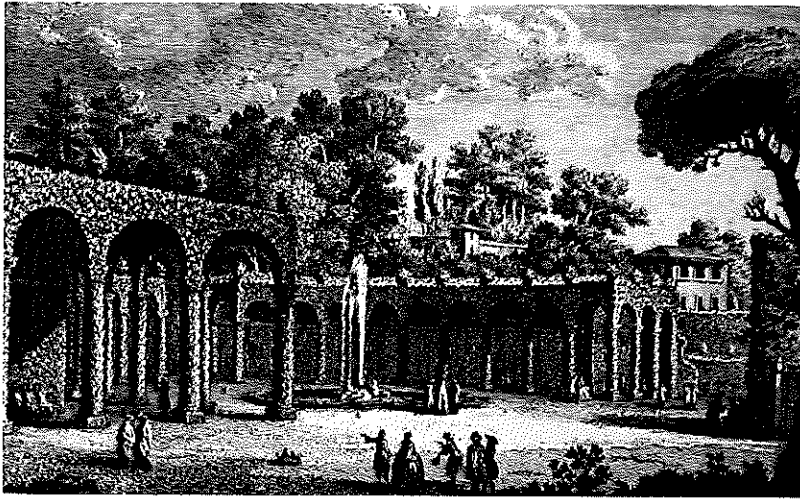


✓ *A watercolor showing a view of the Palazzo Corsini as seen from the top of the Water Stair, 1780.
(Images of the Grand Tour: Louis Ducros 1748-1810)*

Corsini Family: 1736-1883

In 1736, Nicola Riario sold the palazzo to Cardinal Neri Corsini, nephew of Pope Clement XII, and his brother, Prince Bartolomeo Corsini (Tantillo: 2002). The Corsini brothers, whose family originated from Florence, needed to establish a family residence in Rome after their uncle was elected pope. The 16th century Riario palazzo needed substantial restoration and alterations, so the Corsini family commissioned noted architect Ferdinando Fuga to design a plan for the palazzo and the gardens.

Fuga was born in Florence in 1699 and died in Rome in 1782. He was a pupil of Florentine sculptor and architect Giovanni Battista Foggini until 1718, at which time he moved to Rome to learn from the examples of the great Baroque architects. Fuga's first important work—the chapel in Palazzo Cellamare—was constructed in Naples between 1726-27. Fuga returned to Rome in 1730, at which time Pope Clement XII nominated him as the architect of the papal palaces (Pinto:2000). The completion of projects such as the Palazzo del Quirinale and the facade of Santa Maria Maggiore in Rome



View of the Teatro di Verdura with the Fontana dei Tritoni. (Plate 20.4 Roma e il Suo Orto Botanico)

established his status as one of Italy's most successful architects of the Baroque period.

Between 1736 and 1754, Fuga worked to restore and enlarge the existing Palazzo Riario and grounds. The Renaissance palazzo was partially demolished and a new wing was added to the north, reorienting the building off-axis with the garden. Two wings added towards the Janiculum led to the creation of the Cortile della Cavallerizza—the Horse Riders' Courtyard—which connected the redesigned palazzo with the garden.

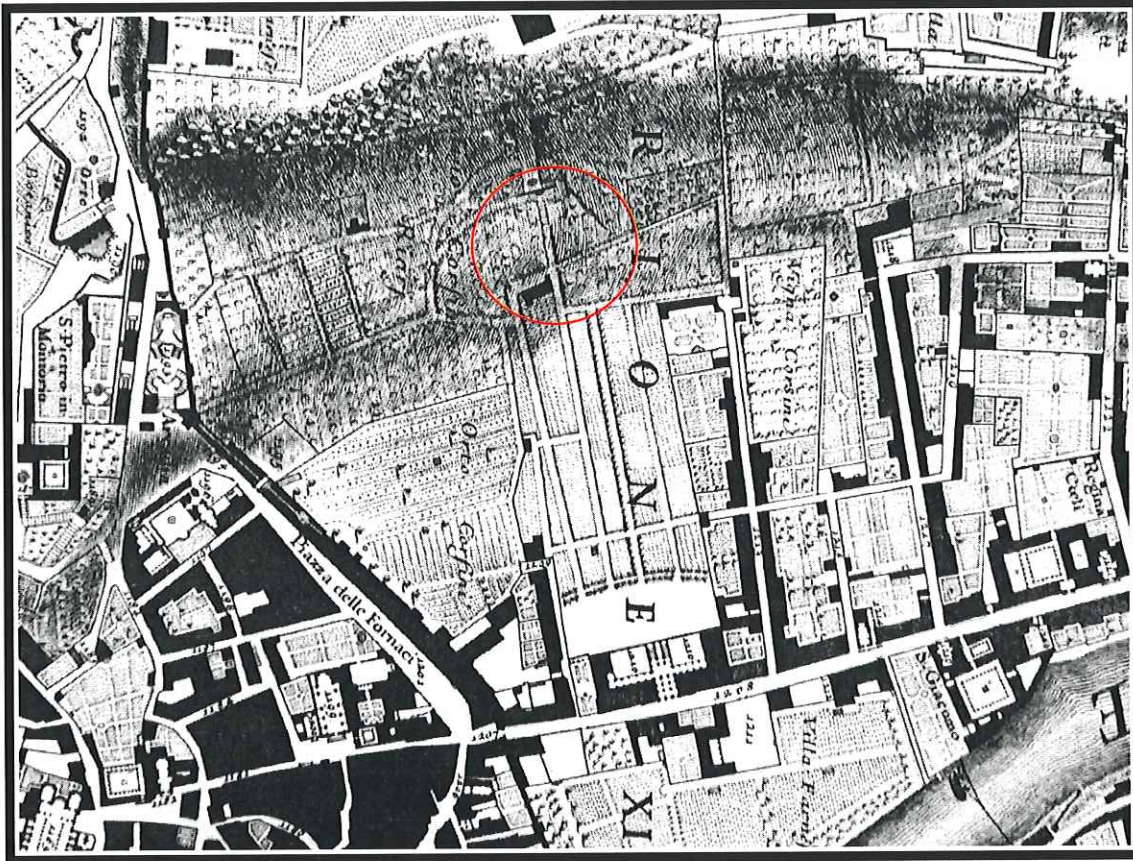
Fuga redesigned the gardens in a controlled, mature Baroque style, using the infrastructure of the earlier garden in his plan. Baroque gardens were based on similar principles of earlier Renaissance gardens, but included a transverse axis running perpendicular to the longitudinal axis. As part of this redesign, the Cor-

sini family introduced trees into the old parterre beds of the Riario garden.

Another element of the Baroque garden was a structure or area specifically designed for special events. For the Corsini gardens, Fuga designed a rustic wooden arcade clothed in greenery—the “Teatro di Verdura”—which was used for dramatic performances and concerts. The arcade surrounded the Fontana dei Tritoni, which was built in 1741-42.

Additional details about the new garden plan emerge from a January 1741 letter Cardinal Neri Corsini wrote to his brother:

The garden will be divided into four areas: the first, a lawn of Proderia in the French style; the second, an English-style lawn, in other words of Gazon; the third, a copse, or rather a maze of Carpine hedges; the fourth, at the far end, an open-air theater with a fountain in the middle; the theater structure will be made of elm wood and the tree trunks will be brought from Lauri (the plans are being drawn now, so I'm enclosing a sketch); the theater will be open-air and will not obstruct the view, so the pathway will continue up the slope to the terrace where at present there is a fountain...(Tantillo: 2002).



✓ Detail of the Nolli Map showing the Corsini Garden. Note the area of the Scala d'Acqua, 1748.
(Le piante di Roma / a cura di Amato Pietro Frutaz)

This letter provides an intriguing clue as to what was present in the garden before Fuga's design. The terrace may refer to the area around the retaining wall—which is shown on historic maps to have at least one fountain—or perhaps to the Nicchione, giving further credence to the possibility of the existence of a fountain there at one time.

Giovan Battista Nolli's 1748 plan of Rome shows an almost identical layout in the

Scala d'Acqua area when compared to the Falda maps, but with three exceptions: the casino is shown off-axis with the central path and palazzo; the southern stair leading behind the retaining wall seems to be missing; and the Nicchione is shown with only one compartment to the left, again, possibly a cistern. Although the map is dated after Fuga began work on the garden, it seems likely that Nolli mapped this area prior to any new construction, evidenced by the lack of change at the Scala d'Acqua site and the

The Orto Botanico and the Scala d'Acqua

absence of the Fontana dei Tritoni on the map.

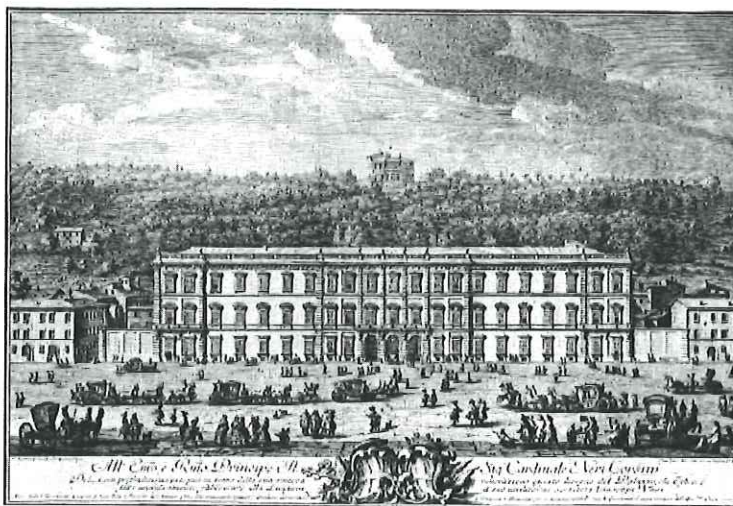
The construction of the Scala d'Acqua, also known as the Scala delle Undici Fontane—the Stair of the Eleven Fountains—began around 1741. This date is supported by a March 1741 letter that mentions that part of the gardener's cottage had to be demolished to provide an unobstructed view of the Scala d'Acqua (Tantillo: 2002).

Fuga's Scala was likely inspired by other great fountains of the time, such as Villa d'Este's "Scala dei Bollori" in Tivoli, and Villa Aldobrandini del Belvedere in Frascati (Borsellino: 1988). In addition to the influence of other great garden architecture of the time it also seems possible that Fuga was influenced by the Spanish steps which had been completed in 1725.

It is likely that Fuga incorporated or built over remnants of an earlier stair into the Scala d'Acqua.

The water source for both the Fontana dei Tritoni and the Scala was the Acqua Paola, an ancient Roman aqueduct restored by Pope Paul V in 1690 (Bongiovanni: 07-08-02). The Acqua Paola, which is located at the top of the Janiculum Hill, also provided water for the palazzo and irrigation of the gardens. The water ran through pipes from the aqueduct to the Nicchione, then through the Scala fountains to a cistern under the landing below the fountain stair. The original water output from the Nicchione was 4 liters/second; today it is only 0.6 liters/second (Bongiovanni: 07-08-02). The Scala d'Acqua fountain stair featured two jets each in five of the water basins with a single jet in the uppermost basin spouting out of a dolphin's mouth (Borsellino: 06-21-02).

Documents record that Fuga restored the Nicchione between 1743 and 1744 (Tantillo



✓ **Palazzo Corsini, Giuseppe Vasi, 1751.**

(Palazzo Corsini alla Lungara, Giovanni Belardi, 2001 p.15)

61

The Orto Botanico and the Scala d'Acqua

2002). Fuga's original plan for the Nicchione included a large fountain emptying into a seashell, but this was never realized (see image p. 65). Instead, Fuga placed a large statue from Corsini's collection known as "Cornelio Cornuto"—Cornelius the Cuckold—in the Nicchione (Tantillo: 2002). Unfortunately this statue has been removed and the Nicchione now stands empty.

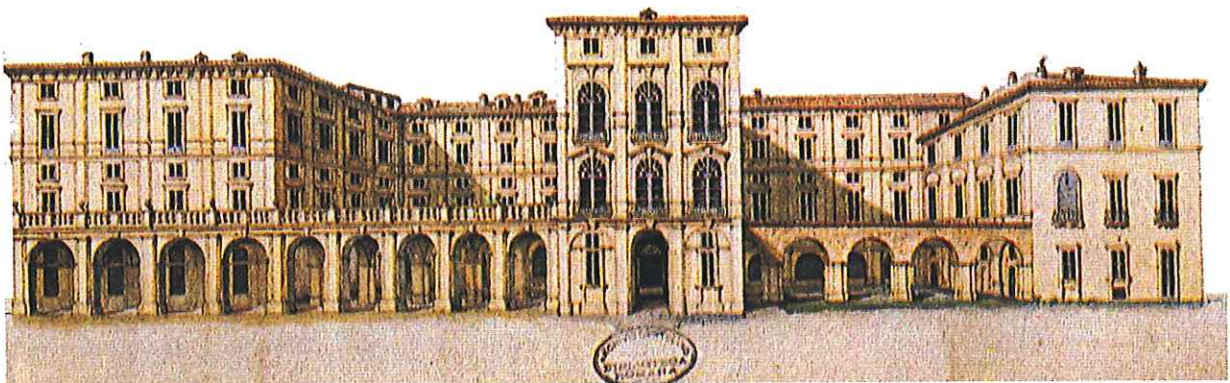
Expenditures from the Corsini archives document that the Scala was painted in 1741: the stairs in a travertine color, and the sides in a brick color. The Nicchione was painted a dark travertine color in 1744 with the walls on either side of it painted two shades of light blue (Borsellino: 06-21-02).

The Scala featured three types of vases or urns of terracotta, placed on trapezoidal bases

to create a sense of perspective (Borsellino: 06-21-02). Other architectural elements now lost but shown in a late 18th century watercolor (p. 37) include a seashell ornament located in the center of the balustrade at the top of the fountains, and a large retaining wall running to the north of the Scala.

Additionally, archaeological investigations in July 2002 uncovered partially inclined terraced floors located behind the wall of the South Terrace, which may have provided walkways to views from the top of the Scala d'Acqua.

A secret garden, located to the side of the palazzo towards Porta Settimiana, was also altered during this time period. Two new fountains were constructed: one in the center of the garden, surrounded by parterres, and a second along the Via della Lungara wall (Tantillo: 2002).

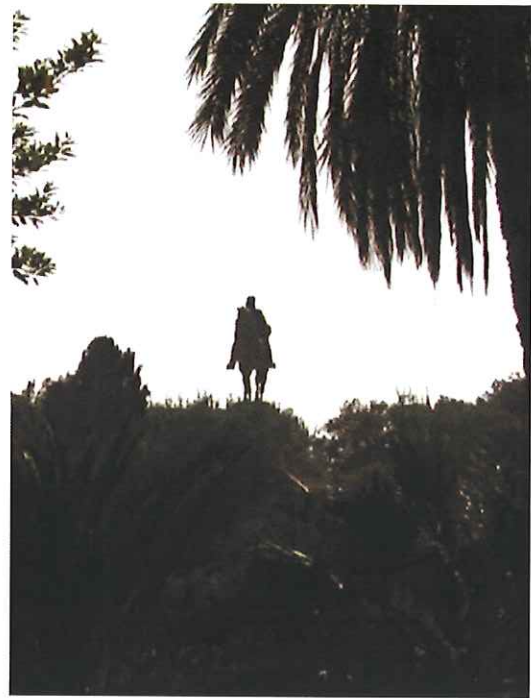


*View of the western elevation of the Palazzo Corsini, Paolo Pollastri, 1872.
(Plate-18.2 Roma e il Suo Orto Botanico)*

The Modern Era

In the past century, the site experienced its last major phase of transformation. In 1872, the Roman City Council laid out a park on top of the Janiculum Hill, incorporating the Corsini casino into the Janiculum Walk (Tantillo: 2002). In 1883, the Corsini family sold their palazzo and part of the garden to the Italian State (Tantillo: 2002). The Palazzo became the seat of the Accademia Nazionale dei Lincei, who constructed a south portico on the palazzo in 1886.

By the early 1890's, the Orto Botanico



View to the Garibaldi Statue from the entrance of the Orto Botanico.

(UPenn 2002)



Early photograph showing the Palazzo Corsini and Garden, ca. 1860. (Early Photographs Photographs 1846-1878 from Roman and Danish Collections)

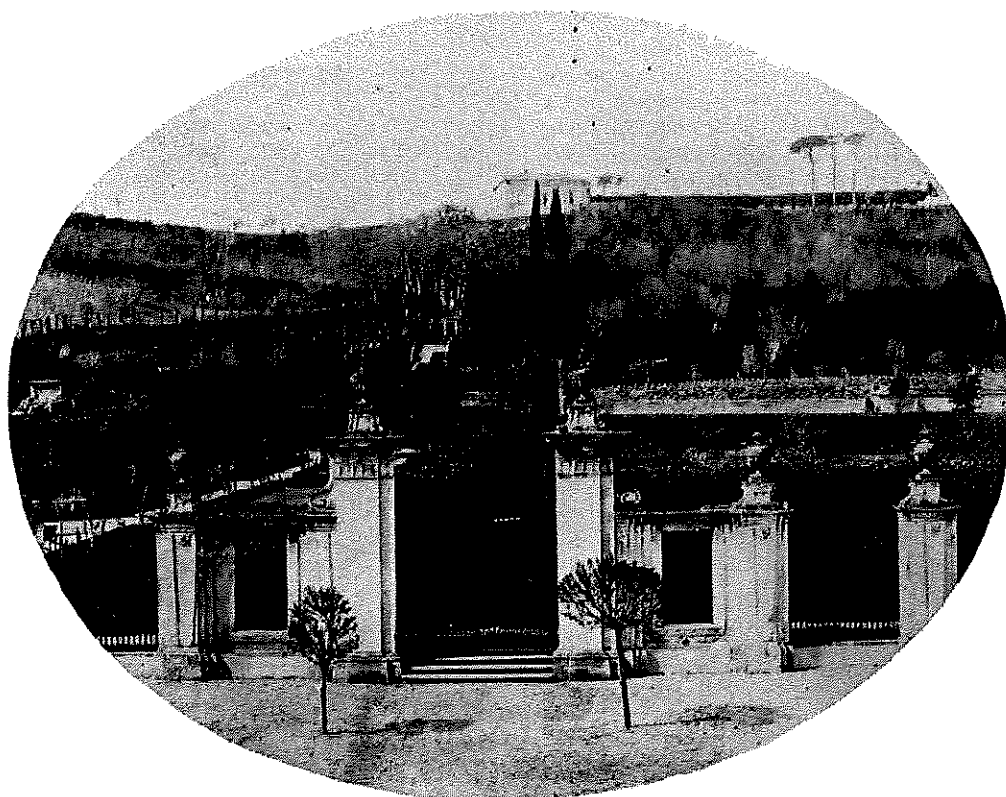
of Rome was firmly re-established in the historic Corsini gardens. The Orto was given twelve hectares of the Corsini garden, while the Roman municipality kept four hectares on top of the Janiculum Hill. In 1895, the casino was demolished to provide a site for Garibaldi's monument.

The secret garden next to the Palazzo Corsini was destroyed in 1897 when the Via Corsini was

The Orto Botanico and the Scala d'Acqua

widened. Today, the only remnant of the Secret Garden is the large magnolia tree—thought to date from Queen Christina's residency—that stands at the intersection of Via Corsini and Via della Lungara.³¹

In 1900, a fence was put up along the western border of the property, creating a formal boundary between the Orto and the Janiculum Walk. As a result, the Nicchione was separated from the Scala d'Acqua, a situation that continues to the present day.



