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SEVEN PARTLY UNDERGROUND ROOMS AND BUILDINGS FOR WATER, ICE, AND MIDGETS

PAMPHLET ARCHITECTURE Nº 20

Mary-Ann Ray

PRINCETON ARCHITECTURAL PRESS: NEW YORK

CONTENTS

"Two large serpents wrapped together, standing inside the city, not in the forest, go underground with their two tails then emerge above ground with only one head."

Francesco Ghezzi, Tuscan poet

INTRODUCTORY NOTE: UPSIDE-DOWN AND INSIDE-OUT

In Virgil's *Aeneid*, the three-headed dog Cerberus guards the entrance to the underworld. Dark waters of the river Styx form the floor of this black hole in time where thin skeletons of forlorn souls are condemned to wander forever. Passing a waterfall of nightmares are bleak characters like the ferryman Charon who carefully places coins between the lips of his unlucky passengers.

In Mary-Ann Ray's inspiring work, it seems to me no coincidence to join Los Angeles and Rome, to meditate on the upside-down, to think of the inside-out. What could be more distant to the carved-out, massive inventions of Roman architecture than Los Angeles? How opposite the density of building in thick-walled tufa stone? How thought inverts in Roman cyclical time, with its ritual repetition of every afternoon's surreal silence, bath, the long Roman meal?

While Roman time does not equal the pure repetition of Greek cyclic time, it contrasts sharply with the linearity of Los Angeles or North American time. A culture of endless new experiences, latest fashions and new computers, site our buildings on the web, fixed to screens our eyes "walk" through virtual spaces.

Suddenly an experience inverts the virtual and phenomenal. We negotiate space with our legs and arms. A twist and turn of the body opens new perspectives. We feel light with our skin, smell the qualities of space, taste the sweetness of time. The marvelous phenomenal powers of architecture draw us into a space-time cyclone.

The Well of Sangallo (St. Patrick) in Orvieto is a marvel for any student of architecture. A stone-carved double helix curve, it is the spatial and temporal opposite of the steel-framed and glass-skinned skyscraper. Like the other examples documented in this little collection, the well is an assistant to a mind in motion and for architectural thought, it must be experienced.

Mary-Ann Ray's dedicated research and experiences remind us of inspirations

of the inside-out and the upside down. Where thinness meets density, where fragmented planar objects become space carved-out and volumetric. Ongoing linear time is suddenly tripped here by the thought of cyclical, mythical time. We are moved by the hope of opposites meeting in impossible time and phenomenal space.

Steven Holl

FOREWORD

This view of seven peculiar buildings has transpired over the course of the past nine or ten years, beginning with a year spent at the American Academy in Rome (1987-1988). This close reading of seven Italian spaces, all of which, to varying degrees, nudge or burrow themselves into or away from their grounds, was an opportunity to intimately play out (almost live) desires of architecture, space, and construction that are often difficult to achieve within other versions of "practicing."

In moving through the world, Robert Mangurian and I find ourselves often in the position of the traveler. We are not only travelers to other places, but we also find ourselves travelers within buildings. In the text, the traveler is referred to, and often the accounts of the travelers recount our maiden or return voyages to these spaces. Our readings of the spaces are attempts to re-see, and to re-build, these places into our future of making architecture.

The reasons for choosing these particular seven rooms and buildings are multiple. For one thing, all of them strongly take on some aspect of role-playing within the context of their respective grounds. They were also spaces which seemed to have the ability to "flip-flop" in and out of multiple spatial or constructional readings. These are played out and described in the text, and photographs and drawings of the seven chapters. One "flip-flop" that all the rooms and buildings seem to share is probably due to the fact that the origin of their construction was based upon the most objective pragmatic program. For example, in the well with the path to allow beasts of burden to pass and miss each other, in the parallel walls of the cistern with diagonally cut openings to allow water to settle, and in the icehouse made spherical to allow as little surface area for heat loss as possible, a kind of "flip-flop" occurs between the architecture of this inevitability in response to a hard and fast program, and space which has embedded in it extreme abstraction, deep perceptual shifts, and multiple and strange positions for the travelers who now occupy it. This shuttle between multiple, almost contradictory, worlds has kept these buildings alive for us in ways that buildings made within the more straightforward realm of architecture have not.

Mary-Ann Ray
Los Angeles and Rome

ACKNOWLEDGMENTS

To my fellow traveler, Robert, I dedicate this book.

At Princeton Architectural Press I thank Clare Jacobson, Therese Kelly, and Kevin Lippert for all of their work on this book. It has been impressive watching the Press grow out of the basement of the architecture school at Princeton, begun by a student ahead of me in the program there in the early eighties to whom I always looked up with wonderment. That student, Kevin has taken the press from that first basement edition of the black Letarouilly volume into one of the most interesting and productive places for the literature of architecture.

Thank you to Steven Holl for making this a part of the Pamphlet Architecture series, and for his ongoing criticism and commentary on its development over the years. The Pamphlet 'manifesto' he has established through this series of books, which now number twenty, was a primary force behind this work.

Nicholas Lowie and Sheridan Lowrey have designed this book with their inventive and always surprising eyes and takes on things. They have responded smartly to an initial vague request that the book be 'sturdy' and feel a little bit like a nineteenth-century traveler's journal or account. They have been able to do that but give the design another edge at the same time. Hadley Soutter Arnold has insightfully and carefully edited this text in between the other more important projects and work in architecture—I thank her for making the time to take this on, as her involvement has meant a lot. Thank you to Leslie Rowe and Janice Shimizu for help with some of the day-in and day-out work —which they made very enjoyable—and to Monique Birault and Lydia Vilppu for their work on the photographs as described in the Afterword. Thank you George Newburn for walking the well up and down that one day.

Without the tremendous support of two fellowships, this project could not have received the luxury of time and attention it required. The Howard Crosby Butler Traveling Fellowship awarded through Princeton University was really the beginning of this project, allowing work during the summer of 1986 in Italy, especially around the villas at Bagnarola. I especially acknowledge Lili Auchincloss and the American Academy in Rome for the year 1987-1988 spent in a great volume of a studio, with the resources for traveling and working and being around a set of fascinating people doing other work. All of us at

the Academy that year felt extremely fortunate to have had Jim and Mary Ann Melchert at the helm—their direction set a tone for enjoyable and productive work.

The methods of photography used to "draw" the seven spaces owe a debt to the work of Sherie Scheer, Jan Dibbetts, and David Hockney. The technique of what we have been calling the "composite" or "built frame" photograph is one that Robert Mangurian and I have used both in our work and in our teaching for reasons that are described in the aft portion of this book under the section titled "Afterword: Notes on the Technique and Method of Photography."

Mostly, I acknowledge and thank deeply my family—Barbara Ann, Edna Josephine, Hilary Jane, Minnie Mae, and Norman Gene for supporting me through all my years, and, several key teachers—Robert Jones, Michael Spafford, Michael Graves, and Robert Mangurian (my fellow traveler)—who as "inspirators" have had a profound effect on this and other work. Their thoughtful and perceptive teaching, and their prods and prompts have led not only to this specific project, but to a more overall and ongoing life of seeing, moving in, reacting to, and making space.

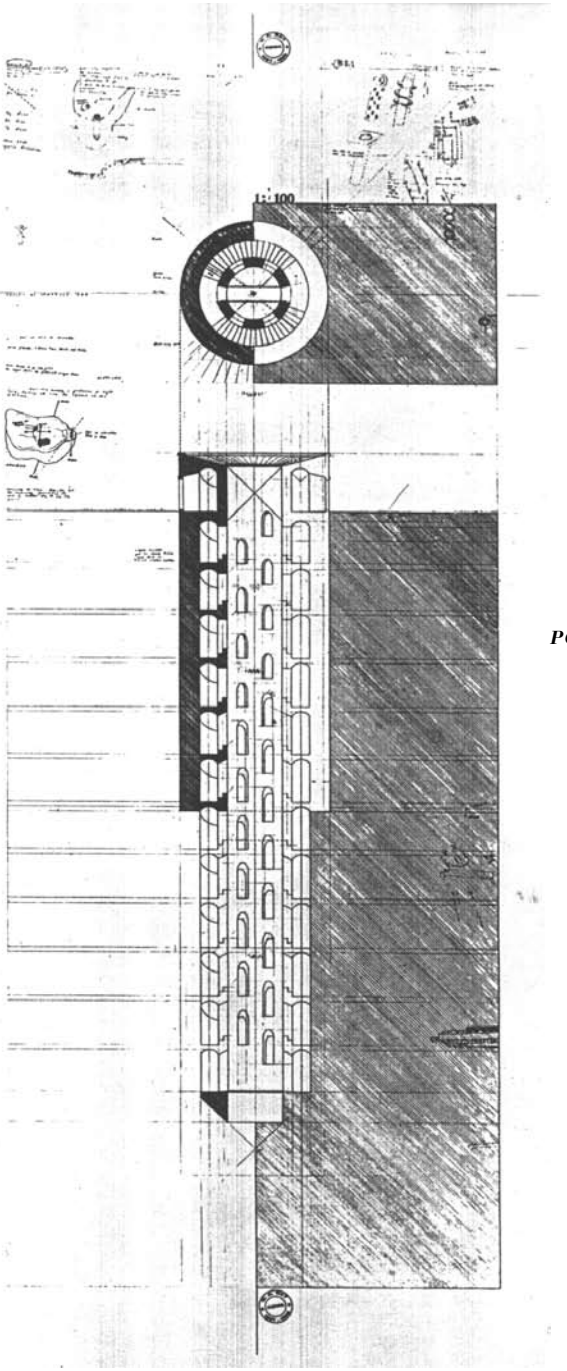
Mary-Ann Ray

A NOTE TO THE READER ON THE STRUCTURE OF THE BOOK AND THE ORGANIZATION OF THE CHAPTERS

This book has been structured to read more like a portfolio of plates for the drawings and photographs than as a book of text with supporting images. Nicholas Lowie and Sheridan Lowrey, in their design of the book, have placed the pairs of drawings and photographs for each of the seven spaces in a position preceding the text for each chapter. The text then should be read as supporting material to these primary documents in the portfolio.