✓ *An early photograph looking west from the Palazzo Corsini toward the Janiculum hill, ca. 1860.
(Early Photographs 1846-1878 from Roman and Danish Collections)*

ARCHITECTURE OF THE SCALA d'ACQUA



View of the stair at the time of the project. (UPenn 2002)

The Scala d'Acqua is located in the northwest corner of the Orto Botanico, oriented off-axis to the south of the central point of the current plan of the Palazzo Corsini. It rises from the base of the Janiculum Hill in a westward direction towards the Piazza Garibaldi in four sections of stairs. From the base of the staircase, three attached flights of stairs connected by landings ascend the hill; at the top is a fourth flight of stairs separated from the rest of the staircase by a stretch of cleared land. Fur-

ther west, beyond this last stair, the Nicchione stands approximately 8.5 meters high on axis with the Scala d'Acqua. For the sake of identification purposes, these sections have been classified as Stair One, Stair Two, Fountain Stair, Modern Stair, and Nicchione. In addition, two landings are identified (See plan, p.46).

A continuous balustrade borders Stair 1 and Stair Two, which are connected by a rectangular landing (Landing One). Located above Stair Two is another landing (Landing Two) that

is rectangular in shape with semi-circular wings projecting on either side to the north and south. The balustrade from Stair One and Stair Two continues around this landing and stops at the bottom of the terraces, which define the beginning of the third set of stairs, Fountain Stair). The Fountain Stair has a trapezoidal shape interrupted by cascading water basins. Flanking these basins are solid, stepped balustrades that culminate at the top of the Fountain Stair in a semi-circular shape with a rounded baluster. Located to the north and south of the Fountain Stair are two terraces rising 5.5 meters that include retaining walls for the Fountain Stair. To the north of the North Terrace extends a sloped retaining wall that possibly predates the Fuga structure. On the opposite side, another retaining wall extends perpendicularly south

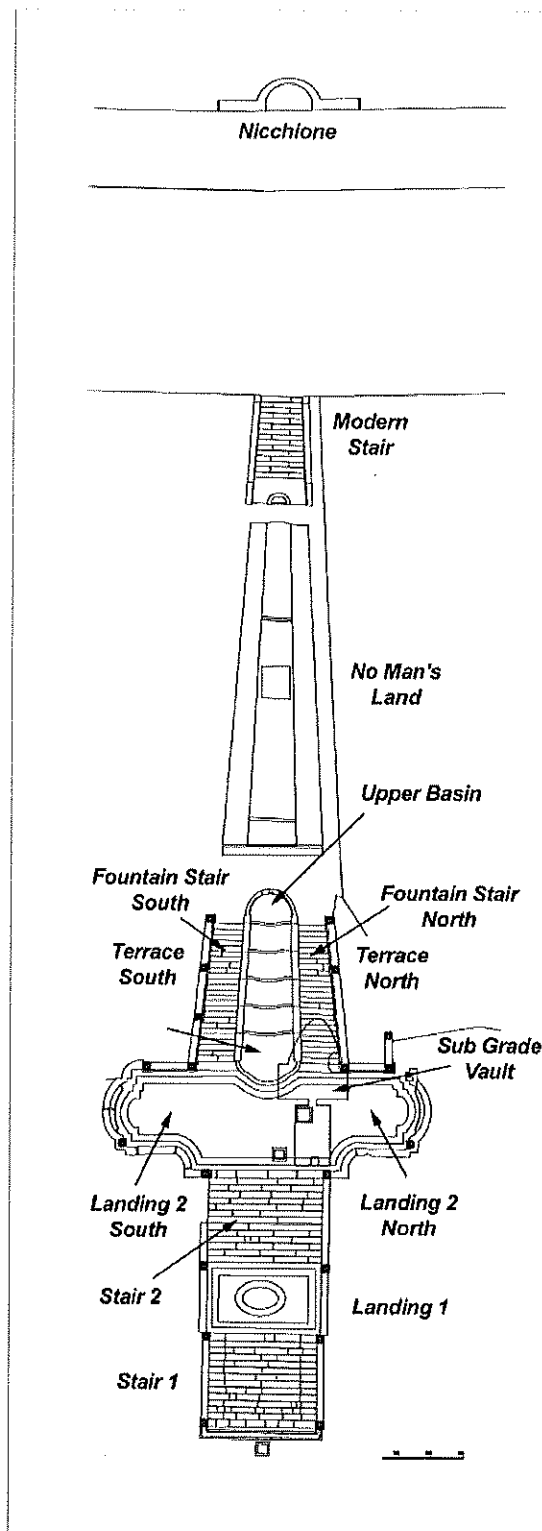
of the South Terrace. This wall appears to slope less than the northern wall, and stops at a ravine beyond a reservoir.

In between the Fountain Stair and the fourth flight of stairs (Modern Stair) is a cleared area defined by a battered retaining wall to the north running in an east/west direction. The Modern Stair is located further west of the cleared area and is defined by a solid balustrade.

In plan, these stairs appear trapezoidal in shape, echoing the Scala d'Acqua's play on perspective. An additional semi-circular balustrade surrounding a former fountain is integrated into a platform at the bottom of the Modern Stair. Beyond the Modern Stair is a brick niche (Nicchione) clad with rusticated stucco. Probably intended to serve as a focal point for the perspective view, this rounded structure is the uppermost element of the Scala d'Acqua as it stands today.



Looking southwest at the Nicchione from inside the boundary fence of the Orto Botanico. (UPenn 2002)



Plan of the Scala d'Acqua and Nicchione. (UPenn 2002)

Stair One

In plan, Stair 1 is rectangular in shape with sixteen travertine steps rising 2.36 meters in length and 5.35 meters in width. Each step is pitched 3.0 centimeters off perpendicular to the riser to allow for water run-off. The first two steps are constructed of a different material than the fourteen steps rising above them. These two steps, which are also longer than the other steps, return 90 degrees to the east of the balustrade posts. They are constructed of two different materials: basalt stone blocks for the step and travertine stone for the rounded nosings. The fourteen steps rising west above the previous two steps are made of large travertine stone blocks with a two-centimeter chamfer at the edge of the tread. These measure approximately 42 centimeters in tread and 16 centimeters in rise.

Stair 1 is defined by a balustrade on each side connecting two pairs of posts capped with decorative finials (Note: two male bust finials top the lower stair posts in an 1867 water color view, see p. 9). These travertine finials are covered urns. The posts of the stair are made up of a travertine coping and plinth. The shafts of the posts are of brick core parged with pozzolana stucco and travertine veneer on the east.

While the balustrade is flush on the exterior face, the interior face defining the stair is decorated with an inset panel. The second pair of posts is identical to the first except the posts

The Orto Botanico and the Scala d'Acqua

lack a travertine facing on the shaft because they are integrated into the balustrade. When seen in elevation, the balustrades defining the interior stair are constructed with a brick core and stucco-finished with an inset panel and a solid travertine cap. The panels, which are rectangular in shape with



*Stair One looking southeast.
(UPenn 2002)*



Stair One looking southwest. (UPenn 2002)

gradient corners, consist of two layers of pozzolana stucco—one layer serving as a raised border creating a recess. This recess has a rougher surface, while the stiles and rails of

the border have a finer, smoother texture. At the bottom of the balustrade, parallel to the travertine cap, is a base of travertine facing that is flush with the brick core. Below this, the brick is parged with stucco at the point where it meets the risers.

Some additional features of Stair 1 include block paving, a drain, and iron ties. An area projecting 89 cm in depth and 7 meters in length from step one is paved with basalt blocks

in a consistent manner with the first two steps. Within this area is a square drain that projects 1.0 meter east on center from the first step. The drain has a cast iron grill bordered with travertine stones. Two of these stones, to the north and south, have been designed with a groove to allow water to enter the drain. On stairs 6, 8, and 15, metal straps have been inserted into the travertine to repair large cracks. Addition-

Landing One

Landing 1 is paved with dark gray basalt and white marble blocks. The white marble blocks are patterned in a rectangular shape that borders a central oval. Both of these marble elements are approximately five blocks wide, totaling 43-44 cm in width.



Looking east across Stair Two onto the first landing. (UPenn 2002)

ally, a running seam is visible on the north side of the treads outlining a section of the treads that appear to be in better condition and may be replacements.

The balustrade on the south side of Landing 1 projects 24 cm to the north from the previous post of Stair 1. This asymmetry may be a function of Fuga's original design, or possibly results from displacement of the structural elements over time. Similarly, the north side bal-

ustrade projects 22 cm to the south from the previous post of Stair 1. The Landing 1 balustrade is constructed with the same material and in an almost identical pattern as the Stair 1 balustrade. However, the travertine facing on the bottom edge of the Landing 1 balustrade tapers in the eastern direction towards Stair 1. This is a significant feature because it contributes to the perspectival effect of the entire Scala d'Acqua as the structure begins to reflect the rise in elevation. This is further accentuated by the continuation of both posts on Landing 1 onto the flat surface of the balustrade, giving the form of the post greater depth.



Looking east from the terrace across Stair Two. (UPenn 2002)

Stair Two

The second set of stairs contains fourteen steps. These stairs are consistent with the first set of stairs, measuring 42 cm in tread and 16 cm in rise with a 2-cm chamfered edge. The construction technique is also similar to Stair 1 in that each step is pitched 3 cm out of level. The balustrade continues in this section and is consistent in pattern and materials with the Stair 1 balustrade. Two major plane trees whose roots have begun to penetrate the structure of the steps threaten this section of the Scala d'Acqua. As a result, a section of the south balustrade

Portion of Stair Two which was removed to allow for the growth of an historic plane tree. (UPenn 2002)



has been removed. At the edge of the existing portion is an unusual joint in the masonry that suggests an alteration of the original design. The presence of this alteration suggests that the tree roots have been an issue in the past.

Looking southeast at the wall of the Landing Two. (UPenn 2002)



looking at the lower scalloped-shaped basin. (UPenn 2002)

View of the Landing Two as it connects with the North Terrace and Fountain Stair. (UPenn 2002)

Landing Two

Landing 2 is designed as a rectangle with two projecting semi-circular wings. Two terraces on the north and south side define the western boundary. A scalloped shaped travertine water basin projects into the center of the

western boundary at the beginning of the Fountain Stair.

The landing is paved with dark gray basalt and white marble blocks. The marble blocks, set in a border pattern, are placed in rows of six blocks measuring approximately 41-43 cm in total width. The balustrade, continuing from Stair 2, follows the polygonal pattern of Landing

The Orto Botanico and the Scala d'Acqua

2. It is similarly constructed both in materials and design to the balustrades of the first two sets of stairs, but has five posts instead of four. An additional difference is that the inset decorative panels are located only on the part of the bal-

this space was intended for a path that leads to the north of the stair.

Significant features on Landing 2 include four distinct manholes which pierce the landing. The first manhole is located at the base of the



A manhole cover located in the second landing which provides access to the sub-grade vault. (UPenn 2002)

ustrade running north and south on each side of the landing. These panels are framed by two posts with travertine finials similar to those on the lower stairs. The section of balustrade running east and west is semi-circular in shape. In place of a decorative panel, a curved travertine bench supported by three profiled travertine legs projects approximately 37.5-cm from the wall. These sections are framed with posts and finials as previously described. On the south side, where the balustrade meets the retaining wall, there is a niche connecting the wall to the Terrace in a jigsaw fashion. However, on the north side, the balustrade does not intersect with the Terrace or the retaining wall. It is possible that

north Fountain Stair. It consists of three travertine pieces framing a removable travertine stone with an oval opening most likely used as a grip. The second manhole, larger than the first described, consists of a basalt frame and a removable basalt centerpiece with an iron hook embedded in the center. This manhole is located in the center of the landing near the lowest basin of the fountain. The third manhole is a distinctly older drain with a border of three travertine pieces and a larger travertine base. The centerpiece is removable and contains a raised center portion that possibly once featured an iron ring. It is located at the east edge of the landing in line with the center of Stair Two. Four diagonal

The Terraces

When seen in elevation, both the north and South Terrace walls are characteristically distinct from what has been previously described. The terraces have a brick core parged with pozzolana stucco.



View looking southwest at the South Terrace. Detail shows the sgraffito within the rondelle at the east end. (UPenn 2002)



oval holes pierce the centerpiece of the drain in a square shape around the raised section. Additionally, two circular holes pierce this centerpiece to the north and south of the raised section. The fourth manhole, located near the northeast post above Stair Two, is surrounded by scored asphalt resembling basalt blocks, and features a removable iron cover with two holes.

Decorative finishes for these walls include travertine facing and lime rusticated panels textured with embedded coral limestone, and a central sgraffito rondelle on the eastern elevation.

Each terrace is embellished with a balustrade similar to the one described in previous sections. On the North Terrace, the balustrade forms a "seven" shape, while the South Terrace



The Fountain Stair walls of the North and South Terraces. (UPenn 2002)

balustrade forms an L-shape. The north side balustrade is flush on the interior of the terrace and paneled on the outward face. A winding stone stair, present only on the western side and added after original construction, leads to the interior of the terrace. This indicates that the two terraces are not level possibly due to the hilly terrain. This asymmetry could also be due to the integration of a previous structure into the present stair. Six posts interrupt the balustrade on the north side while only five posts interrupt the balustrade on the south side. Of the eleven finials that once adorned these posts, only ten bases remain with one missing from the north side. It appears that these finial bases have a rhomboid shape, unlike the square bases of the finials on the balustrades below. This further suggests that Fuga intended to emphasize the perspective in his design of the stair.

The east elevations of the terraces are framed with pilasters constructed of travertine caps and bases, and shafts of brick stuccoed with two layers of pozzolana plaster. These frame a rusticated panel textured with small coral limestone rubble. Centered within this panel is an oval rondelle frame with a smooth stucco border around a red and white sgraffito floral decoration. Fragments of this sgraffito panel remain extant on the north Terrace only.

The north and south elevations outline the core of the Fountain Stair. Triangular in shape, these elevations emphasize the stair's incline. The travertine pieces of the base and the capitals of the pilasters extend from the bottom of the stair until they meet at a point at the top, creating a triangular spandrel. The inset panel is finished with coral limestone rubble set in pozzolana stucco.

Water Reservoirs

Aside from the main fountain, several other water features are incorporated into the Scala d'Acqua. One of these features is a small pond located to the north of the bottom of Stair 1 that is potentially part of the fountain system.

A second feature is a concrete reservoir located to the south of the South Wing of Landing Two. Rectangular in shape, it projects to the east of the South Retaining Wall, and was built into the hill below the grade of Landing Two. The interior of the reservoir contains fountain pedestals that might have served as vases for hydroponic plants. A portion of the South Retaining Wall projects to the east in approximately the same area as the reservoir. It is possible that this wall fragment, made of stalactitic rock, dates to the earlier pre-Fuga construction and was used as a backdrop for a grotto, suggesting that the reservoir was used as a decorative water feature at one time.

Finally, a large cistern is located beneath

Landing Two. This cistern is connected to a water source on the top of the Janiculum Hill that in turn is fed by the Acqua Paola. This water flows from the Nicchione, through the fountains in the Fountain Stair, and collects in the cistern. This water flow may also have originally been the source for the Fontana dei Tritoni located below the stair at the base of the hill.



Behind the north railing wall of Stair One is a small pool which could be part of the complete stair water system. (UPenn 2002)



A reservoir located to the south of the second landing. (UPenn 2002)



The stalactitic rock wall from an earlier phase of construction. (UPenn 2002)

*Three views of the southern retaining wall showing the unique construction materials that support the possibility of an earlier pre-Fuga construction.
(UPenn 2002)*



The South Retaining Wall

Running perpendicular to the South Terrace is a retaining wall made of tufo stone. This wall slopes slightly to the south and stops approximately 3.0 meters before a ravine. A split rail fence has been added to the top of this wall for safety. According to archeological investigations, this sixteenth or seventeenth century wall may have been finished at one point. Today, due to deterioration, many Roman brick and travertine patches of the core construction have been exposed. Also, archeological evidence suggests that the Scala d'Acqua was inserted into this retaining wall by removing a

portion of a pre-existing wall. This could account for the difference of material between these walls and the Scala d'Acqua.

The North Retaining Wall

A similar retaining wall projects approximately 7.5 meters to the north from the north Terrace. It is similar in construction to the South Retaining Wall, but retains a steeper slope descending from the south to the north.



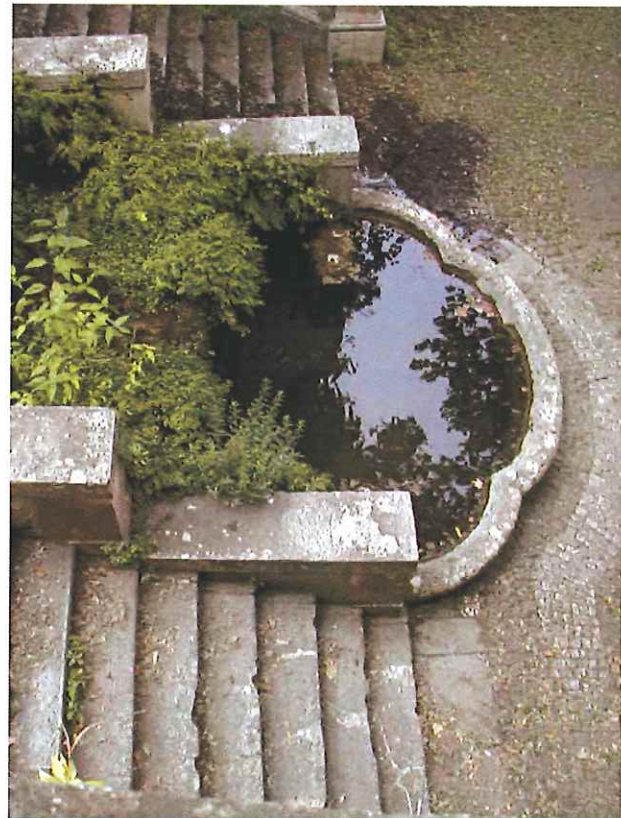
The north retaining wall partially hidden beneath heavy overgrowth. (UPenn 2002)

The lower basin of the Fountain Stairs. (UPenn 2002)

The Fountain Stair

The Fountain Stair exhibits a complicated integration of perspectival design culminating in the most visually recognizable component of the Scala d'Acqua. It is shaped in a series of three trapezoids tapering from east to west, and consists of two sets of stairs flanking a six-tier fountain. The area is bounded by the interior elevations of the terraces to the north and south, Landing Two to the east, and the cleared area to the west.

Each set of stairs consists of 26 travertine steps complete with rounded nosing over a fillet. The original form for each tread



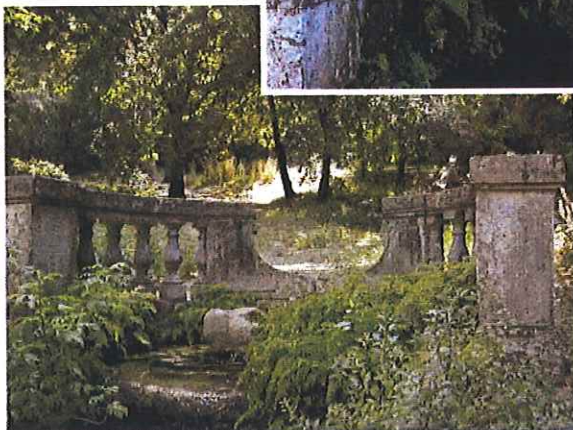
The Orto Botanico and the Scala d'Acqua

included a groove at the edge closest to the fountain, designed to allow excess water to run off the stair into a drain. Some steps on the north and south Fountain Stairs have been replaced, most likely due to structural failure, leakage, or other deterioration.

The fountain itself is comprised of six scalloped water basins that increase in size from top to bottom. These basins are framed by a

stepped retaining wall; each step of the wall flanks one of the basins. This retaining wall is constructed with a brick core and parged with pozzolana stucco. Each step has a travertine block on its eastern face as well as a travertine coping. At the western end, the stepped wall converges into a semi-circular balustrade with a symmetrical opening in the center. It is complete with two end-posts similar to the posts previously

✓ *The Fountain Stair as it appeared in 1998. (Palazzi of Rome: Konemann, 1998)*



The top of the Fountain Stair showing the upper basin with balustrade. (UPenn 2002)

described, with the exception that these posts are constructed of solid travertine. The rest of the balustrade is not as solid as that below it, but is constructed with five turned and two engaged travertine balusters and solid upper and lower cap rails. The opening is defined by curved travertine brackets that frame a central waterspout to the east and the cleared area leading to the Nic-

chione to the west. A pair of metal rods embedded into step three of the stepped retaining wall on both sides of the water basins indicate that a decorative piece might have been attached to the Fountain Stair at one point. Also, metal straps have been added to some treads on the south Fountain Stair as well as on step five of the retaining wall to prevent further cracking.

The Subgrade Vault and Water System

Historically, one of the most striking elements of the Scala D'Acqua was the series of *spruzzi*, or water jets; eleven in all, with a primary nozzle existing in the top basin, and two nozzles each in the five lower basins. For this reason the stair became known as La Scala delle Undici Fontane, or "The Stair of the Eleven Fountains".



The balustrade of the upper fountain surrounding the central water jet. (UPenn 2002)



The north and south steps which border each side of the central fountain. (UPenn 2002)

The Orto Botanico and the Scala d'Acqua

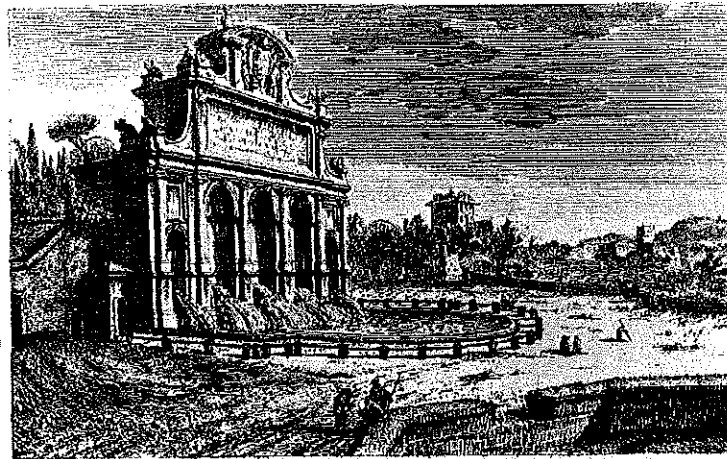
Historical prints and photographs indicate that at one time these water jets reached heights of three to four meters.

The source of the water for the Scala d'Acqua is the Acqua Paola, an ancient Roman aqueduct formerly known as Trajan's Aqueduct. It was restored in 1612 along with the construction of the Fontanone dell' Acqua Paola on the top of the Janiculum Hill. Commissioned by Pope Paul V Borghese, the Fontanone was the first major fountain on the west bank of the Tiber and it immediately became a significant element of the urban landscape. In addition to its importance for providing water for drinking and washing, its impressive architectural scale, cascading water and location meant that it became a focal point as well as a vantage point for the surrounding area. (Heilmann: 1970). During the Renais-

sance, Rome began to revive its sophisticated ancient water system, while at the same time reveling in the display of water throughout the city and its gardens. Italian gardens during the Renaissance and Baroque period incorporated moving water as a prominent design feature. The Corsini Garden was no exception.

The topographic relationship between the Acqua Paola and the Scala d'Acqua is what allowed for the incorporation of the water jets that were once visible. Since the water system relies on gravity to distribute the water, the location of the Acqua Paola on the top of the Janiculum hill allows water to flow downhill to the nearby Orto helping to create the spectacle of the Scala's fountains.

An examination of the water supply



Fontana dell'acqua Paola sul Monte Gianicolo

Fontana dell'Acqua Paola. (Piranesi, The Complete etchings Plate 49)

The Orto Botanico and the Scala d'Acqua

system at the Orto indicated that the water pressure at the Scala d'Acqua, as designed, was considerably stronger than it is today. After water arrives from the Acqua Paola it is diverted into two channels at a point somewhere around the Nicchione. Prior to this junction the water flow was measured at 3.6 liters/second. One channel continues on to the Scala and then to a collection basin located beneath the stair; the flow of this channel is rated at 0.6 liters/second. The second channel, believed to have been added later, directs the remaining water at 3.0 liters/second to another tank to the southeast. Besides the diverted water flow, a number of factors could also be contributing to the decline in water pressure. Unchecked biological growth, such as moss and algae, has inhibited the amount of water that reaches the stairs. Leaks and cracks

in the water pipes may also be an additional cause of the decrease in water flow to the fountain. Today, the lack of moving water has led to a number of problems at the site. The stagnant water has attracted a wide variety of insects. It has also produced an environment where algae and water plants have overrun the fountain.

Investigations of the stair's sub-grade water basin were also conducted. Knowledge of the size and condition of the basin was needed to determine the feasibility of reconfiguring the water flow along the primary channel. The basin was found to be a double-chambered vault. The first chamber is about 1.5 meters tall and 2 meters square. The second chamber is about twice as tall and wide as the first chamber, and is connected to the first through a small opening measuring about one meter high and 30 centi-

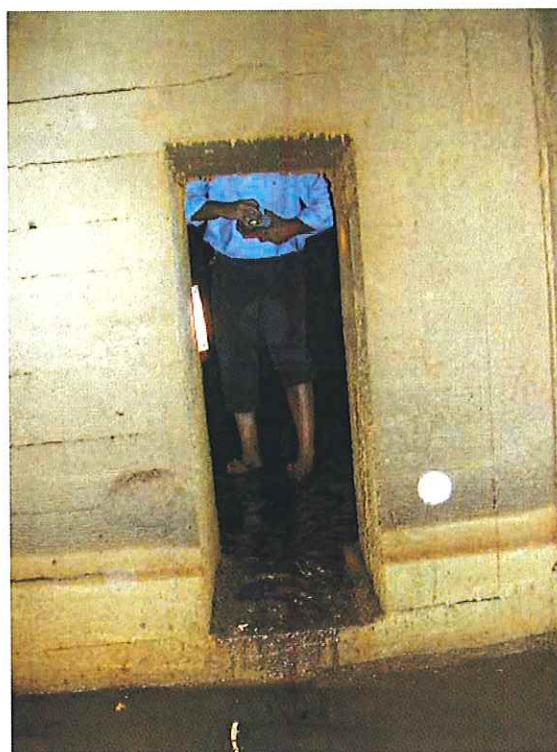
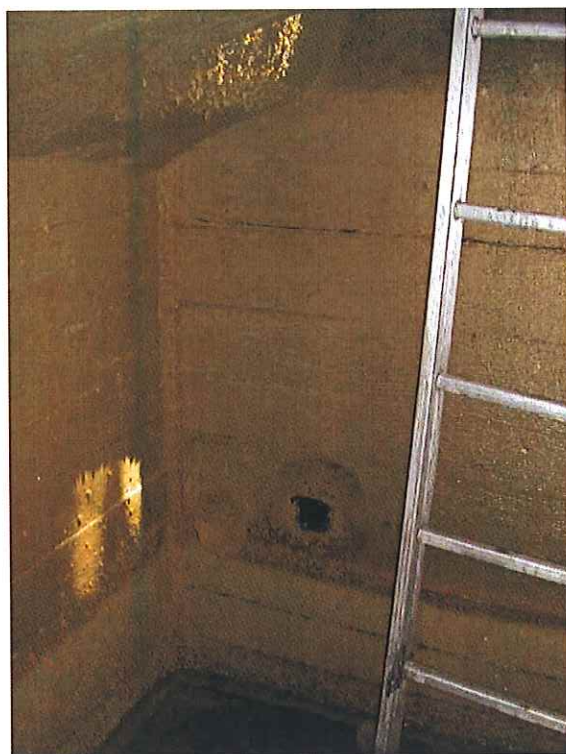


Though not equal to its 18th century appearance, the image on the left dating from 1984 shows a greater water flow when compared with the image on the right taken in 2002. Also note the loss of the path in the background.
(Left: Roma e il suo Orto Botanico, 1984. Right: UPenn 2002)

meters wide. The basin had been drained prior to the investigation, but a residual water line seemed to indicate that the water level is usually about a 30 to 40 centimeters deep in the chamber. There were a number of minor conditions observed in both chambers, including calcium deposits and biological growth.

CLEARED AREA

The trapezoidal section above the Fountain Stair (the "cleared area") is defined by a retaining wall to the north, a fourth set of stairs to the west, and a winding path to the south. The battered retaining wall, which runs east-west, is capped with a travertine block and heavily covered with ivy at the western end. Originally parged with pozzolana stucco, this wall has



The double chambered vault of the sub-grade water basin. This chamber is located beneath Landing Two and is accessed through a manhole cover. (UPenn 2002)



Looking east from the Modern Stair towards the top of the fountain stair. (UPenn 2002)



The drain in the center of the cleared area which is presently partially excavated. (UPenn 2002)

begun to deteriorate due to erosion, exposing the wall's coursed stone core.

The middle part of the cleared area has become overgrown to the extent where certain points are impassable. The remains of some dark gray basalt blocks suggest that at least the northern and southern sides of this area were once paved as below. It appears to the naked eye that the cleared area concaves towards the center, but it is unknown if this is natural erosion or subsidence from a missing element of the Scala d'Acqua. Currently, there is a drain being excavated in the center of the site, which is marked by wooden stakes.

The Modern Stair

The fourth set of stairs is located to the west of the cleared area in between the Fountain Stair and the Nicchione. It rises 7.3 meters and slightly tapers from east to west. The Modern Stair contains sixteen steps with a semi-circular fountain balustrade at the eastern end. Another solid balustrade flanks the entire stair in a stepped manner with a step at the platform,

A view from the top of the Modern Stair looking east across the clear area. (UPenn 2002)





The Modern Stair provides a connection between the Fountain Stair and the Nicchione located above. Its exact construction date is unknown. (UPenn 2002)

a long rise, then another step at the top of the stair. It is constructed with a brick core that is parged with stucco and a slightly overhanging travertine coping with fillet.

This stair, like the upper elements of the entire structure, is trapezoidal in shape but retains a different character than the other sets of stairs previously described. The lines and edges of the steps are more regular, suggesting that they may have been machine-cut as opposed to handcrafted. While the Modern Stair appears to be constructed in a similar manner to the other sets of stairs, it has a regular chamfered nosing

measuring 1.3 cm instead of the 3.0 cm noted in the previous sections. It is unclear if this set of stairs is a replacement of a previous structure or an added component.

The Nicchione

The Nicchione is located outside the present boundary of the Orto Botanico, but is perhaps the most significant architectural element in the Scala d'Acqua landscape. It is the highest element of the stair but is currently blocked from view by an ivy-covered iron gate, barbed wire, a large tree, and thick vegetation.

Access to the Nicchione cannot be obtained by visitors to the Orto, but only by the public on the Janiculum Walk. For this project, access was granted by the city through the Orto's locked gate.

Through the gate, the dirt pathway leading to the Nicchione is littered with debris and overgrown vegetation. The path approaches the Nicchione from the north and is situated west of

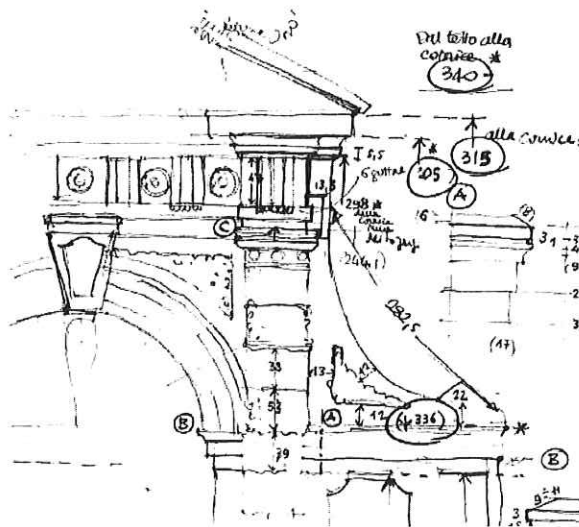


A view looking north west from the path which separates the Modern Stair from the Nicchione. The fence which breaks the continuity of the Scala d'Acqua is clearly evident in front of the Nicchione. (UPenn 2002)

The Orto Botanico and the Scala d'Acqua

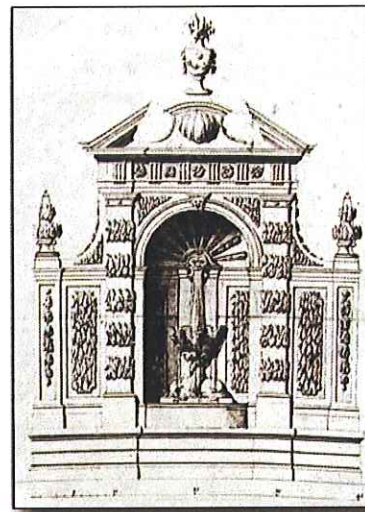
the uppermost stairway, with the front elevation of the Nicchione facing towards the Orto. Thick forested area surrounds the Nicchione on the north, south, and west elevations.

The façade of the Nicchione is divided into three sections. Both the northern and southern portions are double panels of flat and textured, rusticated plaster with embedded coral limestone over a brick construction. Both por-



Student work from the survey of the Nicchione.
(UPenn 2002)

tions are symmetrical by design, but exist in an asymmetrical state due to the immense erosion that has occurred. The southern section has significant stucco loss, which has exposed the brick substructure. The two sections are separated by slightly raised pilasters and framed panels. At either end of the Nicchione are rough-cut stone retaining walls, which hold back the sloping grade and thick vegetation. The northern retaining wall



✓ *Fuga's design for the Nicchione, 1743.*
(E. Kleven, *Ferdinando Fuga e l'Architettura Romana dell' Settecento* p.30)

lies close to the Nicchione, creating a natural stairway rising up behind the structure. It is possible that at one time both retaining walls held stairways leading up the Janiculum Hill.

The middle portion of the structure is the Nicchione proper, a large, semi-circular, apsidal niche surmounted by a broken pediment. The entire interior, particularly the curved shell ceiling of the apse, is predominately covered by carbon, most likely due to a fire that occurred inside.

The central portion of the broken pediment holds a seashell relief framed by textured stucco. Atop this central portion remains a broken base that possibly may have held a decorative urn or sculptural element.

The interior of the Nicchione encom-

passes an antique marble pedestal that once held the statue of Cornelio Cornuto (Cornelius the Cuckold). The marble pedestal is rectangular in shape and has a large framed panel with an inscription reading "Cornelius C F Gal Cornutus Trib Milit." Surrounding the inscription is a carved vine-like frame relief. The front elevation of the pedestal has been defaced with black spray-paint graffiti, which has a faded appearance.

The rear elevation, which faces the west along a sloping grade, is covered with smooth undecorated stucco. Two metal doors on the southern part of the rear façade enclose a cabinet that contains a water regulating apparatus.



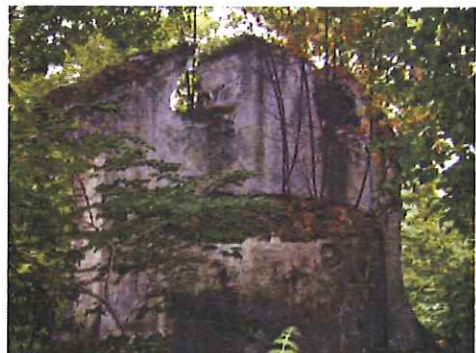
a.



b.



c.



d.

Detail images of the Nicchione. (UPenn 2002)

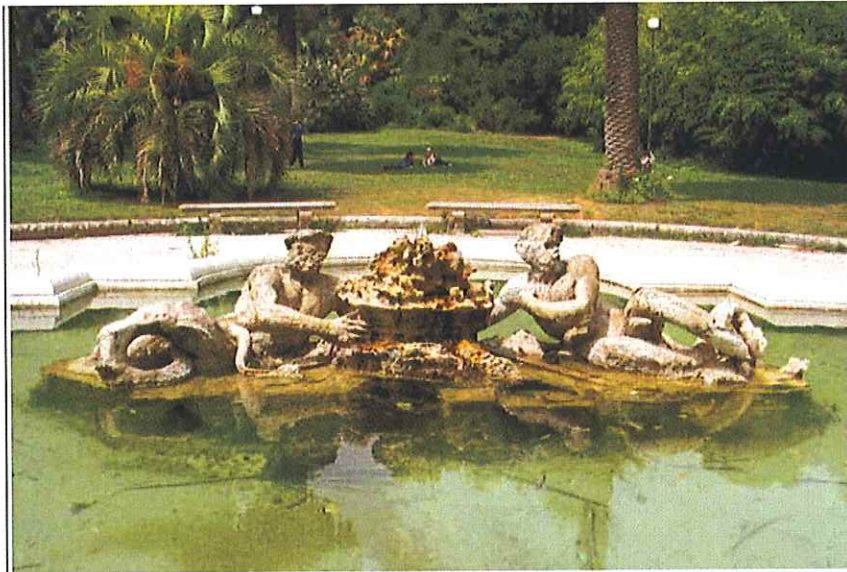
a) Pediment shelf relief

b) Rusticated pilaster

c) Marble Statue base, possibly antique Roman

d) Rear wall

LANDSCAPE ANALYSIS: THE ORTO BOTANICO



The Fountain of the Tritons. (UPenn 2002)

Analysis of the Orto Botanico was conducted using a multi-phase approach based on a range of given variables with the intended goal of determining the site's Strengths, Weaknesses, Opportunities, and Threats. This approach (known as a S.W.O.T. analysis) provides a comprehensive set of values which allows for a better understanding of the intended fundamentals of intervention on the site. The landscape analysis of the Orto Botanico began with gathering mappable information that could be used to identify patterns such as use, deterioration and overgrowth. The result of this initial phase was a series of

maps that provide an overview, which allows for a visual interpretation of the existing conditions and their relationships with the entire site at one time. Additionally, a set of existing conditions was identified and defined using images to help determine their positive or negative contribution to the site. From this gathered information a S.W.O.T. analysis was executed. This broad survey of the conditions at the Orto Botanico was an important step in gaining a more comprehensive understanding of the landscape.

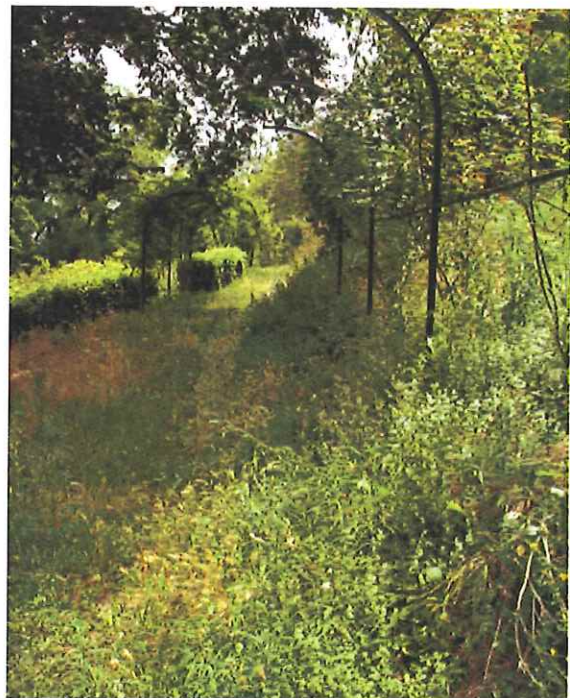
Mapping

The landscape team's initial approach consisted of a quantitative survey of critical variables that help define the site. The four variables listed below were chosen based on a consideration of the Orto as a place for visitors to recreate as well as a place for education and research.