The subsections of each chapter follow an order which begins with a **general introduction** to the room or building, followed by aspects of it related to its **site and situation,** then **structure and construction,** and concluding with **composition of architecture and space.** Immediately following the text is a list of key dimensions and data and an annotated bibliography for each room or building.

EMBLEMATIC PLAN,
THE HALF MONOLITH/'HALF MANYLITH'



I

POZZO DI SAN PATRIZIO

ORVIETO

WELL OF ST. PATRICK

ORVIETO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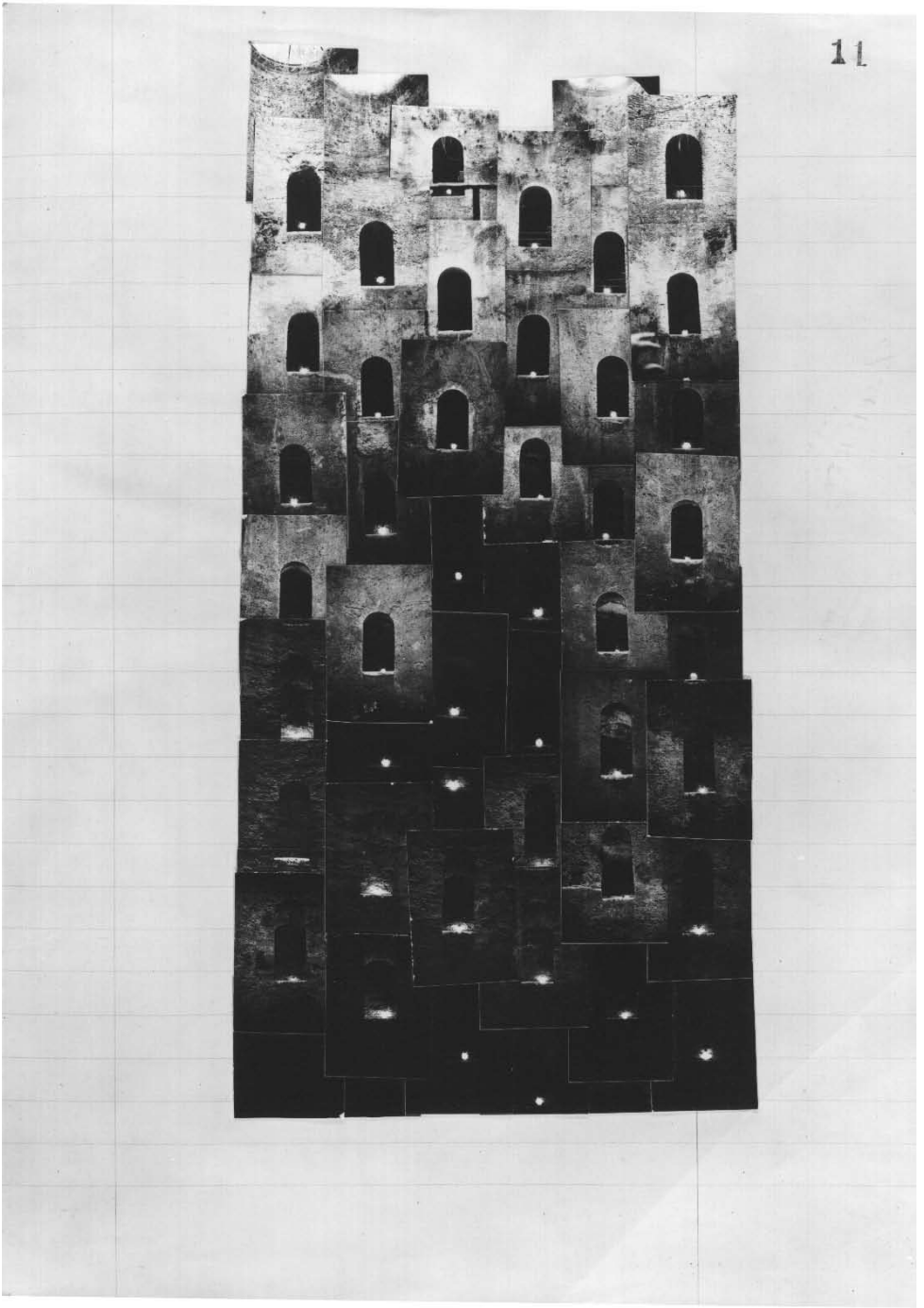
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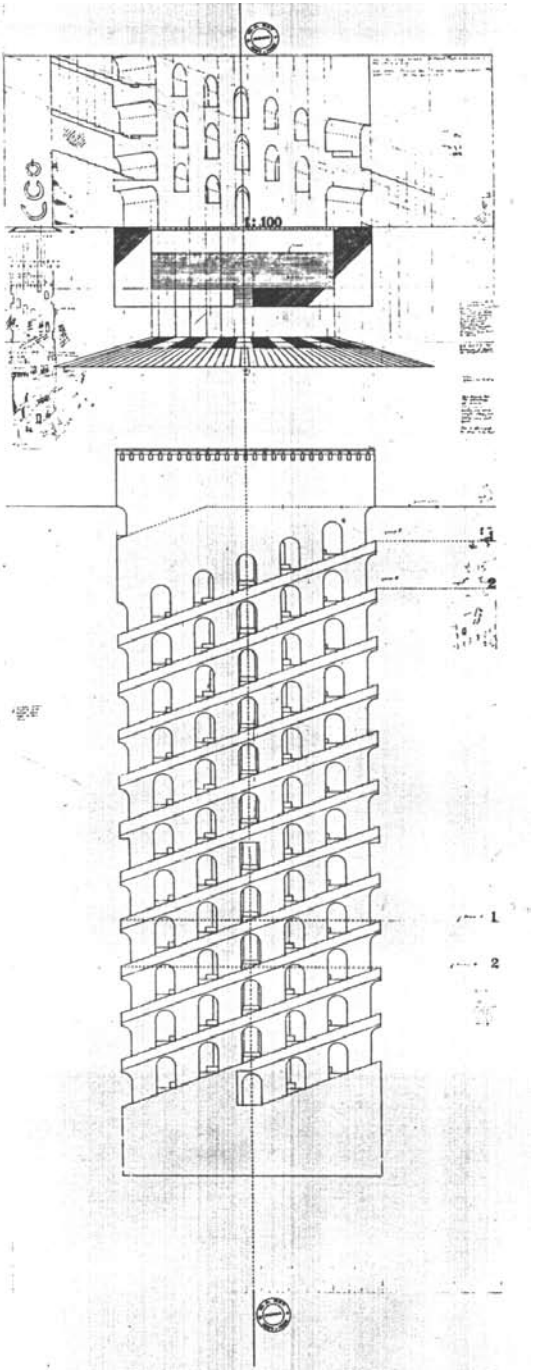
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I

POZZO DI SAN PATRIZIO

ORVIETO

WELL OF ST. PATRICK

ORVIETO

The construction of the *Pozzo di San Patrizio,* or St. Patrick's Well, was instigated by Pope Clement VII following the sack of Rome in 1527. Clement, who took refuge in the city of Orvieto, northeast of Rome, commissioned the well to supply this hill town with water during times of siege. Antonio da Sangallo the Younger was the initial architect, and the architecture of the well can be attributed to him. Work was finished under Paul III in 1543 and was supervised by Giovanni Battista da Cortona and Simone Mosca (a Florentine architect and sculptor). St. Patrick is associated with the well because of its resemblance to a natural cave formation on an Irish island in the lake of Dearg. Next to a plummeting chasm in the cave, St. Patrick would go to pray.

A VATICAN MANUSCRIPT

A PAIR OF CITY ARCHITECTURES, HOVERING THRESHOLDS, DUOMO AND ITS OBVERSE, AND OCCUPIED EDGES

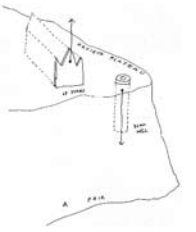
ORVIETO

Set into the city of Orvieto, where life moves back and forth across the horizontal surface of the streets and piazzas, are two distinct architectures perpendicular to the horizontal plane. The Italian Gothic cathedral or *Duomo* rises vertically above the town from the central piazza. It is a magical building full of light and illusion, where alabaster thresholds induce closed doors to hover over glowing bands of light. The *Duomo* is banded abstractly in greenish-black and white stone, with a thin vertical slice of facade gilt with gold-plated mosaic.