1. Visitor Access
2. Botanical Research
3. Exhibit Type
4. Plant Density



An example of one of the many broken benches throughout the site. (UPenn 2002)



Different types of pathways add visual diversity to the site. (UPenn 2002)

1. Visitor Access

Defining the Orto Botanico's function is a complex task. The garden serves both the public and scientific communities, making it difficult to find a balance between La Sapienza's botanical research and visitors' expectations of a fulfilling recreational and educational experience. Despite the inherent difficulties involved in classifying "use," it is extremely important to consider the sometimes conflicting nature of the Orto Botanico's primary purposes. The ability to optimize the garden's potential is vital with regard to its long-term survival and development.

An examination of the structure of the existing circulation system helps in understand-

ing people's impetus to experience the garden. An investigation of both barriers and invitations to access each path helps create a stratification system of qualities related to access to the Orto.

The paths within the Orto can be defined as either primary or secondary. A primary path is typically made of hard surface materials, such as concrete or travertine. However, some paths near the entrance are made of gravel and are similar to the other primary paths in use and appearance. In general, these wide paths have identifiable entrances and boundaries.

Secondary paths generally consist of dirt, grass, stepped stones, and/or gravel. As a network, they create alternative routes between primary paths. Many serve the purpose of weaving through smaller, thematic gardens. Predom-



Looking south along the path which divides the Modern Stair from the Nicchione. (UPenn 2002)

inately, secondary paths experience a higher intensity of vegetation overgrowth, greater narrowness of pathway, undefined borders, and unfinished surfaces.

The stratification scheme for access is described below, using the classification of paths and circulation as a starting point for analysis. For the purpose of this survey, key destinations within the Orto were identified as defined gardens, unique landscapes, and historic remnants.



An example of typical overgrowth resulting in blocked paths. (UPenn 2002)

GOOD:

- Leads to destination points
- Clear entrance points
- Level surface for ease of navigation
- Maintained vegetation
- Paths with potential for high pedestrian capacity
- Close proximity to entrance
- Perception of safety
- Ability to use benches

ACCEPTABLE:

- Comprised of an even mix of good and poor functional conditions

POOR:

- Blocked paths
- Excessive overgrowth
- Very steep slopes
- Perceptions of hazards
- Inability to use benches
- Infestation of insects





a.



b.



c.



d.

The images on this page represent examples of some of the more severe conditions. a) Stagnant water is unpleasant and also a haven for insects. b) Slippery paths caused by overgrowth can be a pedestrian hazard. c) Broken benches eliminate a visitor's option to sit and relax. d) Blocked paths reduce circulation and pose a danger to visitors.

2. Botanical Research

One primary mission of the Orto Botanico is to cultivate and display a diverse collection of plant species. The ultimate goal is to offer a contiguous space for a variety of plant collections. While the primary function of the Orto is scientific research, recreation is also a significant element. This dichotomy is a challenge for the Orto's management. Recognizing the strain that visitors can place on the vegetation, it is necessary to study the overall health of the garden, specifically the botanical conditions. It should be noted that while the Orto embraces spontaneous growth, monitoring the garden for neglect is still necessary.

GOOD:

- Healthy plant conditions that support growth
- Clear layout of plants
- Minimal leaf coverage
- Minimal invasion of weeds

ACCEPTABLE:

- Dying plants
- Moderate ground leaf coverage
- Moderate amount of weeds

POOR:

- Dead vegetation that remains planted
- Heavy ground leaf coverage
- Excessive overgrowth of weeds overshadow plant collections.



The Orto Botanico Rome, Italy

Botanical Condition

A primary mission of the Orto Botanico is to cultivate and display a diverse collection of plant species. Recognizing the strain from visitors, a map of botanical conditions was created to determine the health of the site.



Botanical Condition

- Poor
- Good
- Fair

The Water Stair

- Buildings
- Water Features
- Paths

Graduate Program in Historic Preservation
University of Pennsylvania
University of Rome, La Sapienza
ICCROM



100 0 100 200 300 Meters

3. Exhibit Type

After an initial study of the Orto Botanico, it became obvious that the garden is juggling various roles that often work against each other. To better understand these cross-purposes, it helps to visualize the Orto as a “living museum.” Various exhibits, or thematic gardens, exist together and offer a diverse visit, but each exhibit also has an element of isolation. For example, a visitor can “escape” to the Fern Garden and ignore all the other areas. Isolation, however, is not the only option. Field studies during open hours indicated visitors often settled into the Orto to socialize, paying little attention to the formal didactic value of the place.

La Sapienza administers the Orto Botanico as a research institution whose scientific objectives sometimes compete with historical landscape design and recreation. It is these three categories—recreation, scientific research, and historical and formal design—that formed the classification system for the mapping. While it is difficult to completely discern which areas are only affiliated with one aspect, the decision for classification rests on the judgment of which type is most apparent or dominant.

HISTORICAL-FORMAL DESIGN:

- Planned vegetation and architectural design aimed towards visual enjoyment.

SCIENTIFIC RESEARCH:

- Areas that suit data collection in the natural growth pattern, where growth is not strictly manicured.

RECREATION:

- Areas where people feel comfortable to socialize, demonstrating little regard for plant exhibits or the natural appearance.

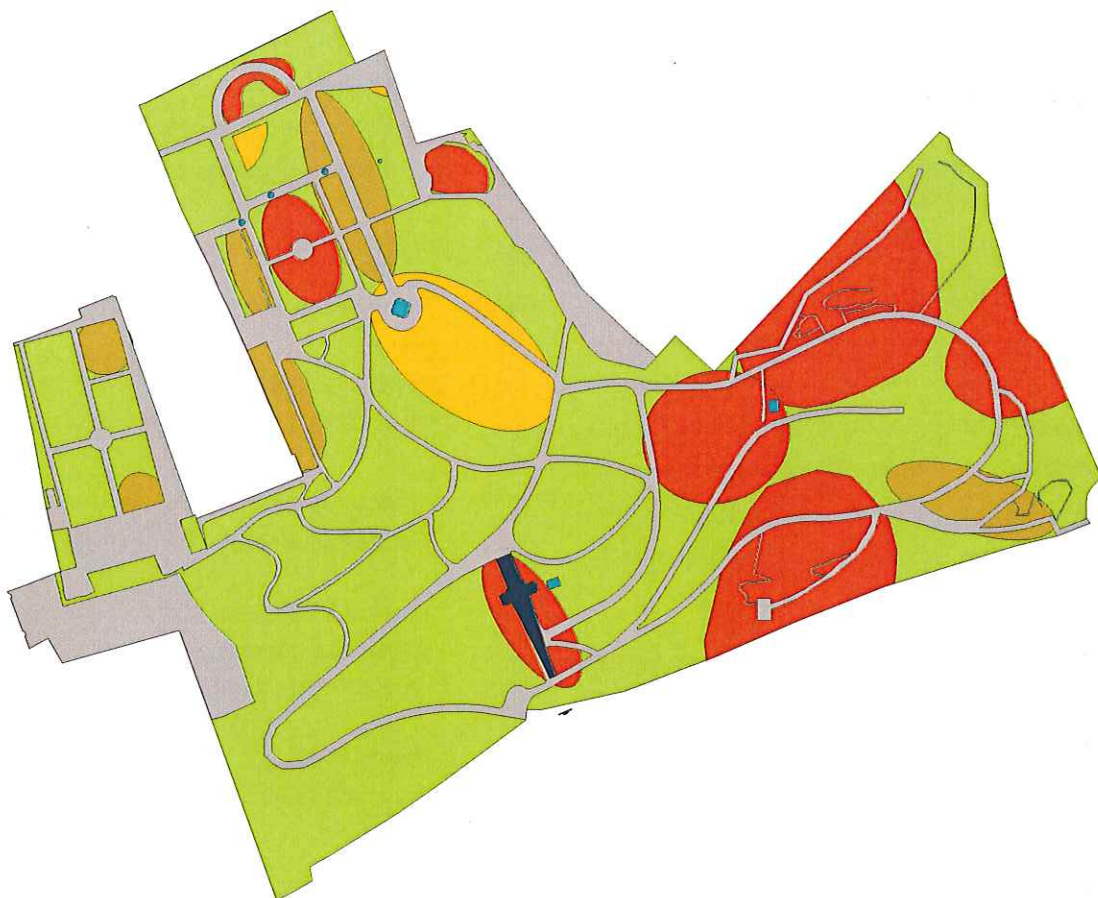


The Orto Botanico Rome, Italy

Exhibit Type

Various exhibits, or thematic gardens, exist together and offer a diverse visit. La Sapienza administers the Orto Botanico as a research institution whose scientific objectives sometimes compete with historical landscape design and recreation. Three categories consisting of: recreation scientific research, and historical or formal design form the classification system for this mapping.

- Exhibit Type**
- Formal / Historical
 - Recreational
 - Scientific
- Garden Boundary**
- The Water Stair
 - Water Features
 - Paths



100 0 100 200 300 Meters



4. Plant Density

The extent of the vegetation in the Orto Botanico is various depending on plant species and location. While some plants are cultivated in a controlled environment, others are left to grow naturally.

A six-tiered classification of levels of plant density was developed to map and analyze the Orto Botanico. This process produced an alternative to a general aerial map, which could not reach the level of detail desired.

In general, dense vegetation follows the perimeter, obscuring boundary walls and creating a sense of privacy. There are only isolated patches of heavy dense vegetation in the interior of the garden; generally these consist of a hedge or a small grove of trees. The palm promenade and the bamboo garden are the only major intentional landscape features that create visual and physical barriers.



This heavy vegetation located along the fence which divides the Scala into two parts only helps to emphasize this division. (UPenn 2002)

Throughout the top or western portion of the Orto Botanico, slightly less dense vegetation covers the steep slope of the Janiculum Hill. The paths in this area are characterized by a continuous tree canopy. The undergrowth carpeting the forested region does not encourage visitors to leave the main path, but it is possible to see through the forest. On the north side, several areas of forest are thinning due to fallen trees, and smaller plants, such as acanthus, covers the ground. The dense area to the south is relieved by the open, organized spaces of the Japanese, Rock, Iris, and Rose gardens. However, the Bamboo Forest and Fern Garden are incorporated into the existing, dense vegetation.

Spatial classification according to plant density

1-OPEN SPACE:

All open space with no obstruction.

2-MINIMAL VEGETATION:

Open spaces with minimal obstruction by plants.

3-PENETRABLE:

Fully penetrable forest, easily traversed.

4-PARTIALLY OBSTRUCTED:

Partially obstructed forest with open sight lines, difficult to traverse.

5-IMPENETRABLE:

Fully obstructed forest with dense vegetation creating a visual and physical barrier.

The Orto Botanico and the Scala d'Acqua

At the base of the Janiculum Hill, vegetation gradually becomes thinner and planted areas become more organized. Lawns cover the majority of the region, ranging from wide, open areas to thicker patches planted with medium-sized trees and bushes. Even in the thickest sections, the grass allows easy accessibility and encourages exploration. However, plantings often obscure sight lines. Open spaces are small, and usually surround paths. Bordering the western section, the forest is easily traversable. This portion is only partially protected by tree canopy.

The flat portion of the garden, closest to the Palazzo Corsini, covers a broad range of density. It is primarily an open, organized space with several small concentrations of vary-

ing types of vegetation. Lawns, planted beds, and orchard-like areas characterize the majority of this section. Open lawns are rare, and again usually only border the path, but there are several lawns with a few trees. Beds and specific plantings allow for visual continuity but create a physical barrier. The areas containing small trees are not as easily accessible to visitors because they create a visual barrier. The palm promenade forms the densest concentration of trees, and is the only section that impedes sight lines as well as foot traffic. Only small patches are classified as easily traversable forest, and these are characterized by a continuous tree canopy. Greenhouses located in the vicinity also contribute to density, and create visual and physical barriers.



A view from the base of the stairs looking southeast towards the entrance of the Orto (UPenn 2002)

The Orto Botanico Rome, Italy

Density of Vegetation

The density of vegetation in the Orto Botanico is various depending on plant species and location. A five-tiered classification system of plant density was designed based on a person's ability to access each section of the garden.

- Density of Vegetation**
- Impenetrable
 - Partially Obstructed
 - Penetrable
 - Minimal Vegetation
 - Open Space
- The Water Stair**
- Buildings
 - Water Features
 - Paths



100 0 100 200 300 Meters

Characterizing Conditions

The Orto displays a number of conditions which as a consequence affect the public's overall impression of the landscape. These conditions may or may not contribute negatively to a visitor's experience of the Orto Botanico, however each condition has the potential for problems both in terms of aesthetic concerns as well as health and safety aspects. A number of conditions that were found during the survey not only detract from the facility as a recreational experience, but also undermine the Orto Botanico's stated goals as a scientific and educational institution.



An example of a dead tree. Elements such as this one, although part of a natural process can be dangerous to visitors.
(UPenn 2002)

Plant Overgrowth

Indigenous plants and weeds are invading formal garden areas, pathways, ponds, etc.

Dead Trees

In several locations dead trees have been left standing and create a hazard for visitors. In addition, these trees reduce the quality of the visual experience.

Tree Obstructions

Many trees, either alive or dead, have collapsed as a result of natural, physical, or man-made conditions, and are obstructing pathways, as well as threatening or damaging architectural elements.



This tree has fallen and presently blocks a path reducing the circulation of the site.
(UPenn 2002)

Stagnant Water

In several locations ponds or streams lack a regular flow of water, resulting in foul, unpleasant water. These stagnant pools are unsightly and are a haven for mosquitoes.

Blocked Views

Due primarily to overgrowth, important designed viewsheds that once provided destinations in the garden have become obstructed.

Graffiti

Unwanted inscriptions by vandals have resulted in the defacement of both contemporary and historic architectural elements.



Graffiti on structures can be seen in several locations around the site. (UPenn 2002)



Stagnant pools of water exist in several locations throughout the site. (UPenn 2002)

Unattended work areas

In several locations work areas have been left unattended. These areas pose a hazard to visitors who may come in contact with the equipment. They also contribute to the unsightliness of the surrounding natural environment.

Dangerous Paths

Moss-covered pathways in many locations are slippery, creating a potential slip and fall condition. In addition paved areas that contain broken paving materials create trip/fall hazards.

Missing Signage

In many situations once extant signs have either been lost or destroyed rendering didactic interpretation difficult. In addition lost orientation signs make navigation of the site difficult.

Broken / Damaged Benches

Most benches within the site have experienced some form of damage; splintering, peeling of paint, missing panels, reducing their functionality.

Broken Fencing

Portions of the fencing along the perimeter of the site are very damaged, resulting in possible hazards to visitors as well as the potential for unwanted intruders as these sections of fencing continue to fall into disrepair.

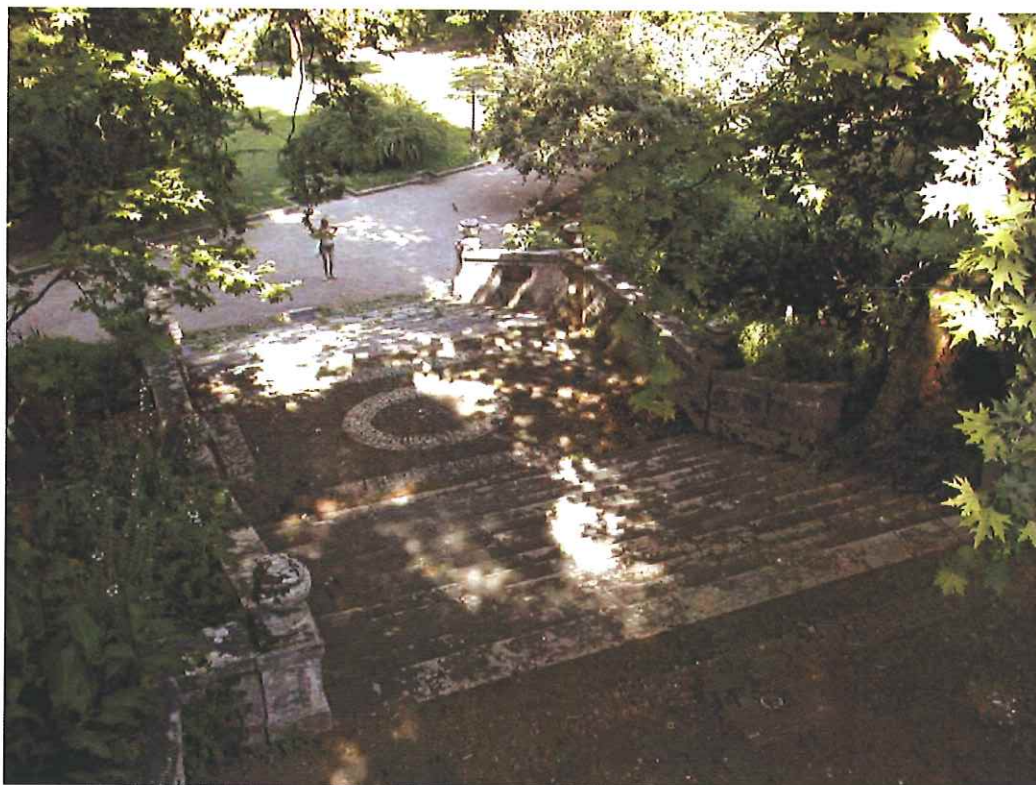


Broken signage limits visitors ability to fully understand and appreciate the goals of the Orto. (UPenn 2002)



The Orto's important bamboo collections are difficult to control. (UPenn 2002)

CONDITIONS AND ASSESSMENT: THE SCALA d'ACQUA



*The lower section of the Scala as viewed from the top of the north terrace.
(UPenn 2002)*

The major component of the Scala d'Acqua study has been the documentation and analysis of the conditions of the stair and Nicchione. A condition survey documents the observed existing state of the structure and building materials. This type of survey is useful in developing a

preliminary conservation plan, proposing future analyses, and in understanding the alteration and deterioration of a structure over time. Before looking at the various sections of the Stair Fountain and Nicchione "above ground", a brief study of the archaeological aspects of the site was conducted.



Looking west from Landing Two at the South Terrace and south Fountain Stair. (UPenn 2002)

Archaeology

Preliminary archaeological investigation provided the survey team with a better understanding of the sequence of construction of the fountain stair. Under the direction of archaeologist Stefano Coccia, the group focused on three areas of the site: the retaining walls, the terraces, and the Nicchione. The process began with a visual examination of the Scala d'Acqua to identify primary areas for investigation. The first area was located around the steeply sloping north retaining wall. The second and third areas of

digging were located on the north and South Terraces. Due to the hazardous conditions of the Nicchione location, only a visual inspection was completed at that part of the site. As a result of the probes, the team gained a better perspective on the scope of research still needed in order to fully understand the construction system of the Scala d'Acqua.

Research revealed that the fountain stair was integrated into a pre-existing garden feature documented on the 1577 Etienne Du Perac map of the Palazzo Riario. A large retaining wall, possibly containing one or more grottoes,



Team members work on archaeological excavations along the North and South Terraces. (UPenn 2002)

was shown close to the present location of Fuga's Scala. In fact, traces of stalactite rock typically used as a backdrop for grottoes still exists in the retaining walls. Today, due to deterioration, many Roman brick and travertine patches of the core tufo stone construction have been exposed. After examining these materials, Coccia suggested the retaining walls located to either side of Landing two date from the sixteenth or seventeenth century. The difference in materials between the tufo walls and the travertine stair suggests that Ferdinando Fuga's 1740's fountain stair may have been spliced onto an original feature from the Palazzo Riario garden. One team of students attempted to corroborate this conclusion by searching for evidence of a staircase believed to have been a feature of the retaining wall from the Riario era. The steep pitch of the north retaining wall seemed to fit this profile, yet after clearing the vines and sweeping the soil no substantial evidence of the stair was found. However, they did come across a sixteenth or seventeenth century well that may have been part of an original aqueduct system.

These preliminary archaeology attempts were intended to explore the inconsistencies within the fountain stair structure. One such inconsistency was found on the North Terrace where a winding stone stair added after the original construction indi-

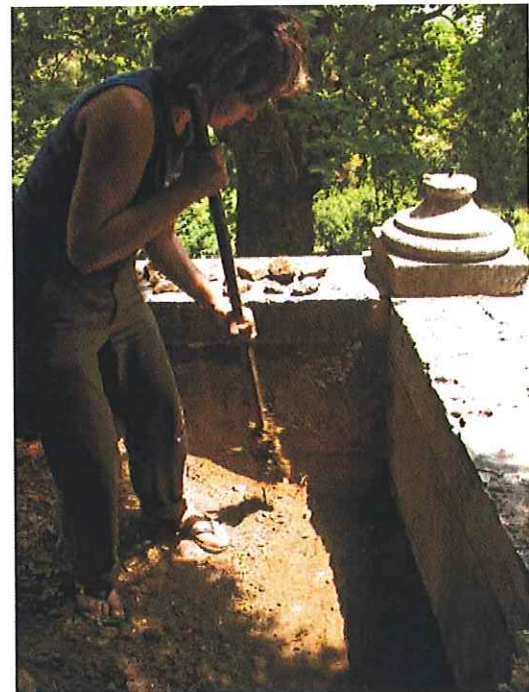


Part of the remains of a buried walkway uncovered on the South Terrace. (UPenn 2002)

cated that the two terraces were not level. In addition, the North and South Terraces, “seven” shaped and L-shaped respectively, were the only asymmetrical elements of the stair. Further probing was needed to determine whether this difference could be attributed to the terrain or to the existence of a previous building campaign.

One group of students began to dig near the balustrades of the North Terrace while another group excavated around the South Terrace balustrades. On the north side, the finished plaster of the balustrade visibly continued below the earth line. After picking away at the packed

soil filled with fragments of plaster and terra cotta, it was concluded that the original floor level of the terrace was located approximately a meter below the current surface. Also, the group uncovered the joint between the 1740's travertine terrace and the older tufo retaining wall, proving the two features were not built simultaneously. The group investigating the South Terrace found more evidence of the original appearance of the terraces. Their probing uncovered a partially inclined terraced floor located behind the balustrade, which may have provided walkways to views



A team member carefully removes ground cover along the South Terrace in preparation for digging. (UPenn 2002)

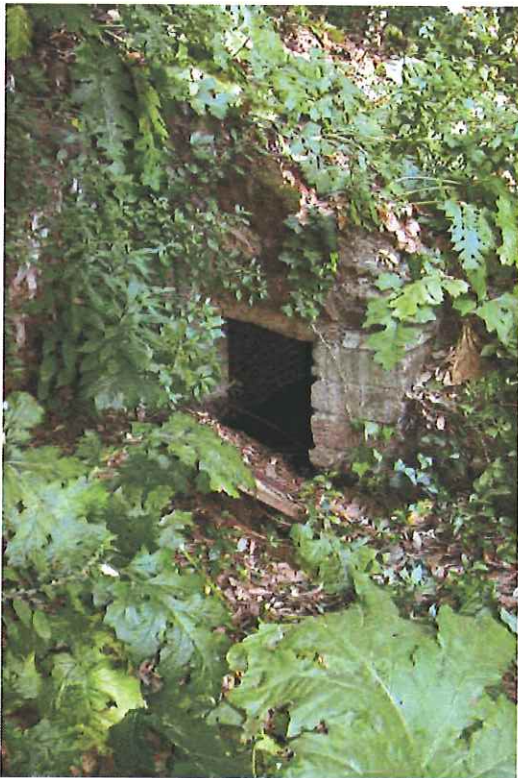
The Orto Botanico and the Scala d'Acqua

from the top of the Scala d'Acqua. The floor inclined to the south, possibly draining water away from the stair and towards the grotto feature.

While today physically separated from the rest of the fountain stair by a fence, the Nicchione was once an integral part of the installation and may have been a fountain at one time. At either end of the Nicchione are rough-cut stone retaining walls, which hold back the sloping grade and thick vegetation. The northern

retaining wall lies close to the Nicchione, creating a natural stairway rising up behind the structure. It is possible that at one time both retaining walls held stairways leading up the Janiculum Hill. Further investigation is needed to determine whether the Nicchione was used as a fountain feature.

An underground cistern to the north of the second landing possibly related to the staircase. (UPenn 2002)



A penetration on the wall of the Nicchione could be evidence of an earlier water system connected with this portion of the stairs. (UPenn 2002)

The Orto Botanico and the Scala d'Acqua

Fuga's design approach to the stair involved precise adjustments to create a perspectival visual effect. Known for such attention to detail, Fuga's placement of the stair within an existing structure, the aesthetic and functional purpose of the terraces, and the placement of the Nicchione all seem integral to his design plan.

As a result of this preliminary archaeological investigation the survey team uncovered important clues that will guide future research and conservation efforts. It also set the stage for a discussion of the team's survey and assessment of the stair's conditions.



A view of the South Terrace showing the remains of an urn which has fallen. (UPenn 2002)



An example of the variety of existing surface conditions at the Scala. (UPenn 2002)

Condition Survey Methodology





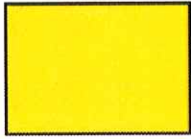







The condition survey team closely examined the masonry, finishes, and decorative elements of the Scala d'Acqua and the Nicchione over the course of several days. The first step was to develop a preliminary list of conditions, including structural and decorative characteristics, and alterations to the original stair design. This list was based on other condition glossaries developed by the Architectural Conservation Laboratory of the University of Pennsylvania for its recent conservation projects.

The final glossary used for the Scala d'Acqua analysis was divided into two parts: (1) conditions associated with masonry and (2) conditions associated with surface finishes. Although there is some overlap between these material

categories, structural, masonry and surface finishes have unique characteristics that deserve separate classification. The list of masonry conditions included: through-masonry cracking, partial cracking, open and defective joints, loss, displacement and deformation, repairs and alterations, vesicular erosion, bio-growth, vegetation, surface finish traces, efflorescence, graffiti, and carbon deposits. The surface finish conditions included: cracking, loss, repairs and alterations, water-wash erosion, detachment,

delamination and flaking, bio-growth, vegetation, surface finish traces, graffiti, efflorescence, and carbon deposits.

While most of these condition categories are based on other surveys, some terms were adapted to fit the unique conditions of the Scala d'Acqua. For example, although much of the stone of the Scala is generally eroded from natural weathering processes, vesicular erosion—also known as pitting—was noted along the caps of the stepped balustrade, particularly near the main fountain spout. Traces of surface finishes from previous campaigns were also noticed. Rather than indicate the large regions of surface finish loss, only remaining surface finish traces were indicated on the survey. Evidence of fire damage at the Nicchione called for the inclusion

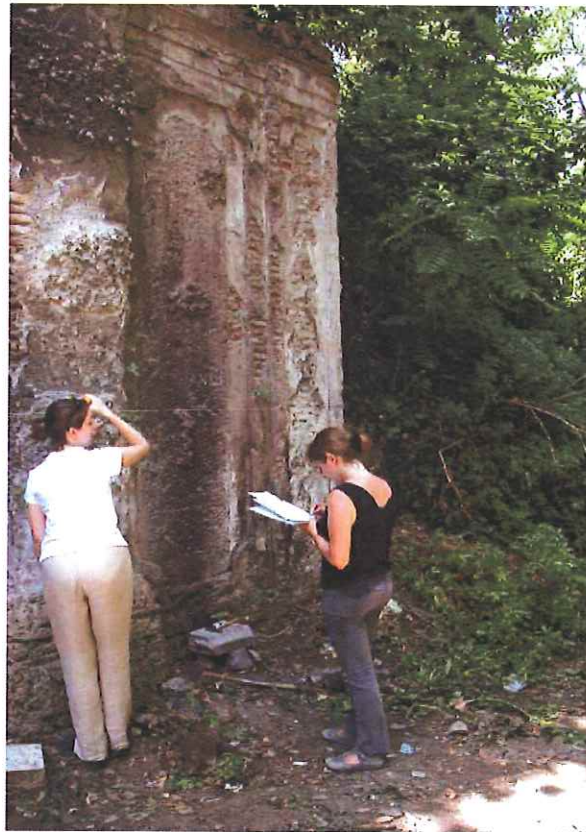
| | | | |
|---|----------------------------|--|---|
|  | Through masonry cracking | Large cracks through the masonry elements usually associated with structural displacement or deformation. |  |
|  | Partial cracking | Linear cracks which do not extend through the entire masonry element. Large partial cracks > 1 cm in width (solid brown line), medium partial cracks > 1/2 cm in width (dashed brown line). |  |
|  | Open / defective joints | Missing or incomplete mortar joints between masonry units. |  |
|  | Loss | Absence of material affecting the architectural form. |  |
|  | Displacement / deformation | Significant deviation from the plane of the wall or shifting of the step occurring after construction usually associated with mechanical failure of the masonry. In the center marking add + or - as appropriate indicating relative planar positions. |  |
|  | Repairs and alterations | Manmade additions / subtractions or repairs to the existing structure. Use annotations to specify if necessary. |  |

A page from the conditions glossary. (UPenn 2002)

of a carbon deposit category in the survey. Moderate amounts of water-wash erosion were also noted on portions of the Scala. This type of erosion, caused by water penetration of the wall, created vertical streaking on the surface where the finish layers had eroded unevenly.

Survey Results

The survey team was divided into three groups: group one documented masonry conditions of the Scala, group two documented conditions of surface finishes on the Scala, and group three documented all conditions at the Nicchione. In this way, observations and recordings of conditions were consistent per material or area.



Team members working on the condition survey of the Nicchione. (UPenn 2002)

Masonry Conditions

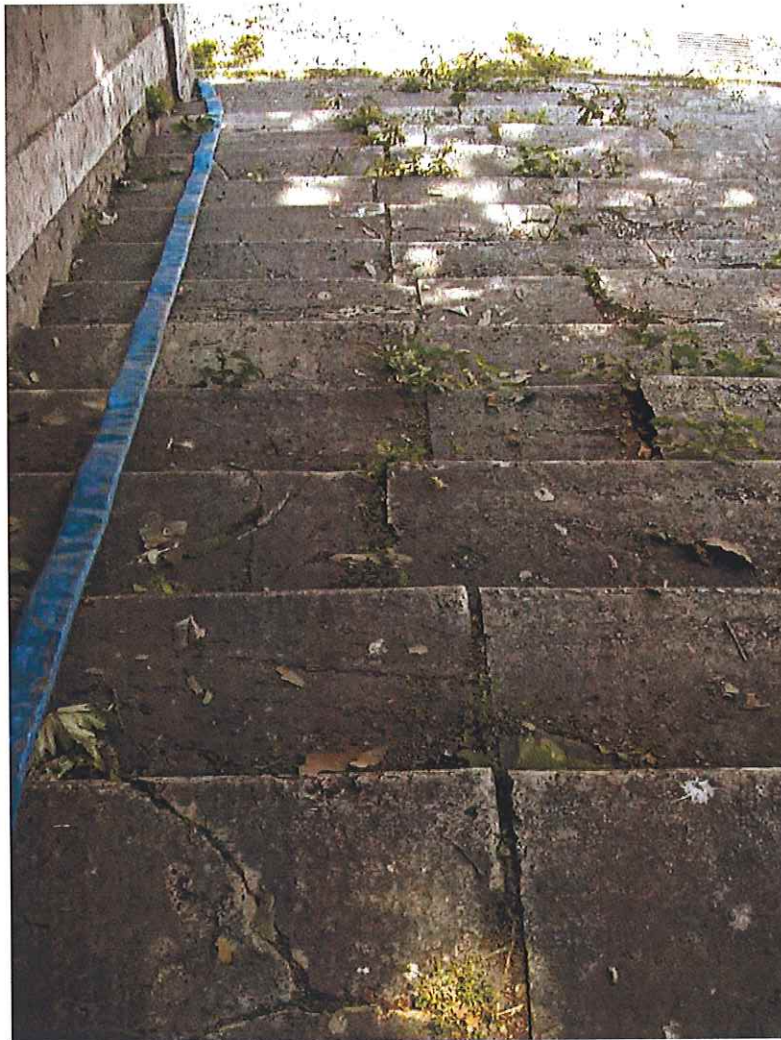
The majority of the Scala is made up of masonry and it was determined that group one would survey the conditions of the entire stair on a 1:50 meter plan. A more detailed analysis of surface finishes in section was accomplished

on acetate over a digital photo-mosaic of rectified photographic images. Due to time constraints, the surface finish group analyzed the north wall of Stair One as a representative example of typical conditions. Group three completed a survey of the surface finish conditions of the Nicchione elevation both on a scaled plan and on acetate over a photo-mosaic.

The largest threat to the masonry of the Scala d'Acqua is the displacement of stairs and walls from

ground subsidence due to tree root growth. Through-masonry cracking is also a significant threat to the stair and often occurs in conjunction with or near areas of pavement displacement.

Further, widespread vegetation, although a relatively recent phenomenon, was noted as one of the most deleterious masonry conditions at the Scala. Over time, these conditions have worked in combination to compromise the overall form and structure of the original design of the stair.



Steps on Stair One clearly show cracking and displacement. (UPenn 2002)

Other significant masonry conditions recorded include: loss, repairs and alterations, and vesicular erosion, which is particularly noticeable at the top of the fountain stair. The loss of urns and other decorative elements has also compromised the appearance of the Scala. Bio-

logical growth is pervasive over the entire stair, particularly on the stair treads and wall caps, indicating high overall moisture conditions from water leakage and shade.

The stair has been divided into sections for the purpose identification and a detailed description of the conditions of each of these portions is discussed below.

Stair One

The most detrimental problem in this area is the displacement of steps, particularly noticeable along the north wall and throughout the south-central portion of the Scala. There is evidence of repairs to the steps near the regions of displacement, indicating that the cause of displacement has been a long-term problem. It should be noted that these repairs appear to have ini-



Looking north at the railing wall of the second landing. Note the invasive vegetation. (UPenn 2002)

tially solved the problem or are acting as an effective temporary remedy. Moderate-to-high amounts of through-masonry cracking and open joints were also observed in the areas of displacement. Vegetation is widespread throughout the area, particularly in open joints, cracks, areas of displacement, and at the riser/tread interface.

Moderate areas of loss are apparent in the area, particularly on the stone caps of the walls. Documentation suggests there is a low amount of partial cracking occurring mostly near concentrations of through-masonry cracks. No efflorescence or vesicular erosion was noted.

Landing One

The first landing of the Scala d'Acqua has the lowest amount of deterioration or loss of any portion of the stair. The largest problem is stone loss, although it remains relatively small compared to loss in the rest of the Scala. Loss, through-masonry cracking, and open joints appear solely on the wall caps and are low in concentration. One repair appears on the urn in the northwest corner of Landing One. The moderate vegetation consists of small plants between the paving stones, and does not appear to be detrimental to the structure of the Scala.



View to the south indicating the location where the railing wall was intentionally cut to allow for the growth of the historic plane trees. (UPenn 2002)

Stair Two

Similar to the first stair, the conditions of the second stair show high amounts of displacement and through-wall cracking. Most of the displacement in Stair Two is concentrated near the roots of the large plane tree beyond the southern wall of this section. Through-wall cracks are highly concentrated along the north and south walls, and are relatively sparse through the center of this portion



The railing wall of the north landing-2 showing extensive damage to the surface finish. (UPenn 2002)

of the stair. Contrary to the high amount of open joints observed in Stair One, low quantities of open joints were recorded in Stair Two. These open joints tend to appear in areas of concentrated displacement.

Moderate amounts of partial cracking were observed, particularly in the north-central portion of Stair Two; it is interesting to note that these partial cracks do not correspond to concentrations of through-masonry cracks. Few repairs were made to Stair Two; a



A view of the upper portion of the fountain stair showing that none of the original urns have survived. (UPenn 2002)

dutchman can be seen near Landing Two, and a few small repairs were made on the cap of the northern wall. High-to-moderate loss was observed in the stair plan, particularly at the edges of the stairs. The most significant loss recorded was a large portion of the southern wall, which was removed at some point due to its interference with the root of a large plane tree growing adjacent to the Scala. A moderate amount of vegetation is present at the interface of treads and risers.

North Landing Two

Moderate displacement was observed on the western side of the bench on north Landing Two. Some repair work has been made to this side of the landing; these repairs are highly visible along the joints. The repairs appear

to have remedied the problem at least temporarily. Moderate losses are particularly visible on the outside edges of the landing. Significant amounts of vegetation were recorded in this region of the Scala, especially along the bench and western wall. No through-masonry or partial cracking was observed on north Landing Two.

South Landing Two

The southern side of the second landing has a large amount of wall displacement in areas of moderate through-masonry cracks. These cracks are extremely wide and appear to have been unsuccessfully repaired at one time suggesting active movement. Open joints in this side of Landing Two are also wide in areas of displacement. Moderate loss was recorded particularly along the outer edges of the wall caps,

as well as some loss of paving materials. Vegetation in this area is moderate but is most pervasive along the west wall under the movable green park bench.

North Fountain Stair

The greatest threat to the north fountain stair is vesicular erosion, prevalent along the cap of the balustrade near the top fountain. A leak in the upper basin near the top of the north fountain stair has also caused vesicular erosion along the southern edge of these steps, explaining the numerous stone replacements present in this area. Moderate amounts of through-masonry cracking comprise an uneven band along the center of the northern fountain stair; a few partial cracks are also present. Some loss was recorded along the edges of the stair treads. There is less vegetation on the north fountain stair than on the other parts of the Scala, and it is concentrated along the northern wall. Many urns along this wall and terrace are missing and have been recorded as hypothetical losses.

South Fountain Stair

The south fountain stair exhibits conditions similar to the north fountain stair. The most significant problem is vesicular erosion around the cap of the balustrade and at the west end of the fountain. There has been significant stone replacement along the north side, and several



Cracks in the stone, as well as invasive vegetation are clearly evident on the South Fountain Stair. (UPenn 2002)

metal strap repairs were added toward the top half of this portion of the stair. A moderate amount of through-masonry cracking is evident through the center of the southern fountain stair; these cracks follow a broken, weaving line along the length of the stair. Moderate stone loss was recorded particularly along the edge of the stair treads. Vegetation is moderate but concentrated



The basal remains of a lost finial on the corner of the North Terrace wall. (UPenn 2002)

at the bottom half of the stair, especially at the tread-riser interface. Most urns along the South Terrace are also missing, retaining only their bases, and have been recorded as hypothetical losses.

The fountain basins contain a large quantity of invasive vegetation and bio-growth that obscures the depth of the basins and the smaller fountain spouts.

The Nicchione

The east elevation of the Nicchione was surveyed using two different techniques. The first, used for the majority of the structure, entailed recording field notes directly on CAD drawings. The second technique, used on the lower, southeast portion, involved recording field data on mylar over a rectified photograph. The rationale for this dual approach was the lack

of detailed photographs of the upper portion of the Nicchione due to extensive vegetation and a fence obscuring the structure.

The most serious problems for the Nicchione are the loss of surface finish and delamination and flaking. Loss of finish is particularly severe on the bottom half of the south pilaster and from the top cornice. Delamination and flaking are prevalent on the surface of the east elevation, although this condition is particularly concentrated on the sides of the lower portion.

Carbon deposits from burning have darkened most of the surface of the Nicchione alcove, although there are fewer carbon deposits in the bottom section. Graffiti is a particularly serious problem on the interior apse, and exists both as incised and painted graffiti. Vegetation is pervasive on top of the Nicchione; live and dead vegetation are also present on the east elevation, particularly on the coral limestone sections of the pilasters. High amounts of bio-growth exist on

the lower portion of the Nicchione as well.