DUOMO

As an obverse to the *Duomo,* the well sits at the cliff's edge on the periphery of town. Instead of rising up from the ground surface, it begins at the ground and drops down into it. The well is an anti-illusionistic space, and is not an occupied single volume like the *Duomo.* Instead, it is a strongly physical construction composed of the repetitive elements of a superimposed circulation system that does not allow occupation at the center, but only within the edges.

ENTRANCE TO THE WELL

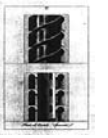


A Pair of City Architectures

HALF MONOLITH/HALF 'MANYLITH,' UP AND DOWN EXCAVATION

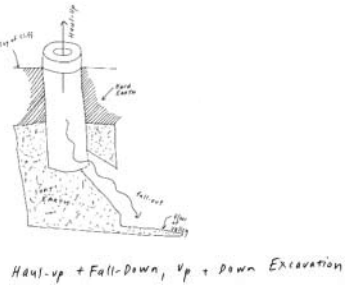
PLAN AND ELEVATION OF THE WELL

The well was built close to the eastern edge of the city's cliff, adjacent to the ruins of an Etruscan Acropolis that overlooked the city. The volcanic tufa bedrock was broken through to reach a living vein of water at about 54.5 meters below the land surface. At approximately mid-depth, the tufa layer gave way to successive strata of Tertiary clays and silts.



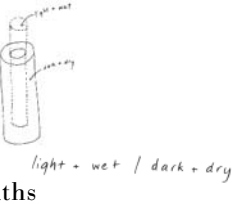
SECTION OF THE WELL

Construction of the walls within the tufa layer was subtractive, and the walls were carved from the monolithic surfaces of the tufa itself. Below the tufa layer, retaining walls of many brick and tufa blocks were built to hold back the soft earth. The construction of the well, which at first glance appears to be uniform, is actually half monolithic and half "manylithic."



One nineteenth-century theory (based on rumors passed down through generations) for how earth was removed from the hill is that work commenced from the top **and** from the side. Quarrymen may have dug a short lateral shaft into the cliffside near the lowest level of the dry well shaft so that excavation could occur from the top down, using gravity to do the work, as well as more conventionally digging out from the bottom up. Thus it was a simultaneous up and down excavation.

COMPOSITION OF ARCHITECTURE: LOOPED SPACE, EMBLEMATIC PLAN, AND TWO TRAVELERS IN THE WELL



The occupiable space of the well **is** its circulation. The well is a building almost without space, without rooms, and without destinations. Each circulation path, entered at ground level, leads back, in a complete loop, to its point of beginning, at which point the paths start up all over again. The spatial composition of the well is structured by two concentric cylinders. The inner cylinder encloses the light well shaft and is continuous and unbroken for almost 60

THE STEPPED RAMPS

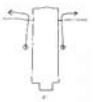
meters. The outer cylinder holds two superimposed, independent, and non-communicating stepped helical ramps. While the plan is as flat and emblematic as a rubber stamp graphic, the section gives way to a complex spatial labyrinth. The ramps are entered from above ground by separate doors, one facing north, the other south. The paths of the two ramps cross only at one point, at the bridge crossing the bottom of the well. This circulation system was invented to permit a continuous single clockwise path of horses to enter, descend, load up with water, ascend, and exit the well without making a sharp turn or running into a fellow animal.

CARETAKER OF THE WELL

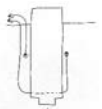
Within this circulation pattern, if two travelers are in the well facing each other, level at the mid-depth position, on separate ramps, the two travelers will be very close in plan, but very far apart along the sectional path. From this beginning position, at equal vertical depths and face-to-face on separate ramps, we can follow some possible scenarios for these two travelers in the well.

One remains, one departs by ascending. They stand face-to-face, but never cross paths.

One remains, one departs by descending and ascending, briefly crossing the path of the remaining.



One departs by ascending, the other also departs by ascending. They are face-to-face at every window along their ascent, but then exit the well back-to-back, one to the north, and one to the south.



One departs by ascending, the other follows (which requires descending). The follower is always behind the leader by a distance equal to the depth of the well.

DETAIL OF "INFERNO" BY LUCA SIGNORELLI

One departs by descending, the other also departs by descending, each inscribing a mirror image path of the other. The two briefly cross paths for a moment on the bridge at the deepest point. They embark on their ascension, coming face-to-face at every one of the seventy windows, then exit the well back-to-back again, one to the north and one to the south.

Paths of Two Travelers in the Well

INSIDE WELL DIAMETER	4.70 METERS	16 FEET
OUTSIDE RAMP DIAMETER	9.07 METERS	30 FEET
TOTAL DEPTH	58.44 METERS	192 FEET
NUMBER OF WINDOWS	70	
NUMBER OF STEPS	496	
NUMBER OF DOORS	2	

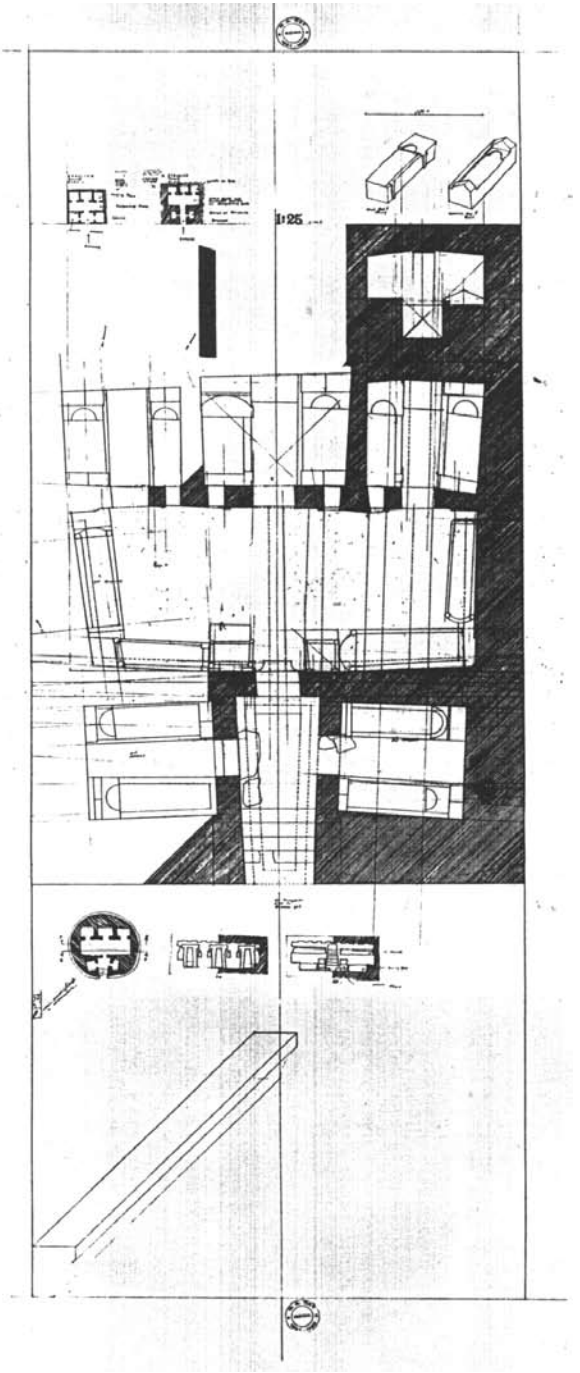
Cipriani, G.B. "Pozzo di Orvieto." Ferraioli II, 740 (int 9), Vatican Library, 1808.
From the Ferraioli library, now in the collection of the Vatican library, this manuscript can be accessed with the call number of Ferraioli II, 740 (int 9). This manuscript contains four nineteenth-century plates: I Plan and elevation; II Section through the ramps; III Section through the center; IV Shadowed section details through the ramps and the center. It also contains a brief one-page description of the history and physical qualities of the well.

Luzi, Ludovico. **Descrizione del Duomo d'Orvieto e del Pozzo Volgarmente detto di San Patrizio.** Orvieto and Pompeii, 1844.

Orvieto. Italia Artistica, no. 83. N.p., n.d.
An early guide-book account of the well.

Pennacchi, Francesco. **Cenni Storici e Guida di Orvieto.** Orvieto: Tip. comunale Tosini, 1873.
Another early guide book account of the well.

Perali, Pericle. **Orvieto: note storiche di topografia e d'arte dalle origini al 1800.** Rome: Multigrafica, 1979.
A historical description of Antonio da Sangallo the Younger's involvement as architect for the well and other building projects in Orvieto. Perali quotes an enigmatic seventeenth-century sonnet written by the Tuscan poet Francesco Ghezzi that begins something like this: "Two large serpents wrapped together, standing inside the city, not in the forest, go underground with their two tails then emerge above ground with only one head."