Low amounts of water-wash erosion were observed at the Nicchione; this condition is most visible on the upper regions just below areas of major cornice loss. Despite widespread carbon deposits, graffiti, and some water-wash erosion, there are a few remaining areas of white paint finish, presumably lime-wash, particularly on the top of the southern pilaster.

Surface Finishes Conditions

The largest threats to the surface finishes of the Scala d'Acqua are delamination and flaking of the stucco. Loss of surface finish is also a problem for the stucco and paint finishes, although not to the same degree. There is a small amount of cracking, manifesting primarily

as map cracking on the stucco. Bio-growth exists under protrusions of the stucco and toward the bottom of the walls; efflorescence was observed in isolated areas of water infiltration. Moderate-to-low amounts of paint traces remain on the surface of the stucco, particularly in protected areas. Water-wash erosion was most prevalent on walls built into the tufo retaining walls. Vegetation is present mostly at the interface of walls and steps, or walls and landings, although there is quite a bit of vegetation on the retaining walls along the terraces.

Using the survey technique previously described, a representative portion of the stair was surveyed on mylar over a rectified photograph mosaic. The section chosen was the north wall of Stair 1, which appears to have remained generally intact from the time of construction and exhibits conditions and characteristics similar to those described above. However, the north wall of Stair 1 contains no evidence of repairs to the stucco or paint finishes, efflorescence, graffiti, or carbon deposits.



Conditions found on the Nicchione include loss of surface finish as well as carbon deposits associated with fires created inside the apse. (UPenn 2002)

Material Analysis

As part of the Scala d'Acqua condition survey, samples of mortar and stucco were prepared and analyzed under the supervision and aide of Ernesto Borrelli, Conservation Chemist, at ICCROM. The objective of the analysis was to identify the composition of the samples and better understand their original properties, appearance, and alteration over time. The identification of these components will guide future conservation efforts and digital reconstructions.

Sampling

The following five surface finish and mortar samples were taken from the west wall of the southern section of Landing Two:

- OB-SC-01 Stucco; rondelle sgraffito red background with white lower edge of the remaining sgraffito.
- OB-SC-02 Stucco; base layer, original north pilaster, west wall of south Landing Two.
- OB-SC-03 Stucco; finish layer, original and washes north



One of the sgraffito rondelles found on the western facade of each terrace. (UPenn 2002)

pilaster, west wall of south Landing Two.

- OB-SC-04 Mortar; brick bedding mortar north pilaster, west wall of south Landing Two.
- OB-SC-05 Mortar West wall, south Landing Two.

The five samples were mounted in a Buehler Epoxide Resin composed of five parts resin to one part catalyst. The samples were cut into cross sections and analyzed under a Stereo Nikon PFX microscope. Images of these samples were taken with Zeiss Axiovision 2.0 software.

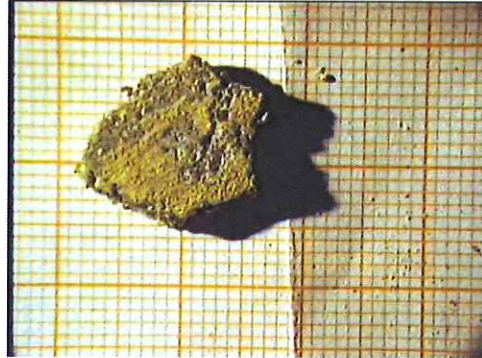
Sample OB-SC-01 contains a large quantity of rust-colored puzzolanic particles, a few black and brown grains of volcanic materials, and small, white blebs of lime. At 10x magnification, a thin yellow layer was observed which was identified as either paint or resin. After examining the sample under a UV light, it was determined that the yellow layer was firmly attached to the stucco, therefore confirming its identification as a paint layer, traces of which can still be observed in situ.

Sample OB-SC-02 is a well mixed mortar of red puzzolana and white lime with a few dark grains visible at 2.5x magnification. The red color of the sgraffito is derived from the puzzolana.



Representative images of mortar and stucco samples taken for testing in the laboratory. (UPenn 2002)

Sample OB-SC-03, examined at 2.5x magnification, shows a finish coat with more lime than puzzolana. Biological growth is also evident as green areas on the outer edge of the finish coat at this magnification. At 40x magnification, the pure glass in puzzolana appears as distinct crosses within the glass crystals. These crosses distinguish puzzolana from brick dust. Distinct crosses were observed in Sample OB-SC-03 at this magnification.



Sample OB-SC-04 is a gray/brown mortar that contains lime, puzzolana, and sand as seen at 2.5x magnification.

Sample OB-SC-05, at 2.5x magnification, contains both small and large particles of puzzolana and lime. As observed, cracking of the binder indicates shrinking of the material during mortar setting.

Results

Both samples OB-SC-02 (scratch coat) and OB-SC-04 (brick bedding mortar) have similar compositions of evenly distributed puzzolana



and lime. Similarly, samples OB-SC-03 (finish coat) and OB-SC-05 (mortar) have uneven distributions of small and large puzzolana within the lime binder. Sample OB-SC-01 is uncharacteristically poorly mixed for a finish coat consistent with sgraffito. All five samples were also prepared in thin section that will enable further study.

Further observation, recording, and analysis of materials and their conditions can provide an in-depth understanding of the Scala d'Acqua. By observing anomalies in composition and application, it is possible to identify both original construction materials and techniques as well as subsequent repairs. Documentation of the conditions reveals patterns and trends of deterioration which can be attributed to inherent material performance, environment, and previous repairs and maintenance. Laboratory analysis extends field observation and can integrate construction hypotheses with perceived environmental conditions through material examination

The Orto Botanico and the Scala d'Acqua



A full view of the Scala. (UPenn 2002)

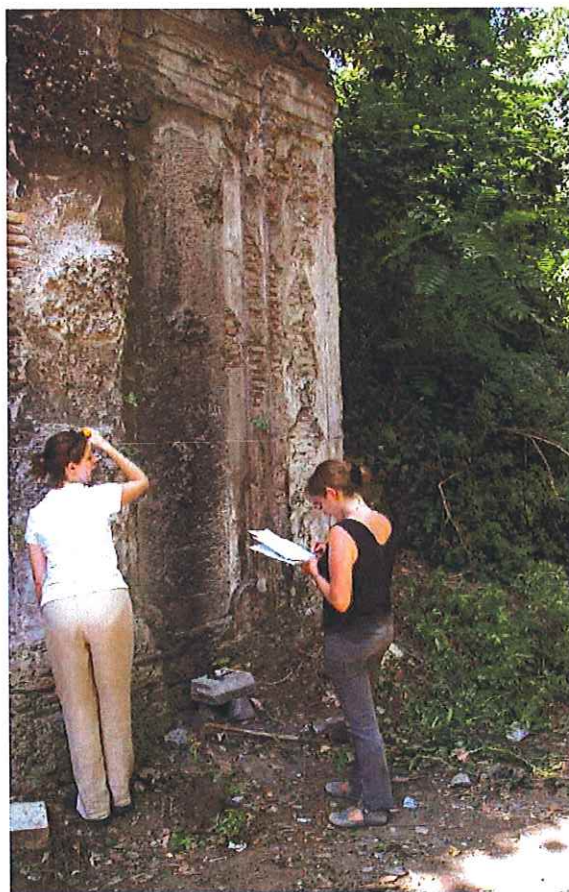
and microscopy. At the Scala d'Acqua, preliminary examination and analysis of the materials revealed the structure was constructed with puzzolana and lime mortars and stuccos, travertine, and brick. The condition survey exposed the major environmental threats of invasive vegetation and water erosion of both masonry and stucco. Together, these analytical components provide a background for a future conservation plan. Most of the masonry and surface finishes appear to be original.

Condition Assessment

One of the most important aspects of the University of Pennsylvania's work during this brief four week study was the effort made to prepare a condition assessment for the entire stair. This process

involves four major steps which include the development of measured drawings, the development of a conditions glossary, the recordation of the existing conditions through field assessment and finally the entering of the conditions into a digital overlay through the use of AutoCAD® and CAD Overlay®.

To develop the measured drawings, the entire team was broken into groups, each of which were assigned a specific portion of the stairs to measure. Each dimen-

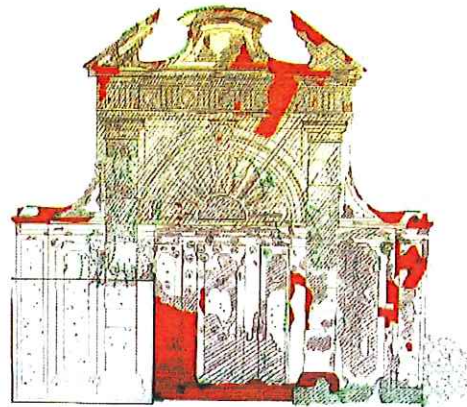


sion was recorded and drawn manually and then used to create a set of final drawings in AutoCAD®.

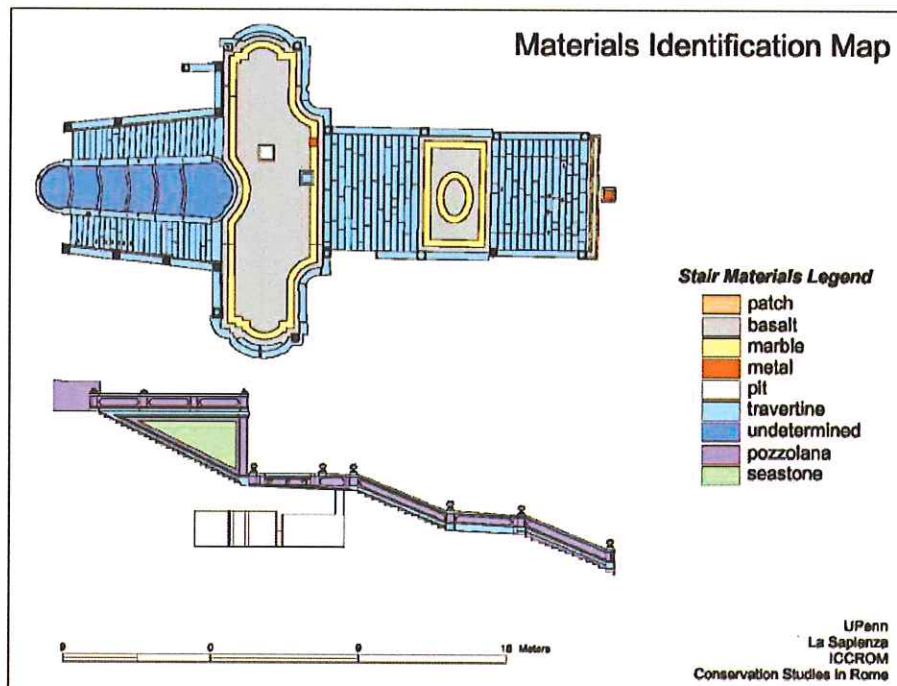
Following the development of the CAD drawings a conditions manual was created in which each type of condition was identified, defined and accompanied with a photograph for easy identification. This manual was intended to normalize the data entry so that each team would be creating a drawing which would contain similar results for a given condition.

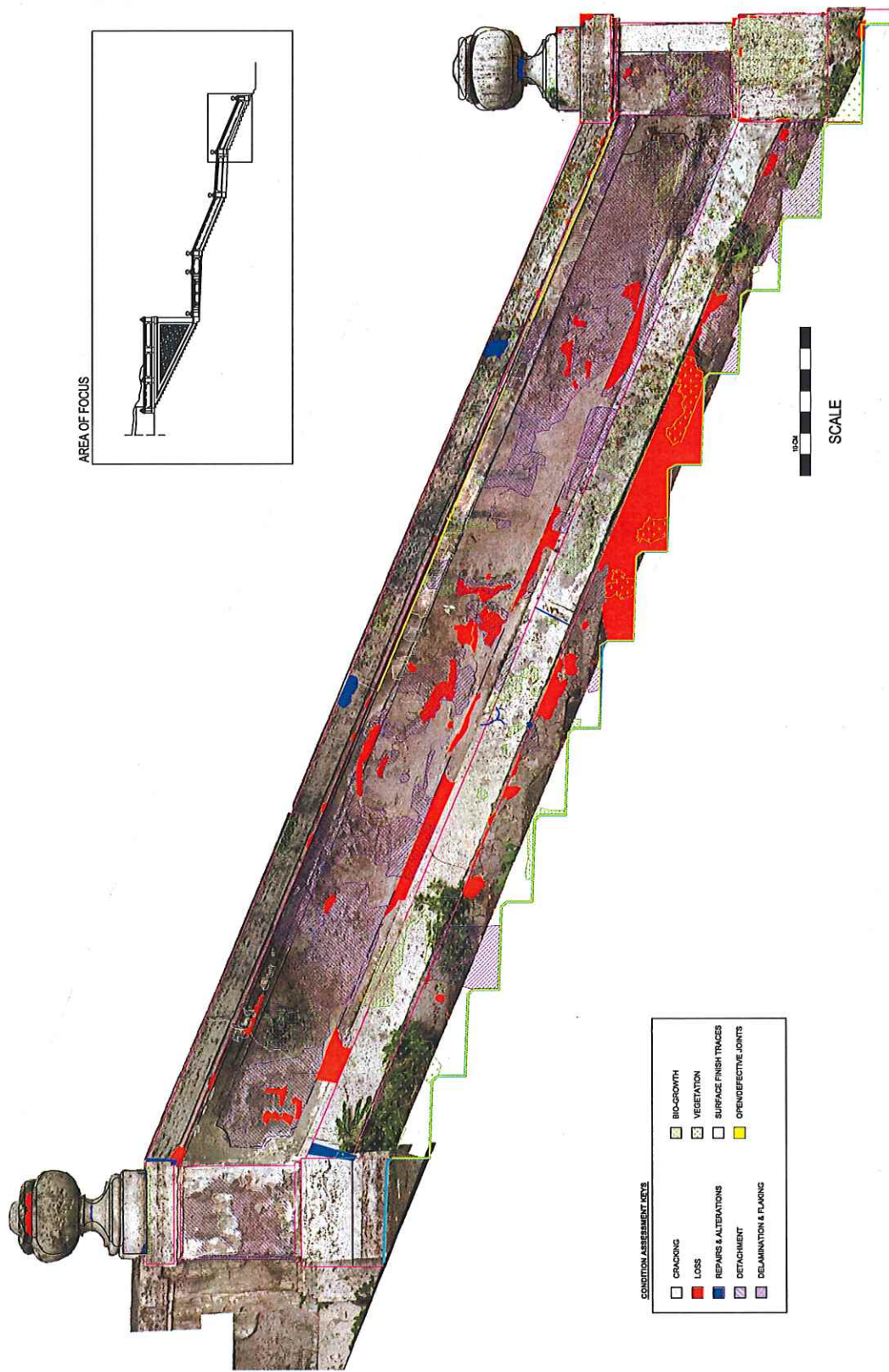
Using the newly created CAD drawings and the conditions manual, a set of drawings were created which outlined the existing conditions of the staircase as well as the Nicchione.

With the data gathered a digital condition assessment for one portion of the stair wall was prepared in AutoCAD® in order to demonstrate the potential for CAD-based condition assessments.



A condition assessment of the Nicchione. (UPenn 2002)





CONDITION ASSESSMENT KEY

| | | | |
|--------------------------|------------------------|--------------------------|-----------------------|
| <input type="checkbox"/> | CRACKING | <input type="checkbox"/> | BIOGROWTH |
| <input type="checkbox"/> | LOSS | <input type="checkbox"/> | VEGETATION |
| <input type="checkbox"/> | REPAIRS & ALTERATIONS | <input type="checkbox"/> | SURFACE FINISH TRACES |
| <input type="checkbox"/> | DETACHMENT | <input type="checkbox"/> | OPEN/DEFECTIVE JOINTS |
| <input type="checkbox"/> | DELAMINATION & FLAKING | | |

The Scala d'Acqua, The Orto Botanico, Rome, Italy
North Interior Facade, Stair One

Site Recording: Summer 2002

Sponsors:
Graduate Program in Historic Preservation, Graduate School of Fine Arts, University of Pennsylvania
University of Rome, La Sapienza
ICCROM

WALL CONDITION
DOCUMENTATION
AND ASSESSMENT

S.W.O.T. Analysis of the Garden

After conducting preliminary research and surveys of the Orto as a whole, including its relationship to the Scala d'Acqua, the team determined that the best philosophy for intervention is one that incorporates the various goals of the Orto with a plan to stabilize its most important assets. This doctrine is based on four general values:

- Respect and protect the natural environment of the Orto Botanico.
- Limit intervention by changing only those aspects that threaten safety, plant health, or stability of architectural elements.
- Find a balance between making adjustments to the environmental and physical elements that detract from the Orto's aesthetic and historical qualities, while respecting the Orto's mission of ecological growth.
- Provide the opportunity for visitors to experience the entire Orto as an integrated entity, where paths, vegetation, and architectural features not only co-exist, but also enhance each other's unique values and help tell the story of the place.



Fontanone dell'Acqua Paola. (UPenn 2002)



The Nicchione as seen from within the boundary fence of the Orto. (UPenn 2002)

The Orto Botanico and the Scala d'Acqua

From these broad themes, the team devised a SWOT (Strengths, Weaknesses, Opportunities, and Threats) analysis to further delineate the issues that should be addressed in the Orto as a whole.

Strengths

- A unique outdoor recreational amenity in the heart of Rome.
- An extensive and important collection of domestic and foreign plant species.
- Managed by The University of Rome La Sapienza with outreach to other professional and academic organizations, as part of a network of scientific information, and research.
- An identity and gathering place for the surrounding neighborhood.
- A good central location which is easily accessible.
- Excellent views of historic Rome.
- Close proximity to Trastevere and the Janiculum Hill as well as the historic center of Rome
- Important surviving eighteenth and nineteenth century garden structures, including the Scala d'Acqua, Arancera, and greenhouses.
- Surviving context with the Palazzo Corsini.

Weaknesses

- Potential conflict of use between recreation, botanical research, and scientific education.
- Unhealthy vegetation.
- Lack of coordination of different landscape design schemes.
- Deferred maintenance of gardens and public amenities (e.g. benches).
- Poor interpretation of the site as well as the amenities it contains.

The Orto Botanico and the Scala d'Acqua

Opportunities

- To reconnect the Scala d'Acqua with the rest of the Orto Botanico.
- To interpret the various historic horticultural structures through use and exhibition.
- To assemble the collections into a more cohesive unit.
- To promote the Orto and explain its mission.
- To create a relationship with Trastevere and the Janiculum Hill.

Threats

- Lack of understanding on the part of the public and little explanation as to the real mission of the Orto.
- Lack of available updated information on the current state of the Orto, including detailed maps, to guide further research.



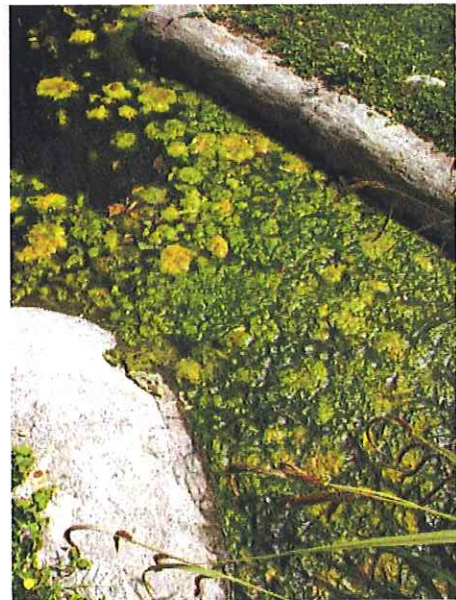
A view of the city of Rome as seen from within the Orto. (UPenn 2002)

Based on this analysis, the team compiled a preliminary list of proposals that best address the identified areas of concern. A number of issues must be dealt with immediately while others require further research into their feasibility and appropriateness.