11

TUMULO DELLA CORNICE

CERVETERI

TOMB OF THE CORNICE

CERVETERI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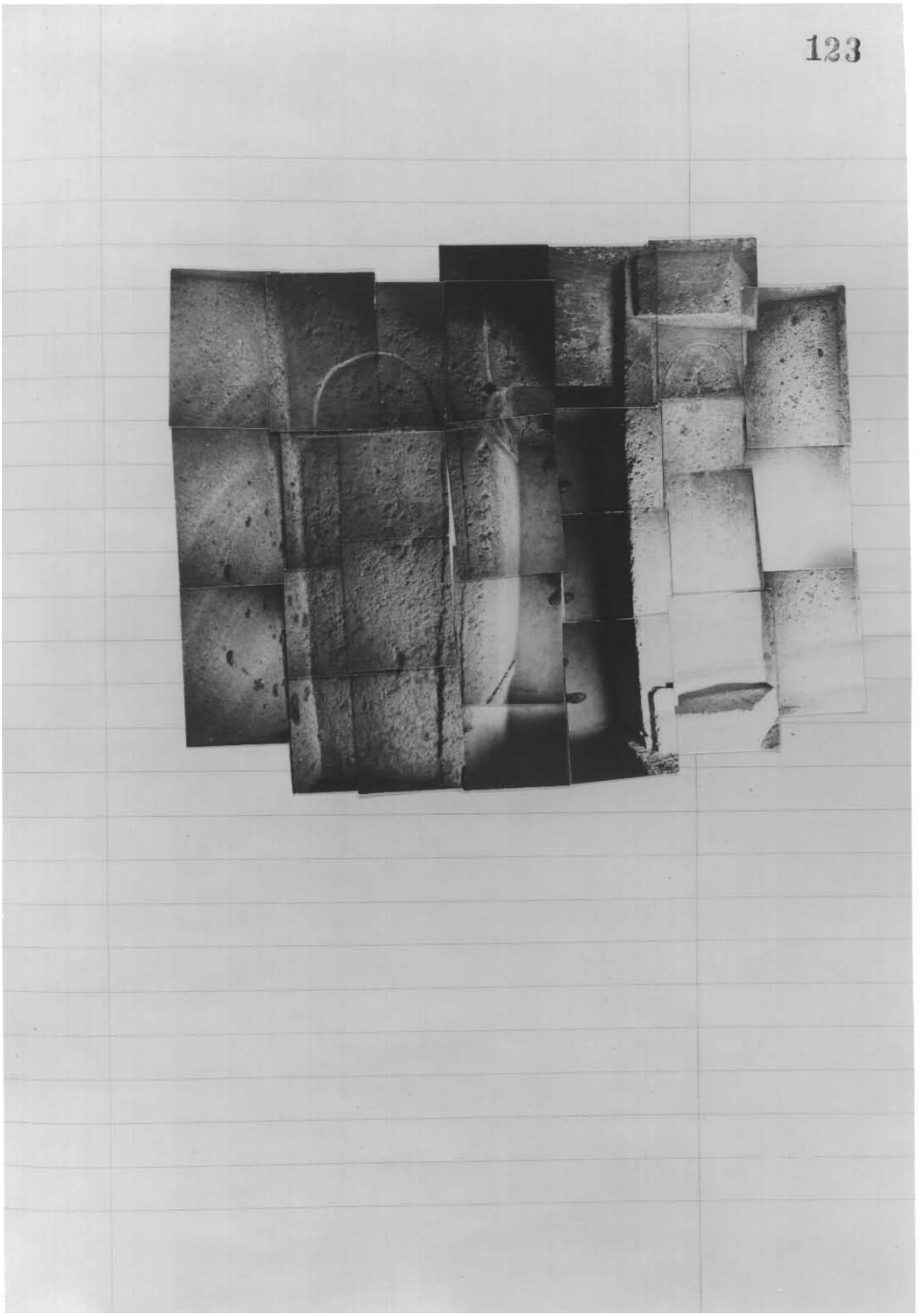
M. A. RAY
ROMA
1937 - 1983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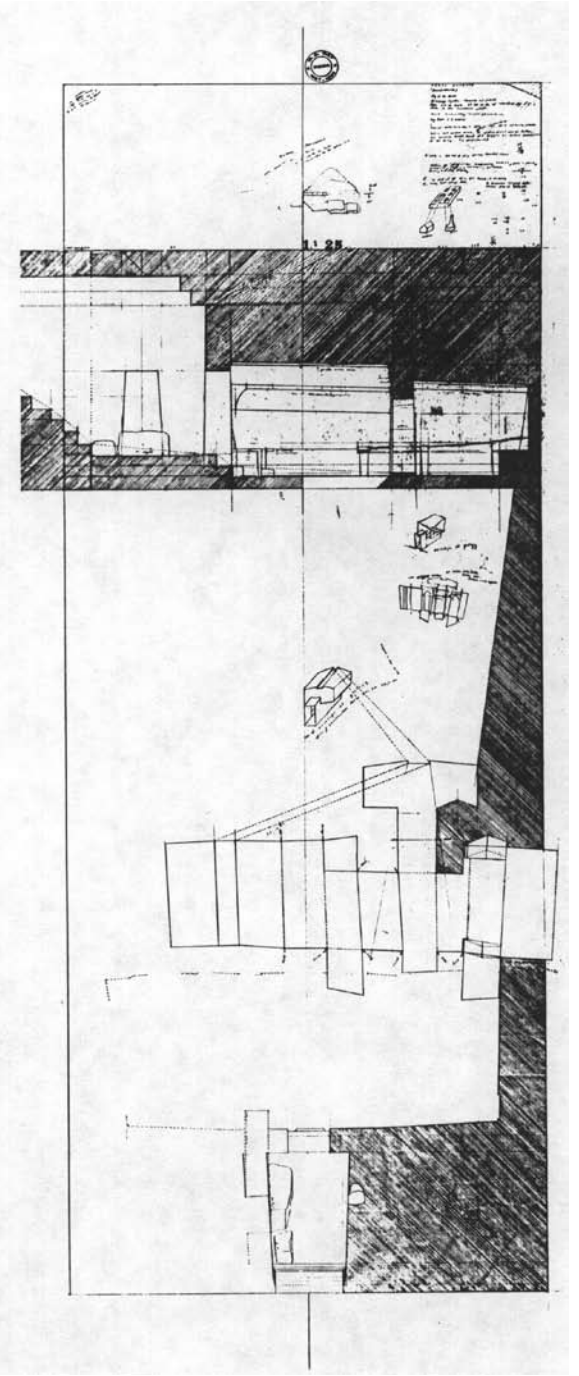
ARCHITECTURE AND FURNITURE SUBSUMED
BY THE SINGLE SURFACE OF THE STRETCHED MEMBRANE OF STONE



II

TUMULO DELLA CORNICE

CERVETERI

TOMB OF THE CORNICE

CERVETERI

The Tomb of the Cornice was excavated and constructed sometime during the first half of the sixth century B.C. in the *Banditaccia* necropolis of the ancient Etruscan city of Kysa or Kysra, called Caere by the Romans and now Cerveteri. The ancient city, just north of Rome, covered 375 acres and held thirty thousand inhabitants. Cerveteri is thought to be the place where the Etruscan alphabet was invented, and is mentioned in Virgil's **Aeneid.**

The burial of an Etruscan did not involve cremation, humation, or embalming. The body, untreated, would be laid out on a stone bed. The rooms of the tomb would be filled with possessions for life after death, war after death, and pleasure after death. Then the tomb would be sealed with *sigilli* (stone blocks with mortar) and a lit brazier placed inside to burn off oxygen that would otherwise cause decomposition.

The legends of the local *tombarolli* (grave robbers) support the notion that the tombs remained airless and airtight until opened. The *tombarolli* tell stories of opening tombs, and, after one still moment of seeing the tomb intact, witnessing the remains of the bodies fall into limp piles of dust and articles nailed to the walls drop to the ground, as the ligaments of the body and the iron of the nails would oxidize.

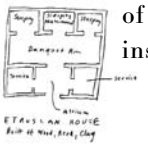
AN OPENED TOMB

ALTER-CITY, CITY FOUND BY SUBTRACTION ("BUILT" IN REVERSE)

PLAN OF ANCIENT CERVETERI

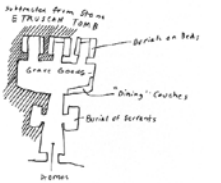
The ancient acropolis of Kysra/Caere and the smaller modern town of Cerveteri are centered on a plateau of volcanic tufa stone between the Mola Valley and the Manganello Valley. The deep Mola Valley and its vertical surfaces were used for Villanovan villages and tombs. A terraced plateau of the Manganello Valley, to the northwest of the acropolis, is the site of the *Banditaccia* necropolis.

The necropolis is a city made by subtraction, "built" in reverse. Etruscan laborers carved monolithic cylindrical stone bases on which were mounted conical earth mounds, perhaps formed from the excavated material. On top of these artificial mountains, trees were planted. Burial spaces inside the mounds were made in imitation of a typical Etruscan



ETRUSCAN HOUSE

RECONSTRUCTED VIEW OF TOMBS



house. A network of streets and drainage channels sloped for water run-off were carved from the surrounding volcanic tufa. With its streets, spaces, houses, gardens, and plumbing, the necropolis was a kind of counterpart, or alter-city for the acropolis, the city of the living on the hill. Originally it would have been planted, painted, colored, and perfumed. Now it is grey, geometric, barren, and abstract.

A STREET IN THE NECROPOLIS

SPACE MACHINED FROM GEOLOGY, SEAMLESS SURFACE, STRETCHED MEMBRANE

The interior space and all of the loose parts and pieces of the "house" of the Tumulo della Cornice—the floor, walls, ceiling, furniture, and building elements such as the cornice, beams, door frames and thresholds—are subsumed by the single unbroken surface of the excavated tufa stone. The parts and pieces are grafted one to the other, each to the next. This space machined from geology resists the modern technological tendency toward the specialization of elements and joints, but prefigures the modern desire for a seamless surface. The disparate elements of the house are encased or wrapped by one uniform material.