There are several areas of concern that should be addressed with urgency. Many of them focus on general maintenance issues and minor changes to current methods that if addressed would enhance the aesthetic value of a visit to the Orto and also make it a more safe and inviting place. These can be resolved easily with proper funding and management.

General Maintenance:

- Cut back overgrowth.
 - Remove stagnant water pools and determine ways to prevent the problem from occurring in the future.
 - Stop water leakage that damages stone surfaces and leads to unsafe, muddy pathways and possible soil erosion.
 - Remove dead or fallen trees or tree limbs that pose a danger to visitors.
 - Clear all hazardous rubbish that threatens public safety.
- Maintain pathways to be safe and inviting, by clearing mud, lichen, moss, grass, fallen trees, and over growth.
 - Clean and maintain lighting on the paths.
 - Install potable water fountains in various locations.
 - Use caution signs for dangerous areas Create enclosed storage area for all maintenance equipment and materials.
 - Repair or remove broken benches.



Signage:

- Species identification tags should be easy to understand and contain uniform information.
- Create an integrated signage system for the entire site.
- Place species identification tags in visible locations.
- Species identification tags should withstand environmental impact so that they last for a number of years.
- Properly label all buildings and put the signs in visible locations.
- Update directional signs so that they are more concise and visible.
- Decide to either use only Italian or a combination of Italian and other languages for all signs and posters.
- Replace missing directional signage and install new signs to direct visitors to major points of interest.
- Construct a design vocabulary for more comfortable benches and new trash receptacles, possibly using indigenous stone, that work with the lighting to produce a more cohesive and aesthetically pleasing atmosphere in the Orto.
- Install benches in places closer to the specimens in order to facilitate more intimate access for researchers and the public to study the plants.



Beyond the initial proposals, there are a number of issues that after this preliminary analysis are subjects for further research. Of paramount importance is the ambiguous relationship between the Orto and the public. Currently, the Orto is a research specimen garden that conducts a number of important studies about the natural growth of plants. Plants grow as they would naturally and the Orto scientists do not appreciate patrons who interrupt this process. This botanical program is in direct conflict with the need to maintain the garden in such a way as to please and accommodate the visiting public. The following proposals seek to mitigate this contradiction and provide alternatives to the current relationship.

Landscape Design:

Also of importance is the psychological and physical connection between the Orto Botanico and the neighboring areas. Currently, the Orto is maintained as a separate entity without emphasizing the importance of its relationship to the Janiculum Hill and Trastevere. The following proposals if enacted would help connection and further incorporate the Orto with its environs.



- Trim branches of large trees to re-open the historical sight line from the Scala d'Acqua to the Fontana dei Tritoni and the Palazzo Corsini.
- Create a more inviting entrance area with benches and a redesigned information booth.
- Develop a plan for a lower grade path that cuts the steep slope of the Janiculum Hill.
- Stratify pathways into primary, secondary, and tertiary, with different paving materials for each.
- Use low fences to demarcate various themes within the Orto and also to deter pedestrian traffic where it is not wanted.
- Visually and physically reconnect the Nicchione to the Scala d'Acqua by moving the gate of the Orto either to the sides of the Nicchione or around it.
- Regrade the high ground behind the Nicchione.
- Construct a graffiti removal program for the Nicchione.
- Move the aromatic garden to another area within the Orto and use the current space as a picnic grove or refreshment place.

- Investigate feasibility and usage of a baby changing area.
- Reopen the gate on the southwest corner of the garden to establish a connection between the Orto and the Janiculum Hill area.
- Gain an understanding of how specific themes and plants co-exist and work within the larger scale of the Orto by utilizing the knowledge of botanists and landscape architects.
- Identify the most important plants and specify how they can be maintained.
- Investigate landscape design elements and usage and how certain uninviting areas can be refurbished.
- Explore and interpret the archeological aspect of the landscape.
- Develop the feasibility of restoring the landscape immediately around the Scala d'Acqua.
- Develop a risk assessment focusing on the landscape adjacent to the stair and how to manage its growth, especially the plane trees.

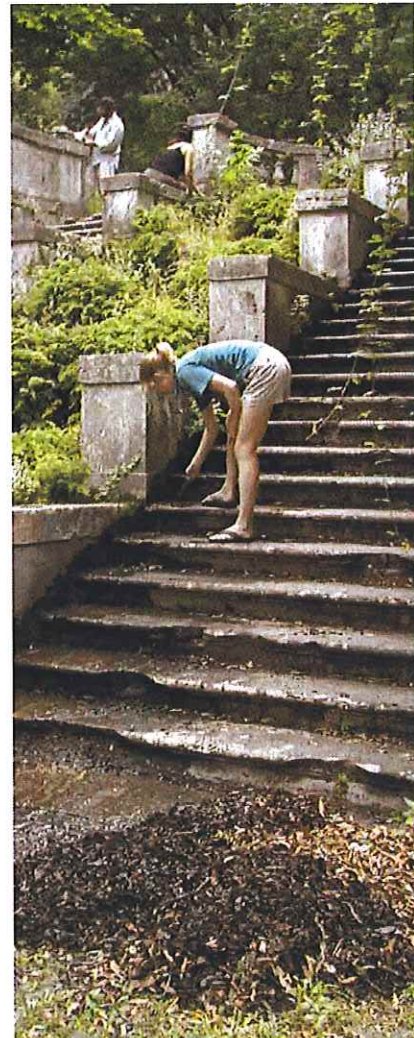
Mapping:

- Generate accurate maps of the Orto for visitors and also for further analysis, especially utilizing Geographical Information Systems (GIS) to identify scientific and aesthetic qualities such as water systems, slope, and ecological systems.
- Post maps throughout the Orto that are labeled with major themes or points of interest and specify the visitor's exact location.
- Produce more specific maps within the themes of the Orto that identify certain plants and provide pertinent background information on their importance.



Public Outreach:

- Develop audio guides to explain various plants and areas of interest to visitors.
- Explore the possibility of developing an evening program and keeping the Orto open to the public for at least one evening per month.
- Investigate the usage of lighting throughout the Orto for aesthetic and safety purposes.
- Use the Scala d'Acqua and Fontana dei Tritoni areas to mount large exhibits about the Orto, its outdoor history, significant plant collections, and current research.
- Restore and interpret greenhouses to the public as functioning exhibits of eighteenth and nineteenth century horticultural technology.
- Educate visitors about the history of the Orto, possibly with panels showing historic and current maps, so that they can use the space for more than just recreational purposes and further understand the importance of conserving the plants and the infrastructures.
- Create pamphlets that educate the public on the history about the Orto, its connection with the Palazzo Corsini, and La Sapienza's mission for the Orto Botanico.



The Orto Botanico and the Scala d'Acqua

The Orto Botanico of Rome contains and displays a complex history through the physical embodiment of its landscape. The site evolved over two thousand years, with forms including a Roman villa, a vineyard, a Renaissance garden, a Baroque garden, and its current incarnation as a scientific collection and private park. The place was created by and for a number of important historical figures and institutions, including noble Italian families, cardinals, royal guests, and scientific and educational institutes. It contains a number of significant architectural and landscape features that deserve further study and preservation. Today, the site serves as a scientific institution and as a quiet verdant retreat for area residents.

In many ways, the experience of visiting the Orto is one of discovery, physically and intellectually. Paths wind around collections that invite the visitor to examine the specimens in a natural setting, but with a distinct focus on education and appreciation. The Scala d'Acqua is an integral part of this experience hidden behind a canopy of trees. One of several eighteenth and nineteenth century horticultural structures that recount the garden's history and provide a built counterpoint to the natural landscape. As one winds around a path, a moment of enchantment occurs as one approaches this structure, wedged into the landscape of trees and plants. It is a remnant of the formal Baroque garden and a poignant illustration of the Orto Botanico's evolution to what it is today.



S.W.O.T. Analysis of the Fountain Stair

Similar to the effort executed on the garden as a whole, the team determined that the best philosophy for intervention is one that incorporates the various goals of the Orto with a plan to stabilize the most important assets of the stairs. This doctrine is based on the same four general values mentioned in the earlier S.W.O.T.

Strengths

- The Scala d'Acqua lies within the only green space in Trastevere, which creates a natural setting that attracts people.
- The Scala is a particularly serene destination, providing a unique opportunity to visit and experience.
- The essential form and character of the structure still remains.
- Surviving paint finishes, sgraffito remnants, and original stucco layers serve as valuable research tools.



Weaknesses

- Lack of general maintenance.
- Missing elements that weaken the legibility of Fuga's original intent.
- Broken fountain spouts and low water pressure.
- Separation of the Nicchione from the Scala, resulting in a disruption of Fuga's original design and no culmination point to the Scala.
- Lack of stewardship responsibility for the Scala and Nicchione.
- The historic view-shed is obscured.
- Hidden access to the stair.
- Lack of interpretation of the fountain and its history.

Opportunities

- High formal and material remnants of lost stair materials and archival data allow for accurate conservation of the site.
- High potential exists to increase the education of visitors on the history of the Scala d'Acqua and the Corsini gardens.
- The reintegration of the Nicchione with the Scala would not only restore its original design, but would also provide a culmination point for the Scala and could assist in clarifying stewardship responsibilities.
- The restoration of the view-shed, either in part or full, from the Scala to the Palazzo Corsini would re-contextualize the Scala and integrate it into the Orto's landscape.

Threats

- A general lack of maintenance at the site compromises the integrity of the structure as well as diminishing its aesthetic value.
- Major leakage of the fountain and water basins promotes displacement of the structure, erodes materials, and facilitates bio-growth.
- Poor drainage at the north elevation of the Scala encourages erosion of materials, efflorescences, and bio-growth.
- The loss of stucco has resulted in many areas of exposed masonry compromising the structural integrity of the Scala.
- Management of the Orto places a higher value on trees than the Scala; trees are allowed to displace the structure of the Scala.



PRELIMINARY CONSIDERATIONS TO SITE CONSERVATION: A SUMMARY



The fountain stair is obscured by heavy invasive vegetation. (UPenn 2002)

The Nicchione

The proposed conservation philosophies for the Orto and Scala fall into three approaches. The most conservative of these allows the Scala to remain in its present state with minimal intervention. The most aggressive restores the stair considerably. The third approach takes a more moderate stance on the level of intervention.

The Nicchione should be reintegrated into the Orto Botanico. Presently, the Nicchione and the Scala are separated by a very large fence, and it is difficult to see them as anything but separate entities. Recreating the perspectival relationship between the Nicchione and the Scala would restore the architectural integrity of Fuga's composition. In addition, the Nicchione in its position outside the fence is unprotected,



where graffiti and misuse are an ever-present problem. Bringing the Nicchione inside the Orto fence would enhance its conservation and interpretation. If the Scala and the Nicchione remain separate, their states will become increasingly disparate as the Scala continues to be maintained and the Nicchione falls into ever greater disrepair.

A new fence could take numerous routes. In the most conservative approach, the fence could meet the sides of the Nicchione, but not fully enclose the structure. The perhaps more difficult approach would be to enclose a portion of the hillside above the Nicchione, which hinges on reaching an agreement between the University and the Municipality of Rome. In addition to thinking about what would be best for the Nicchione, it is also necessary to consider the impact of the proposed changes on the paths and vegetation of the Janiculum hill.

Finally, the base of the Nicchione is obscured by fill over 1 meter high. The base should be excavated, but further research is required to explore the implications of re-grading the area. Possible complications include the roots of a nearby tree and the issue of water runoff.

The Nicchione is missing its central element. This may have been a fountain although it held a statue during Fuga's time. This statue of Cornelio Cornuto still exists and is now in storage in the Musei Capitolini in Rome. Perhaps the statue, or a replica could be placed in the Nicchione. In anycase, once restored the Nicchione should not remain empty.



The Viewshed

The historic viewshed between the Scala d'Acqua and the Palazzo Corsini is greatly diminished due to the planting of trees and other vegetation. There are three basic approaches to addressing this issue: maintain trees as they currently exist, thin the trees to allow for glimpses of the stairs from below, or remove all vegetation to restore the full perspective. Restoring the full viewshed from the water stair to the Palazzo would reinstate Fuga's original plan but completely ignore the changes in the context that are a result of the installation of the Orto Botanico at the end of the 19th century. Thinning the trees would be a less aggressive alteration to the Orto, but represents an artificial approach as it would reflect neither a historic condition nor a natural evolution of the space. The third possibility would be to make no changes to the viewshed. The visitor to the Orto in this case

would continue to stumble upon and "discover" the Scala as a landscape vignette, and the view to the Palazzo would remain obscured.

The Cleared Area

The area between the Scala d'Acqua and the modern staircase to the north currently consists of a rough path, a large hole, and overgrown vegetation. This area is underutilized in its present condition and should be studied to determine alternative treatments. Cleaning the area and installing benches could create a rest area for quiet reflection. Adding an educational exhibit in the area would help to inform the visitor about the history of this significant feature of the garden. Restoring the original design through further archival and archeological investigation could also help to provide an interpretive tool for the history of the garden as a whole.

Surfaces of the Scala

The finishes should be stabilized without altering their existing aesthetic qualities. It would be difficult to partially restore the finishes, and a complete restoration of the finishes was deemed inappropriate for the Scala and Nicchione. Given the state of the Fontana dei Tritoni, restoring the Scala and Nicchione to a pristine state would appear disjointed. Continuity is more desirable.

Finials

The treatment of the finials could range from minimal stabilization to complete restoration. In following a minimal approach, the missing elements would remain in their present conditions, thus respecting the process of time. Many of the finial tops have been found in other locations, and these elements could be brought back to their original positions on the Scala in a slightly more aggressive intervention. In the case of a complete restoration, the errant finials would be replaced while the remaining losses would be reconstructed to completely restore the visual continuity.



Missing Parts

The conservation methodology for other missing elements of the Scala D'Acqua is equally varied. The major piece missing is a portion of the south wall near landing two. This portion could be restored, or the original piece could be replaced if found, although this seems unlikely. The option that made the most sense to the team was to respect the changes made by the Orto Botanico, and allow the loss to remain.

The Fountain

In its present state, the fountain of the Scala d'Acqua functions at only a fraction of its original capacity. The most conservative solution would be to maintain the fountain in its present state, while a more aggressive action would be to restore the full function of the fountain by restoring the water flow that was previously diverted for irrigation. An intermediate course of action would be to restore the full function of the fountain, but use it only on special occasions. The present water flow would suffice for everyday use. This alternative would prevent further deterioration of the travertine surrounding the main spout of the water stair; this could also be accomplished by placing a cap on the travertine or patching the losses with lime mortar.



Suggested Urgent Work

Without proper conservation, the stair will continue to degrade at an accelerated rate. While much of the intervention can be performed at a later date, certain actions should be performed immediately to slow further serious deterioration. Both proper maintenance and stabilization of fragile fabric is necessary. Recommended urgent work includes:

- Repair the leak at the north side of the water basins.
- Re-align the displaced steps.
- Stabilize stucco (sgraffito) and exposed masonry by grouting and edging.
- Stabilize compromised portions of the structure.
- Monitor stairs to determine if there is any ongoing structural movement.
- Remove vegetation from the Scala and the Nicchione.
- Clean the debris from the Scala.
- Research water pipe box in the Nicchione to assess possible risk.



Suggested Work for the Near Future

While the following work is not urgent in terms of risk, the changes would greatly enhance the site and therefore should be explored as soon as possible:

- Restore to the fountain spouts in the water basins.
- Re-incorporate the Nicchione with the Scala d'Acqua.
- Improve signage in the Orto to assist in leading visitors to the Scala



Further Research

The limited amount of time afforded this study of the Scala d'Acqua meant that not all areas of interest could be properly studied. Further investigation is required to allow for more considered proposals. The preliminary list of topics for future research includes, but is not limited to, the following:

- Conduct a study of the area above the Nicchione, including archaeological investigations.
- Search for the second axis leading from the center of the Palazzo Corsini to the casino (no longer extant).
- Attempt to understand why the axis from the Palazzo Corsini to the Scala d'Acqua was interrupted.
- Research the cleared area between the Scala and the Nicchione to understand its historic appearance.
- Utilize a botanist and landscape architect to assess threat to vegetation and plant management.
- Conduct a study of the other historic structures in the Orto, especially the Aranchera and greenhouses.
- Explore materials and designs for a new stretch of fence to enclose the Nicchione within the Orto.

The Orto Botanico and the Scala d'Acqua

The significance of the Scala d'Acqua has been identified by many sources. In 1741, the prominent Corsini family commissioned Fernando Fuga to construct the Scala d'Acqua in the gardens of their palazzo. Although the water stair form was popular during this period, the Scala d'Acqua in the Orto was the only project of this type designed by Fuga. While the Orto Botanico continues to evolve and change, the Scala d'Acqua remains the most important and conspicuous reminder of the history of the Baroque garden.

The value of the Scala d'Acqua and its surroundings is multifaceted, drawing on its importance historically and architecturally. Yet the Scala today is more than a mere connection with the past for visitors. In addition to giving visitors a glimpse of the world of the Corsini, the Scala is a place where the public can walk with their children, or relax in the greenery of the Orto.