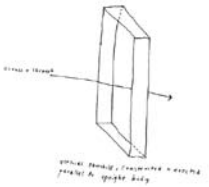
ENTRY OF THE TOMB OF THE CORNICE

CHURCH BETA GIVORGIS

A reading of the walls shifts between two almost simultaneous conditions. Because of the sharpness and crispness of the construction, the surface reads either as carved, cut, and subtracted, or, as a tautly stretched membrane covering an unseen understructure. The walls of these rooms for death flip-flop between seeming to be built inside-out, or vice versa, from the outside-in.

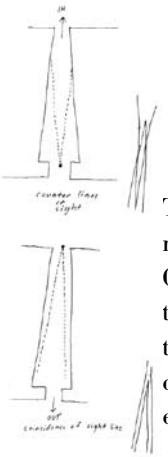
SAQQARA'S PAPYRUS COLUMNS

FURROWED THRESHOLD, RECLINING FACADE, UNENFORCED PERSPECTIVE, BELLOWS OF STONE, AND PRIMAL CINEMA



The threshold, or the way in, is not an opening in a vertical surface through a membrane between inside and outside. Instead, the threshold is a furrow cut across and into the earth, covered by corbelled stones that support the earth mound on top. The furrowed path that crosses through a horizontal surface into the volume of the earth is a threshold for entering the earth through a reclining facade, a facade that is parallel to the reclining occupants.

FURROWED ENTRY



UNENFORCED PERSPECTIVE

This horizontal threshold is wider at the far end. The walls splay to make a reverse forced perspective, or, an unenforced perspective. On the way in, the walls appear precisely parallel, seemingly not to succumb to perspective. On the way out through this same threshold, however the perspective is forced, making the way out appear far longer than the visual memory of the way in. It is easier to come to this place than it is to leave or escape.

Today, with the door open to the elements, light and water enter this space below grade. With the floor of the central room covered with water and the angle of the sun coinciding with the angle of the furrowed cut, an image of anything between the sun and the water surface is cast through the bellows of the stone side walls and thrown upside down by reflection from the surface of water onto the frame of the far wall. On the facade of that wall ahead, the visitor is faced with an upside-down image of their own body, backed by moving images of upside-down clouds. It is literally a *camera obscura*, an enactment of Plato's cave, the primal cinema.

ENTRANCE TO THE FIRST BED CHAMBER

ROMAN FUNERARY CHEST WITH LEAD PIPE FOR LIBATIONS

DIFFERENCE BETWEEN NEW EARTH LEVEL AND OLD EARTH LEVEL	2.00 METERS	6 FEET
DEPTH OF FLOOR BELOW NEW EARTH LEVEL	1.74 METERS	6 FEET
HEIGHT OF ENTRY	3.74 METERS	2 FEET
LENGTH OF ENTRY PASSAGE	3.825 METERS	13 FEET
WIDE WIDTH OF ENTRY PASSAGE	1.35 METERS	4 FEET
NARROW WIDTH OF ENTRY PASSAGE	1.70 METERS	6 FEET
NUMBER OF ROOMS	7	
NUMBER OF BEDS	14	
NUMBER OF WINDOWS	4	
NUMBER OF CHAIRS	2	
OVERALL PLAN SIZE	8 X 10 METERS	25 X 43 FEET
PLAN SIZE OF REAR RIGHT BEDROOM	2.28 X 2.30 METERS	8 X 8 FEET

Boethius, Axel. **Etruscan and Early Roman Architecture.** 1970. Reprint, New York: Pelican Books, 1978.

The chapter on Etruscan architecture is one of the few explanations of the buildings, constructions, and houses of Etruria. The chapter has sections devoted to techniques and materials, temples, town planning, domestic architecture (the description of the house helps to understand the similarities between them and the forms of the tombs), roads and bridges, and tombs and cemeteries.

Dennis, George. Chapter XXI in **The Cities and Cemeteries of Etruria.** 1883. Reprint, Princeton: Princeton University Press, 1985.

To quote from Paul MacKendrick in **The Mute Stones Speak: The Story of Archaeology in Italy:** "Dennis' **Cities and Cemeteries of Etruria,** though its last edition appeared in 1883, is still the best general introduction to Etruscology. His achievement is the more remarkable in the light of the conditions under which he worked: execrable roads, worse lodging, and malaria stalking the whole countryside." It is a text of the intertwined stories and anecdotes of the travels of George Dennis with his descriptions of the Etruscan sites.

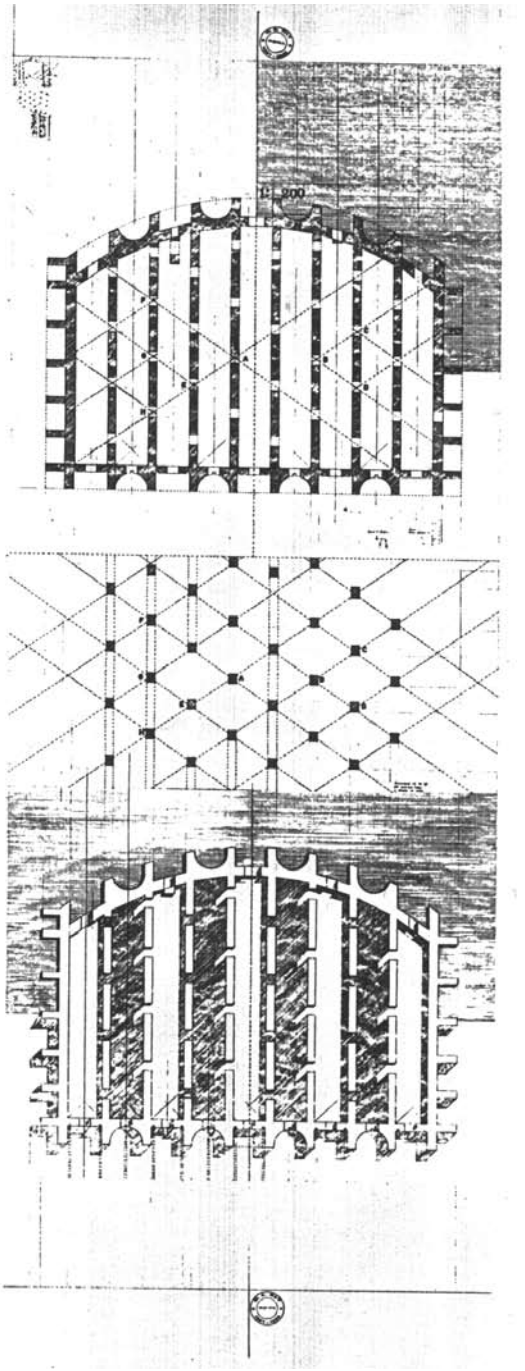
Grant, Michael. **The Etruscans.** New York: Charles Scribner's Sons, 1980.

Chapter nine entitled "Caere" is a good historical account of Cerveteri's wealth, art, territory, sea power, and relationship to the Etruscan and Roman powers. Chapters one through seven describe the formation of the Etruscan states, referring to the metal industry of Etruria, the influences of the East (Greece and Asia Minor) on the Etruscans, and the physical expansion of the territory of the states.

Paolelli, R. and Sorrentino, G. **Let's Meet the Etruscans.** N.p., n.d.

This book is available at the tourist stands at the entrance to the site of Cerveteri. It is a worthwhile book to have while visiting the tombs, as it has clear (though not inspired) drawings. The plans and maps help to make sense of the site, as do the descriptions and photographs supplied by the Deutsches Archäologisches Institut Rom Fototeca.

Virgil. **Aeneid.** Translation by Kevin Guinagh. Rev., ed. New York: Holt, Rinehart, and Winston, 1970.



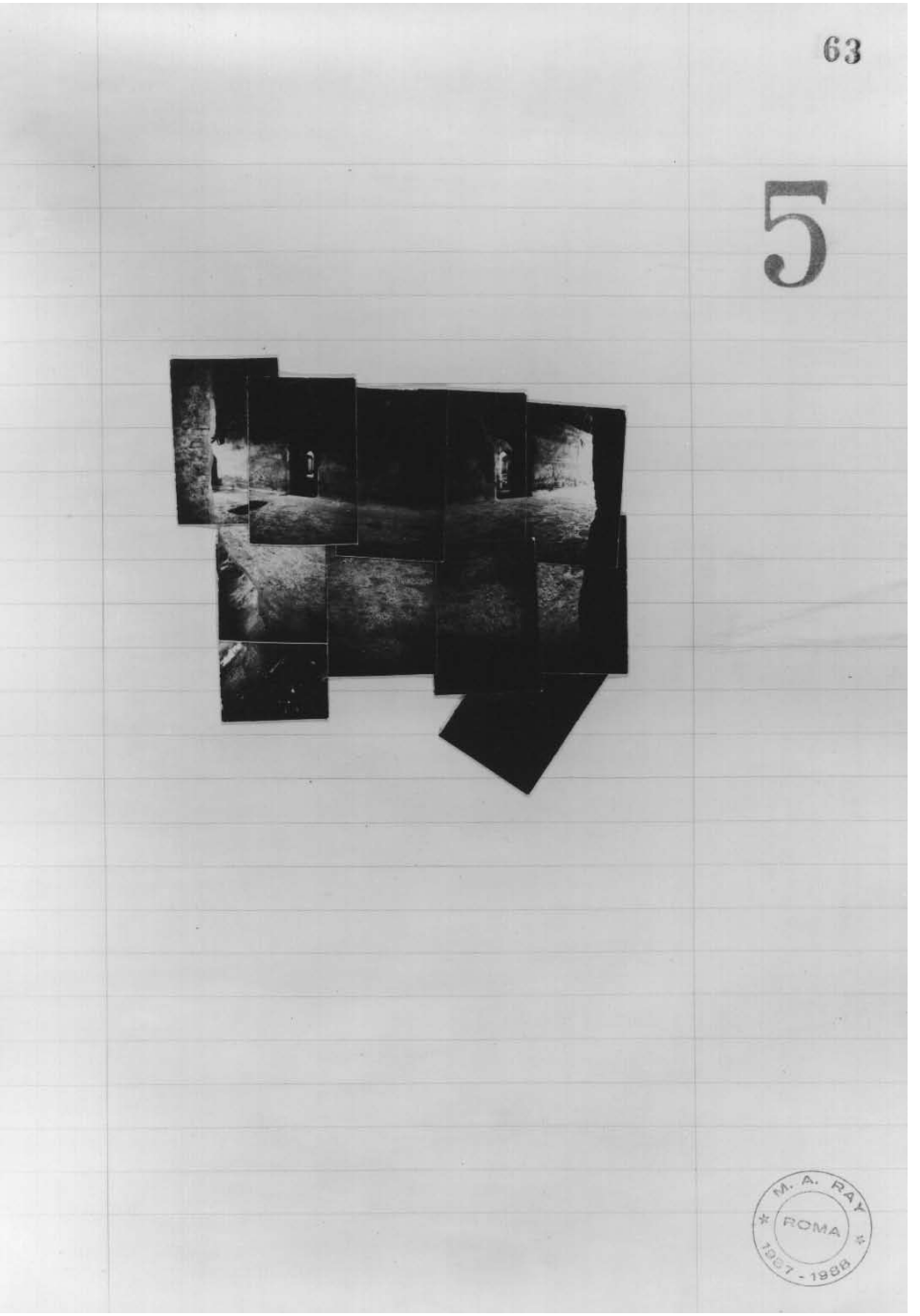
III

SETTE SALE

ROMA

SEVEN HALLS

ROME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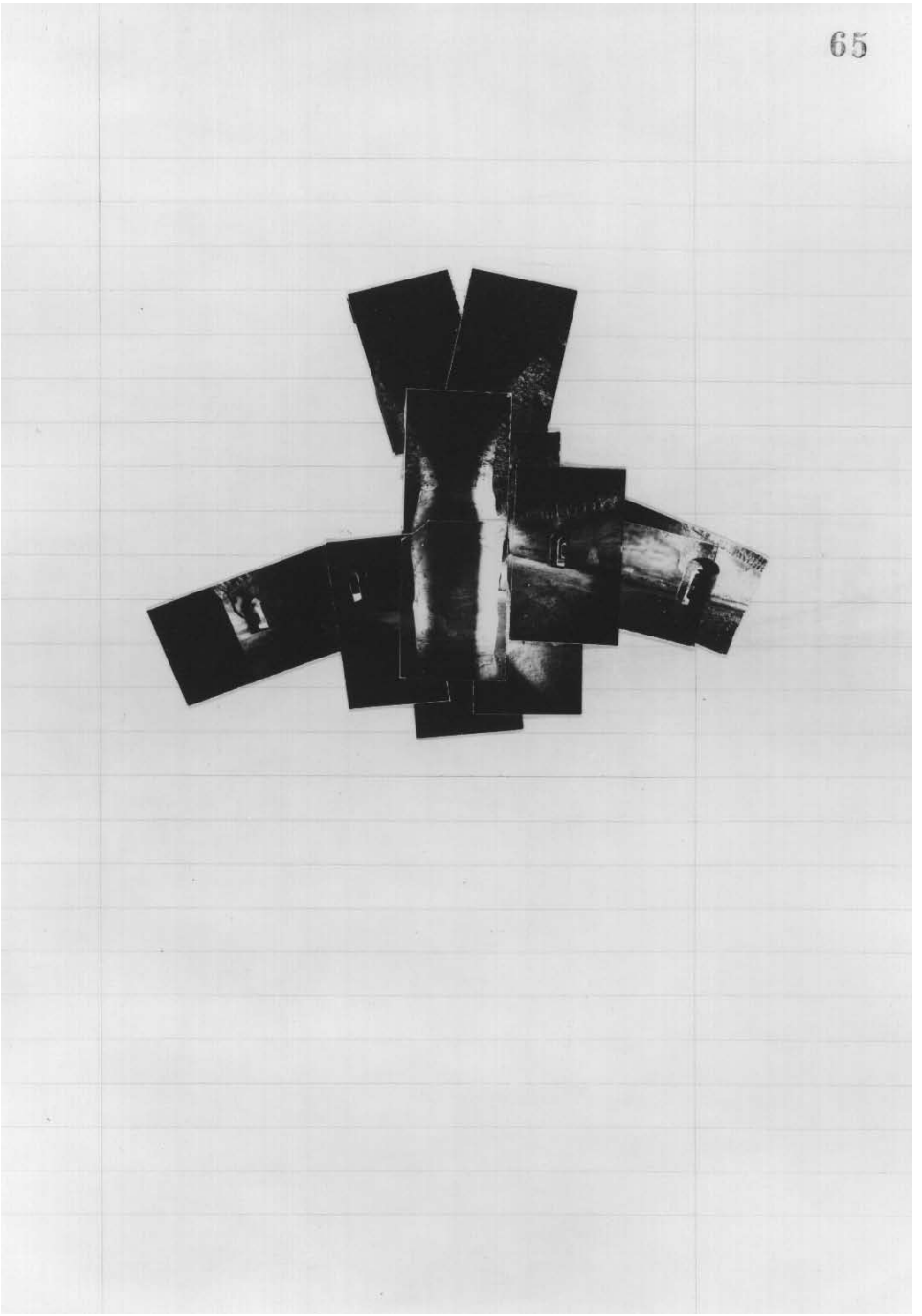
M. A. RAY
ROMA
1987 - 1988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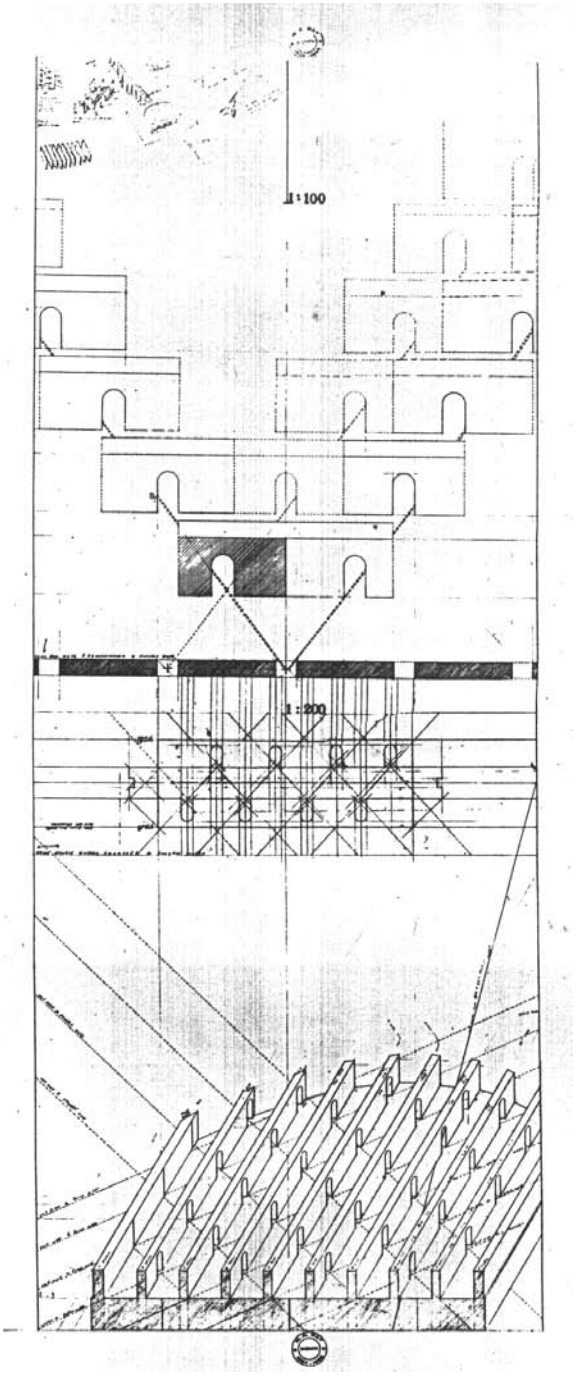
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III

SETTE SALE

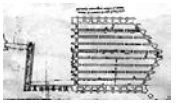
ROMA

SEVEN HALLS

ROME

The *Sette Sale* or Seven Halls cistern is sited on the Oppian Hill, above and behind the Baths of Trajan and the Golden House of Nero. Brick stamps found in its walls date to about 106 A.D., indicating that it probably served to supply water to Trajan's Baths. The cistern would have been utilized at times when the aqueducts supplied by the *Acqua Traiana* were undergoing repairs, or when water supplies were low. During times of normal water supply, the cistern acted as a settling pool for dirt and debris, serving as a big filter at the edge of the city.