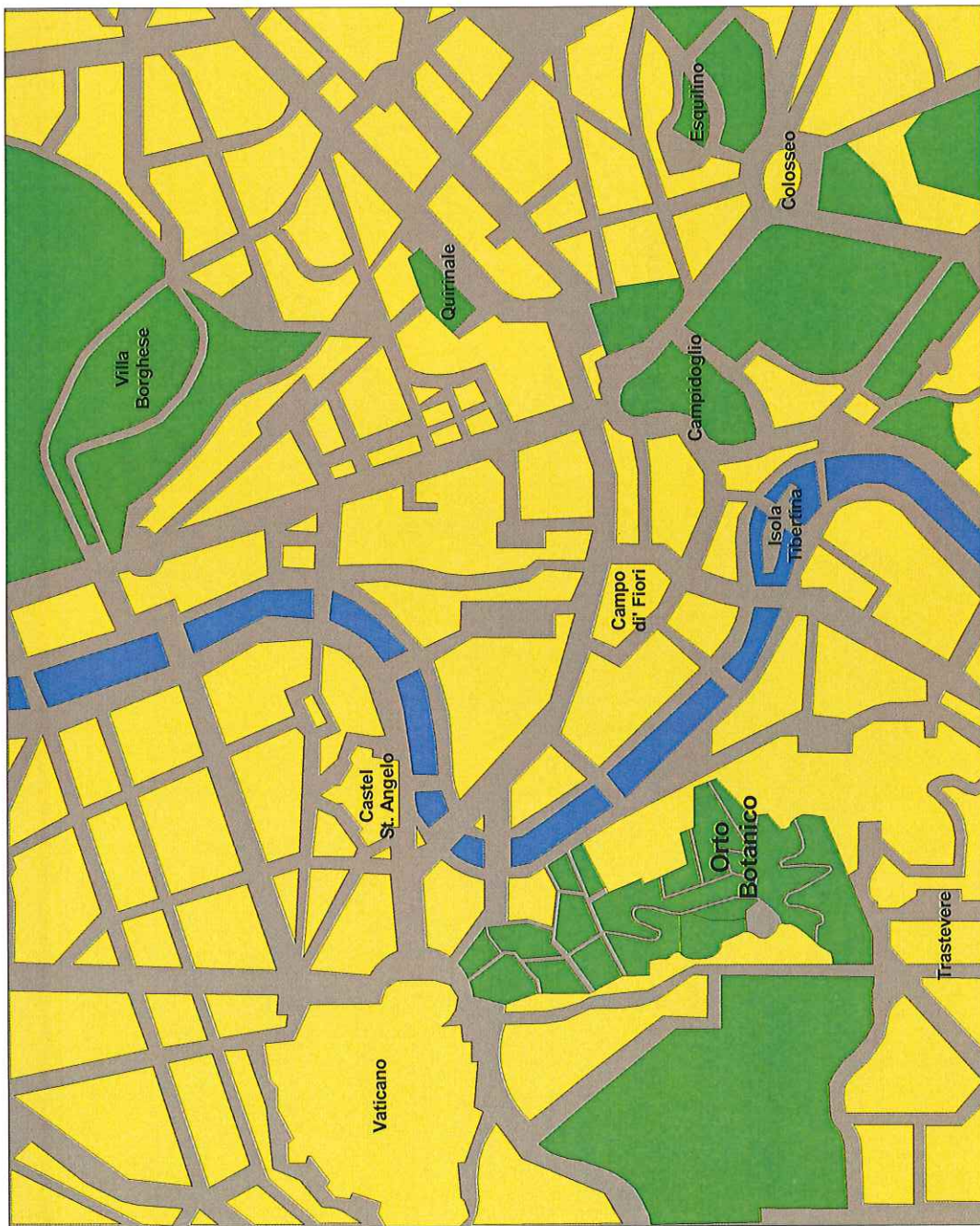
Bibliography

1. Adams, William Howard. Gardens through history: nature perfected. New York: Abbeville Press, Inc., 1991.
2. Bongiovanni, Luigi. Lecture, 8 July 2002.
3. Borsellino, Enzo. Palazzo Corsini Alla Lungara, Rome: Schena Editore, 1988.
4. Ceen, Alan. Lecture, 20 June 2002.
5. Coccia, Stefano. Lecture, 1 July 2002.
6. Cresti, Carlo. Palazzi of Rome. Köln: Könemann, 1998.
7. De Vico Fallani, Massimo. Lecture, 24 June 2002.
8. Dinelli, Angela and Giuseppe Massari. Roma e Il Suo Orto Botanico. Rome: Borgia, 1984.
9. Ficacci, Luigi. Giovanni Battista Piranesi: the complete etchings. New York: Taschen, 2000.
10. Francesconi, Anna Lucia. Lecture, 4 July 2002.
11. Frutaz, Amato Pietro. Le piante di Roma. Roma: Istituto di studi romani, 1962.
12. Gambardella, Alfonso. Ferdinando Fuga: 1699-1999: Roma, Napoli, Palermo. Napoli: Edizioni scientifiche italiane, 2001.
13. Goode, Patrick and Michael Lancaster, editors. Oxford companion to gardens. Oxford: Oxford University Press, 1986.
14. Heilmann, Christopher H. "Acqua Paola and the urban planning of Paul V Borghese," in The Burlington Magazine. Vol. 112, 1970.
15. Hibbert, Christopher. Rome, the biography of a city. New York: W. W. Norton, 1985.
16. Jokilehto, Jukka. Lecture, 1 July 2002.
17. Kieven, Elisabeth. Ferdinando Fuga e l'architettura romana del settecento. Roma: Multigrafica, 1988.

18. Lazzaro, Claudia. The Italian Renaissance Garden. New Haven: Yale University Press, 1990.
19. Matthiae, Guglielmo. Ferdinando Fuga e la sua opera romana. Roma: Fratelli Palombi, 1952.
20. Pinto, John. "Architecture and Urbanism," in Art in Rome in the Eighteenth Century, Edgar Peters Bowron and Joseph J. Rishel, ed. Philadelphia: Philadelphia Museum of Art, 2000.
21. Ricci, Franco Maria. Vignanello: Castello Ruspoli. Milano: FMR spa, 1999.
22. Rome in early photographs, the age of Pius IX: photographs 1846-1878 from Roman and Danish collections. Copenhagen: The Thorvaldsen Museum, 1977.
23. Scoppola, Francesco. Lectures, 18 and 21 June, 2002.
24. Stovel, Herb. Lecture, 21 June 2002.
25. Tantillo, Caterina. "The History of 'Palazzo Corsini Alla Lungara' and its Garden," Leaflet. 2002.
26. Wittkower, Rudolf. Art and architecture in Italy, 1600-1750. Baltimore: Penguin Books, 1965.

The Orto Botanico Rome, Italy

Locator Map



0.3 0 0.3 0.6 Kilometers

Rome

Graduate Program in Historic Preservation
University of Pennsylvania
University of Rome, La Sapienza
ICCROM

The Orto Botanico Rome, Italy

Site Plan



- Buildings
- Water Features
- Paths

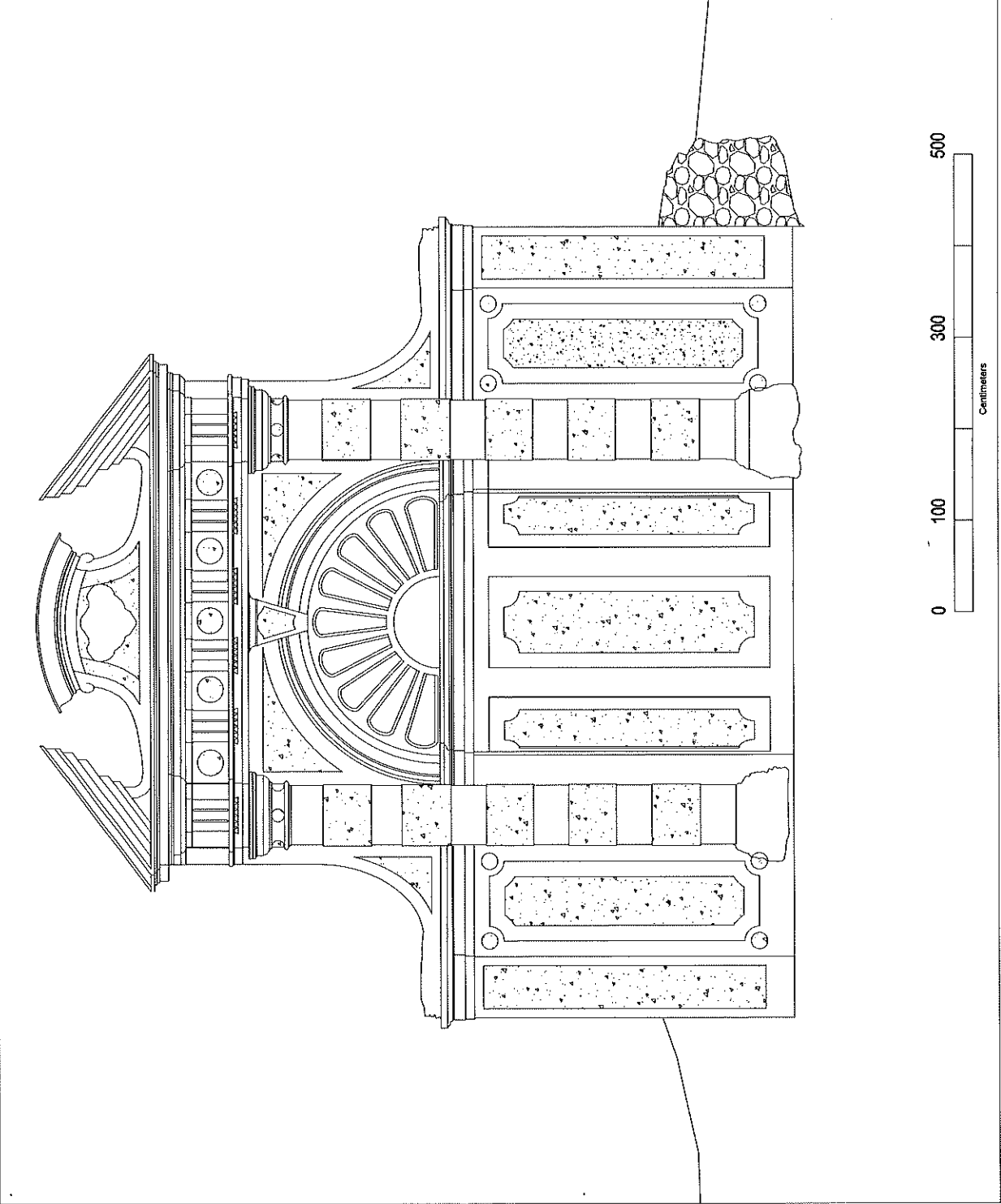
Graduate Program in Historic Preservation
University of Pennsylvania
University of Rome, La Sapienza
ICCROM



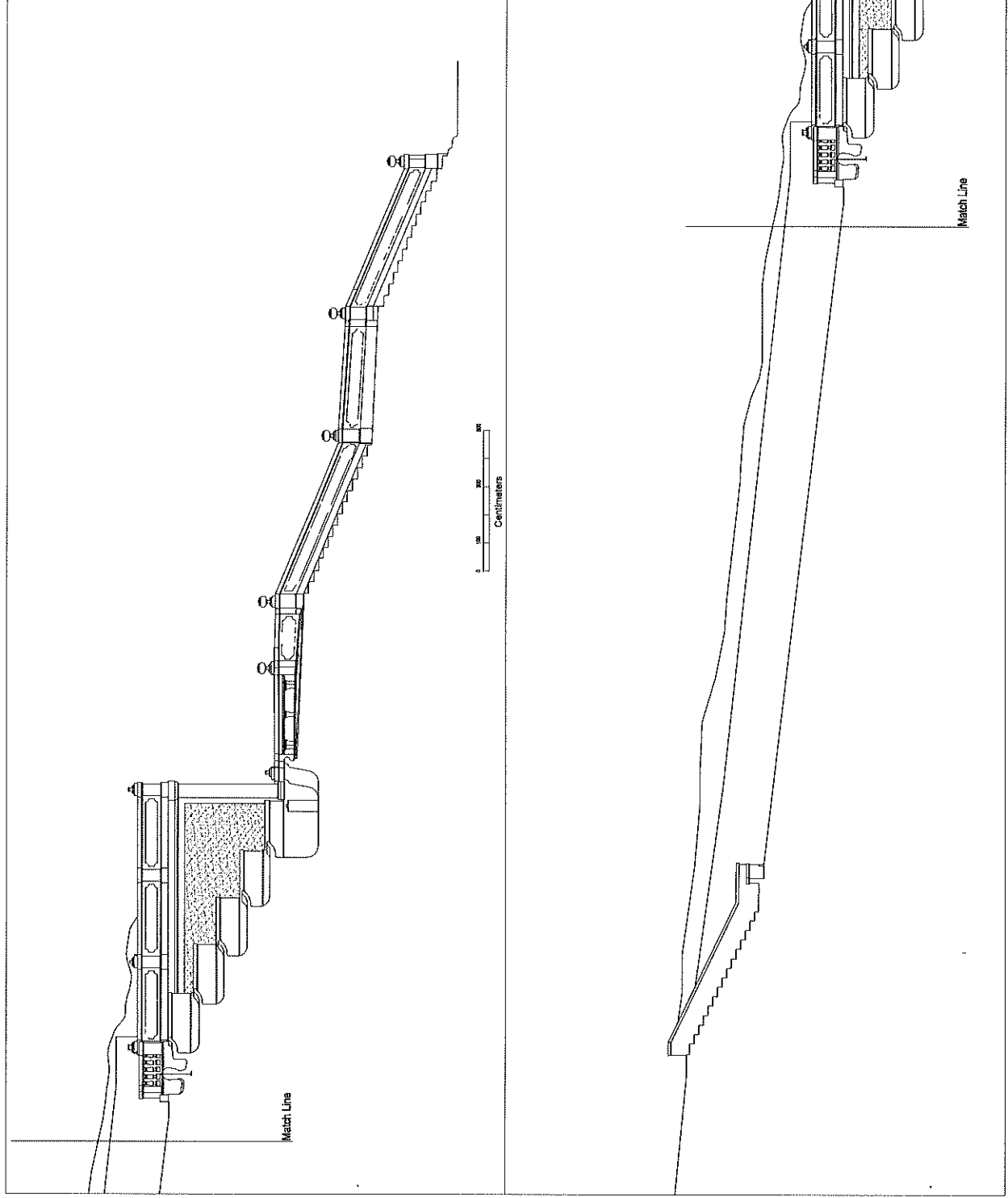
100 0 100 200 300 Meters

The Orto Botanico
Rome, Italy

Elevation of the
Nicchione

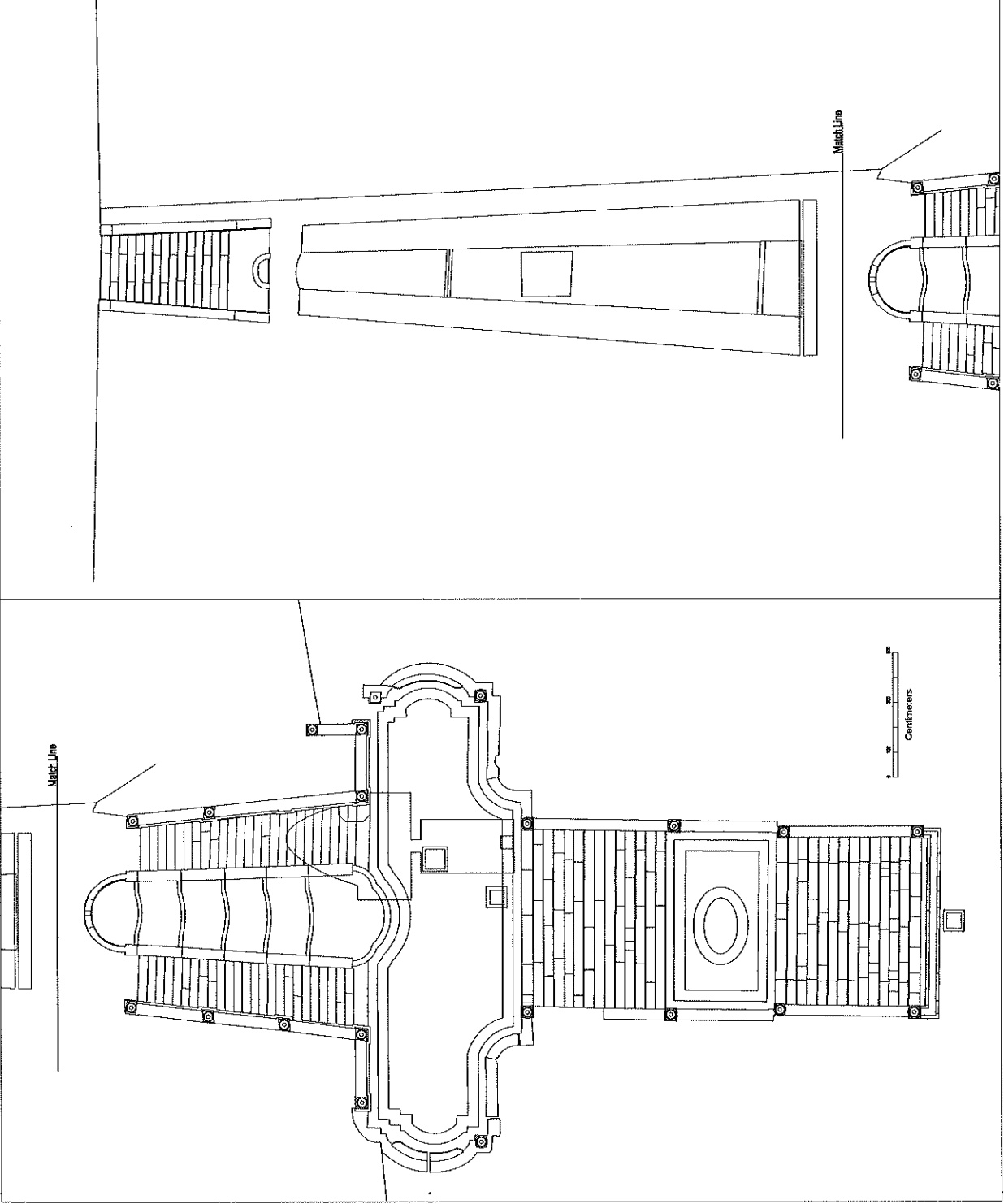


Section of the
Fountain stairs



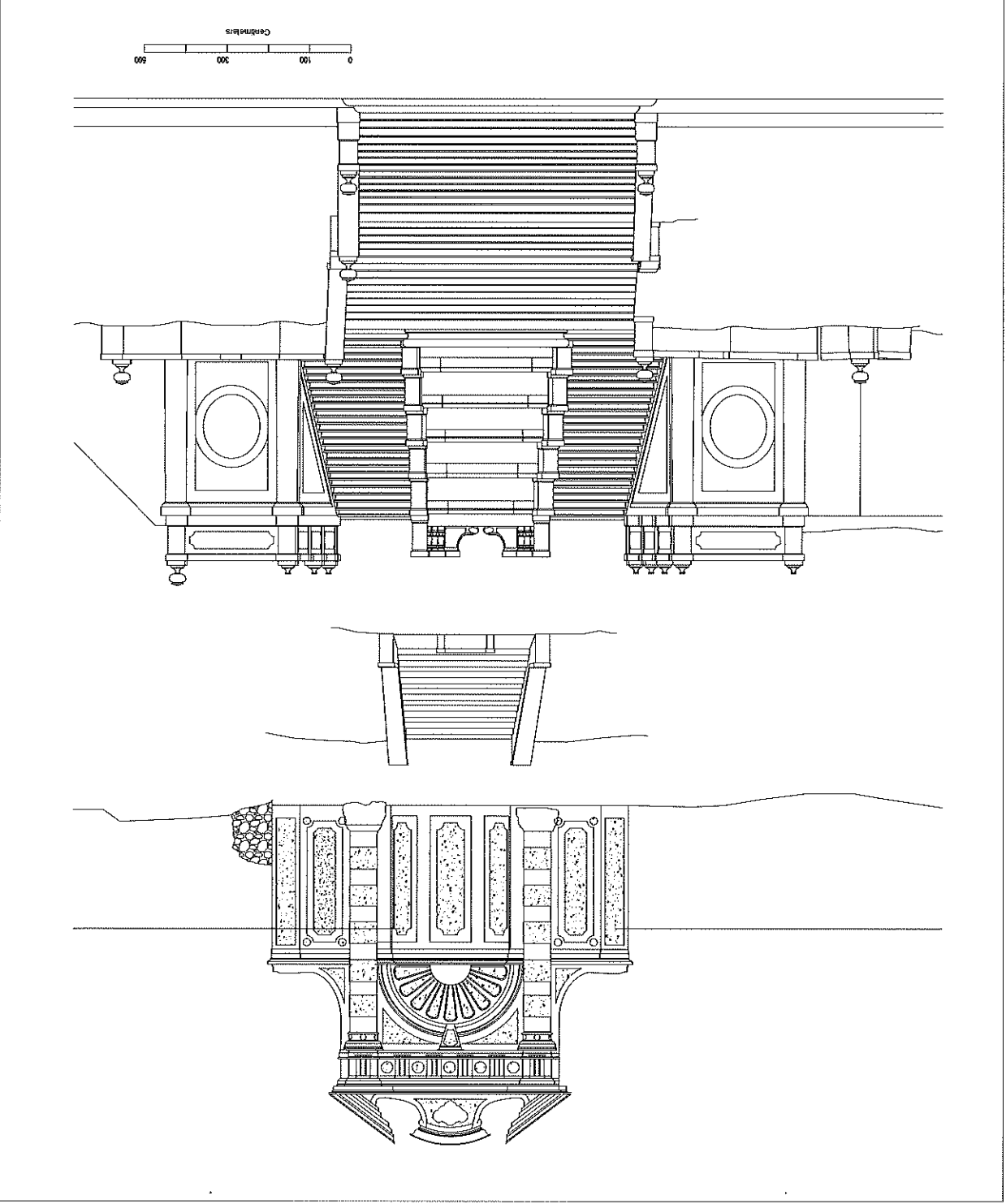
The Orto Botanico Rome, Italy

Plan of the Fountain stairs



The Orto Botanico
Rome, Italy

Elevation of the
Scala d' Acqua



11/10/16