The *Sette Sale* is a building consisting of nine parallel rooms. The popular name, which means "Seven Halls," was given to the cistern when, after having been abandoned at the end of the ancient world, it was rediscovered, full of earth, and only seven of the actual nine rooms were visible. In the late 1500s, Pirro Ligorio drew a reconstruction of the Sette Sale. He depicted not only the plan of the cistern, but also a reconstructed view of the front fountain wall and roof terrace.

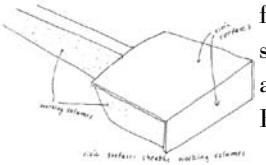


AN EARLY PLAN OF THE CISTERN

EXCAVATIONS OF THE 1960S

CIVIC SURFACES/WORKING VOLUMES, AND GRAVITY

The site for the *Sette Sale* is along the ancient dividing line between the country *(campagna)* and the city. This border is described in physical terms by the front and top surfaces of the cistern. These two surfaces, Pirro Ligorio's reconstructed facade and viewing terrace, might be described as civic surfaces. They are the exposed, above-ground surfaces, and are planar and two-dimensional except for shallow relief. Both surfaces face the city.



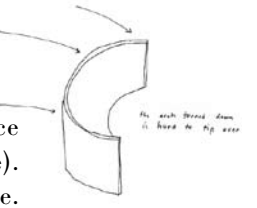
PIPES AND JOINTS

Pushed down into the hill, and wrapped by these two surfaces, is the working volume of the cistern. The volume of the cistern is linked to the line of water entering the city, the aqueduct from the *campagna*. The position of the cistern above the city allows gravity to act as a natural force to distribute water.

UNDERPINNING, AN ARCH TURNED DOWN, CORRUGATION, AND BUILDING AS FIRED VESSEL

The cistern acts as the underpinning and backing for the props of the civic surfaces. The cistern is set halfway into the hill and halfway out. The wall set

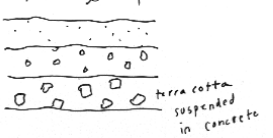
ANCIENT ROMAN CARPENTERS' TOOLS



into the hill is curved, an arch laid on its side, its geometry resisting the force of the earth behind it (it is easier to tip over a straight wall than a curved one). This "perpendicular" use of the Roman arch is an economical structural move. It increases its strength by means of shape rather than added material. The front fountain wall makes a similar structural move at a scale of finer grain. Its alternating semi-circular and rectangular niches subtracted from a thick wall act to fold or "corrugate" the wall, increasing its ability to withstand the weight of water against it.

ANCIENT ROMAN "PAENULA" OR WINTER WORK CLOAK

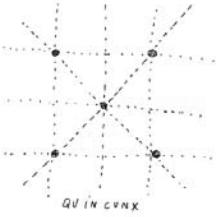
The construction of the walls, in good Roman fashion, is of poured-in-place concrete. An outer shell of brick, infilled with concrete, remains in place as a non-structural revetment. Its main work is to act as formwork for the pour. In order for the building to be watertight, a coating of *opus signinum* was applied over the brick revetment. *Opus signinum*, a cement made impervious to water through the addition of terra cotta aggregates, allowed the Romans to make their cisterns replicate, at the scale of an entire building, the water-holding capacity of huge, fired clay vessels.



PARALLEL AND PERPENDICULAR TO PARALLEL WALLS, FIELD OF SPACE WITH EVERYWHERE PLACE, NETWORK OF PATHS (THE RHIZOMATIC LABYRINTH), INVERTED UNDERGROUND GROVE, AND CORRUGATED LIGHT

The disposition of the ten parallel walls that define the nine parallel halls, and the disposition of the door openings along a diagonal pattern, comprise a repetitive and rational composition. The purpose of the diagonally placed openings in the many parallel walls was to constantly divert, divide, and slow the force and flow of incoming water, allowing it to settle as it filled the cistern. This repetitive and rational composition leads to a continuous field of space, without place, a kind of free plan which is experienced more as a disorienting labyrinth than an ordered plan. This building without place is a network or web of paths, paths that are parallel to parallel walls, perpendicular to parallel walls, and diagonal through parallel walls.

FIELD NOTES OVER COPY OF PIRRO LIGORIO'S PLAN



A figure-ground reversal of the pattern of doorways and openings reveals a ground plan mimicking a quincunx grid of planted trees. The occupation of this now-emptied building for water is like the occupation of an inverted, underground grove. The overlapping alternations of solids, voids, solids, voids in the niches and doorways, and in the windowless, windowed, windowless, windowed progression through the nine halls produces a flickering procession of lights on/lights off like moving through the shutter of a movie camera.

CONFIRMATION OF PERMISSION TO VISIT THE CISTERN

INTERIOR LENGTH	56.93 METERS	188 FEET
	193 ROMAN FEET	
INTERIOR WIDTH, ENDS	29.42 METERS	97 FEET
	100 ROMAN FEET	
INTERIOR WIDTH, CENTER	39.41 METERS	130 FEET
	133.5 ROMAN FEET	
INTERIOR WIDTH OF HALLS	5.17 METERS	17 FEET
	17.5 ROMAN FEET	
STANDARD WALL THICKNESS	1.33 METERS	4 FEET
	4.5 ROMAN FEET	
HEIGHT, VAULTED ROOMS	8.00 METERS	27 FEET
	27 ROMAN FEET	
HEIGHT, DOOR OPENINGS	3.54 METERS	12 FEET
	12 ROMAN FEET	
WIDTH, DOOR OPENINGS	1.62 METERS	5 FEET
	5.5 ROMAN FEET	
WATER STORAGE CAPACITY	10,620 METERS^3	375,000 FEET^3

Castagnoli, F. "'Le Sette Sale' Cisterna della Terma di Traiano." In **Archeologia Classica: Revista dell Istituto di Archeologia della Università di Roma.** 53-55. Rome: L'Istituto, 1956.

Cozza, Lucos. "I Recinti Scavi delle Sette Sale." In **Rendiconti Pontificia Accademia.** 47, 79-101. n.p., 1974-1975.

An archaeologist's report on a domus found on the roof of the cistern in recent years.

de Fine Licht, Kjeld, ed. "Scavi alle Sette Sale." In **Analecta Romana.** Supplementum 10 Instituti Danici. 186-202 + figs. Odense, Denmark: Odense University Press, 1983.

Another report on the rooftop domus, this article is also well illustrated with Pirro Ligorio's field drawings.

Fikret, Yegül. **Baths and Bathing in Classical Antiquity.** Cambridge: MIT Press; New York: The Architectural History Foundation, 1992.

This is one of the best books in English for understanding the ancient baths, including their waterworks. Pages 144, 156, 394, 443, 471, 493 all refer to Sette Sale.

Lanciani, Rodolfo Amadeo. **Ruins and Excavations of Ancient Rome.** New York: Bell Publishing Company, 1967.

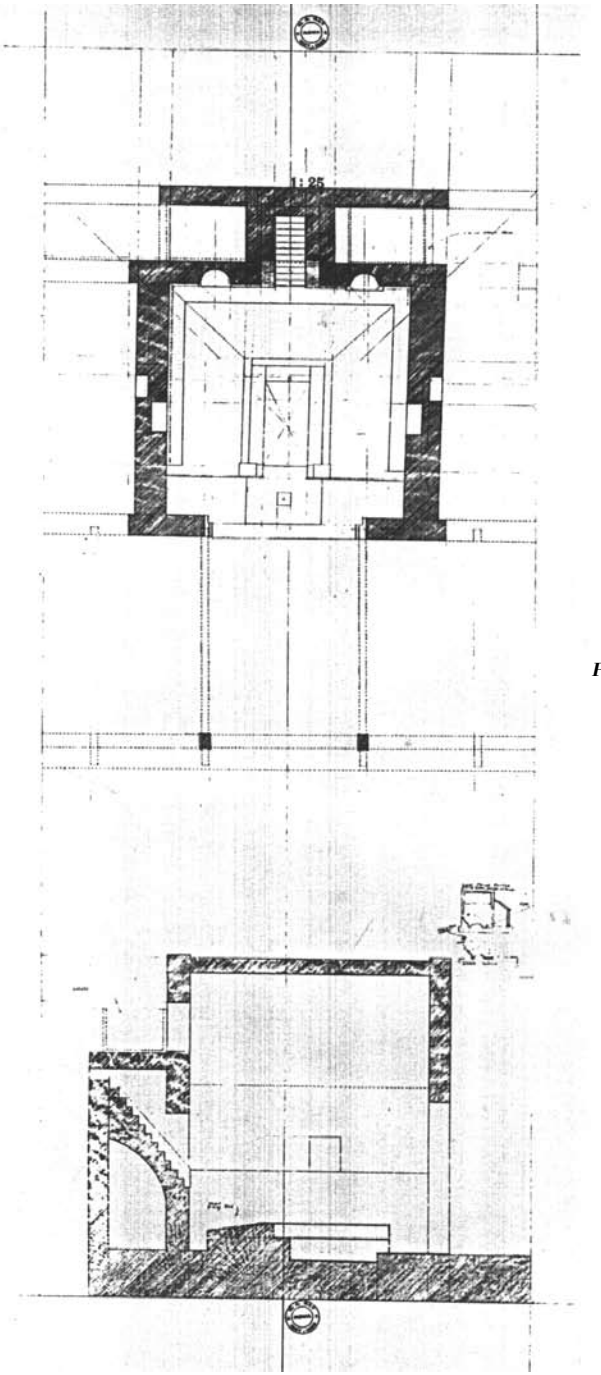
First published in 1897, this book's author was involved firsthand with that period of rediscovery and uncovering of the ruins of a city to which he devoted his entire life's work. On page 360 can be found notes on the Sette Sale, but the entire book is recommended as a guide to all of Rome's ruins and excavations.

Lanciani, Rodolfo Amadeo. **Forma Urbis Romae.** Rome: Edizioni Quasar di Severino Tognon, 1990.

A folio of forty-six maps that cover the city of Rome, printed with black, red, and blue lines, in which black lines draw ancient buildings / roads / structures, red lines draw "modern" (i.e. baroque), and blue traces modern streets and waterworks. Scale of the maps is 1:2000. The publisher may be contacted at Via Quattro Novembre 152, 00187 Rome, Italy, telephone 06/6789888.

Staccioli, Romolo Augusto. "Lo scavo delle Sette Sale al Colle Oppio." In **Palatino 10.** 275-276. n.p., 1966.

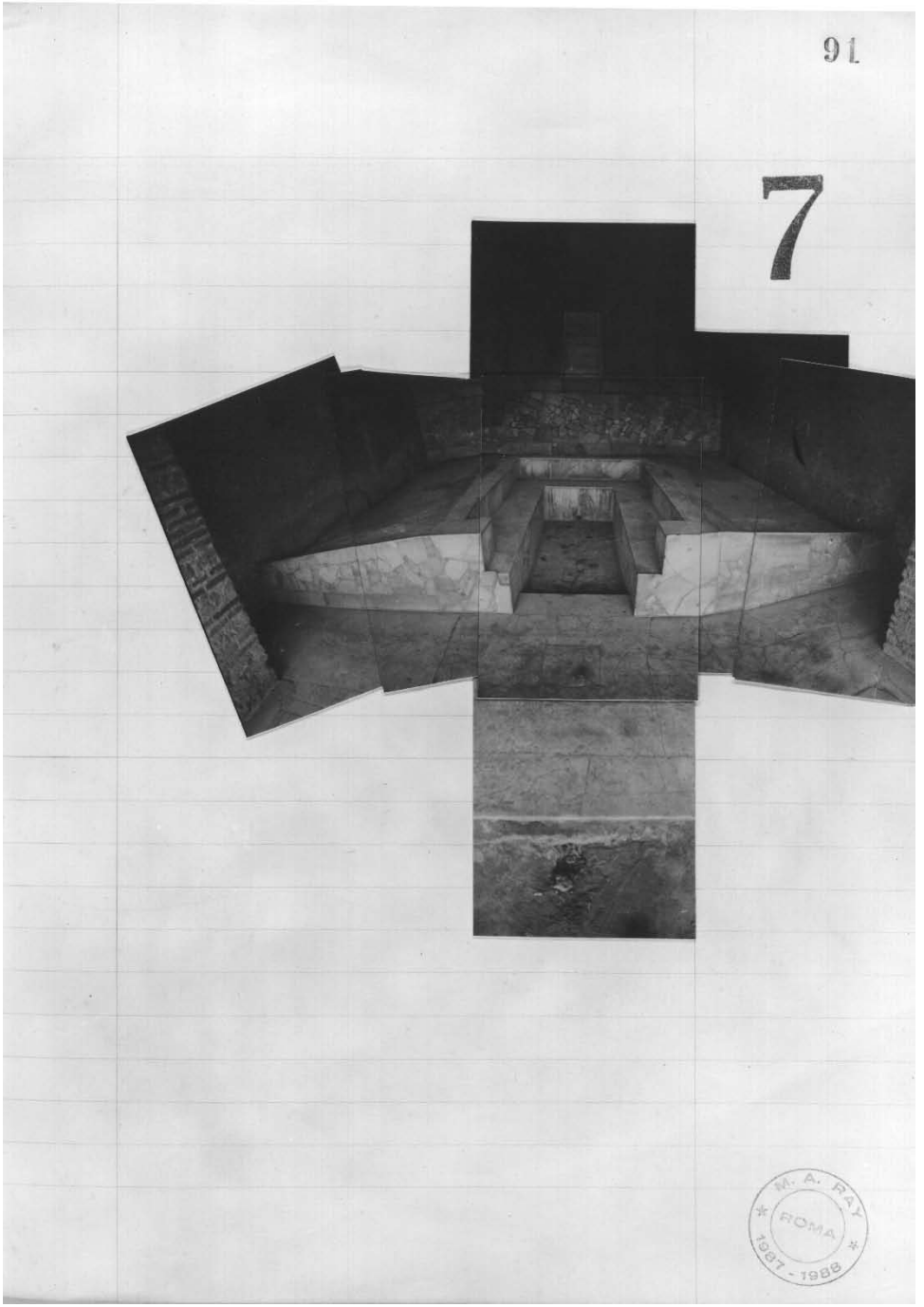
SPACE OF THREE BEDS
SPACES LEFT FREE FOR 'UMBRAE,' OR SHADOWS



IV

TRICLINIUM,
PRAEDIA DI GIULIA FELIX
POMPEI

PROPERTIES OF GIULIA FELIX
POMPEII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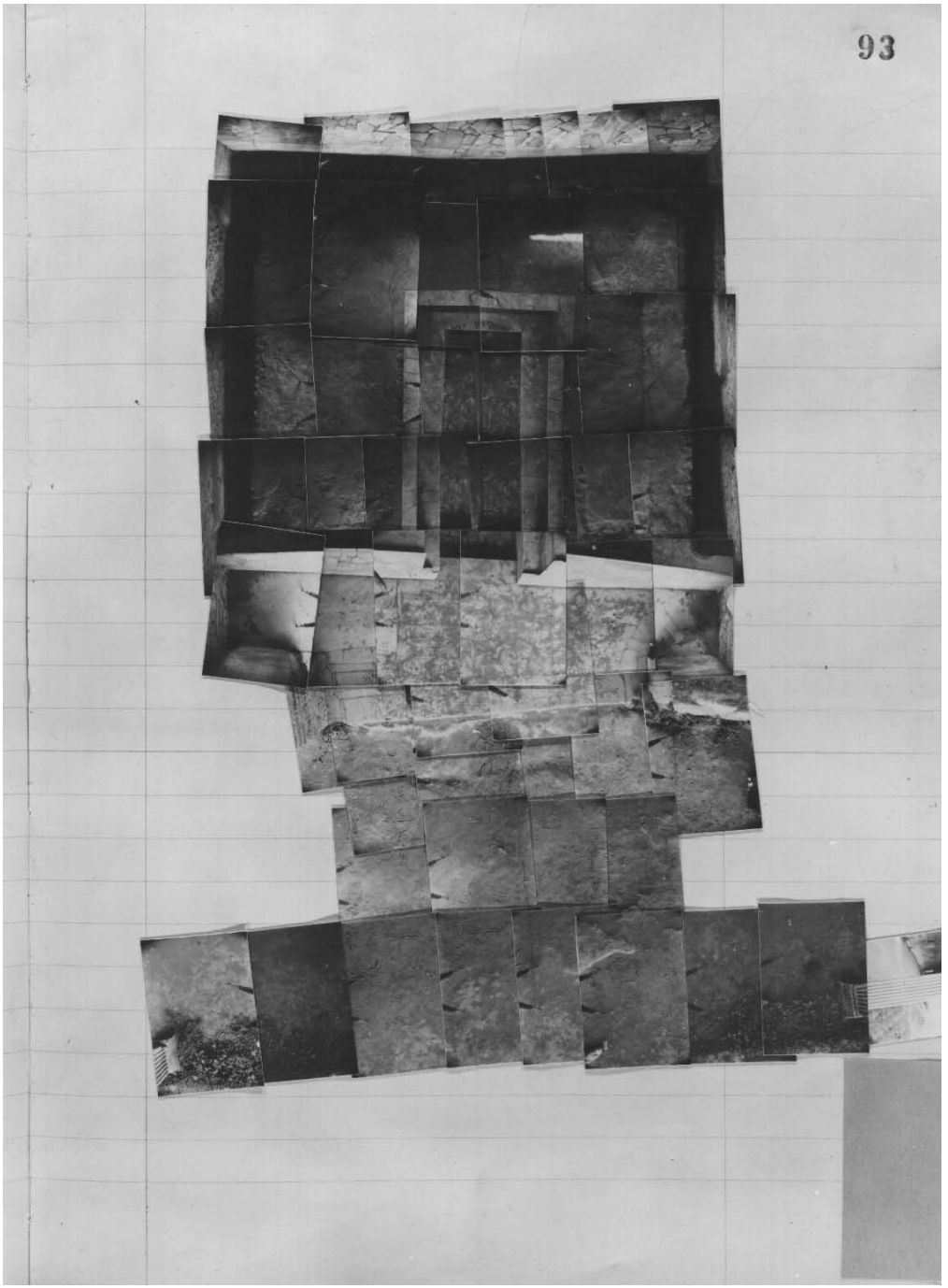
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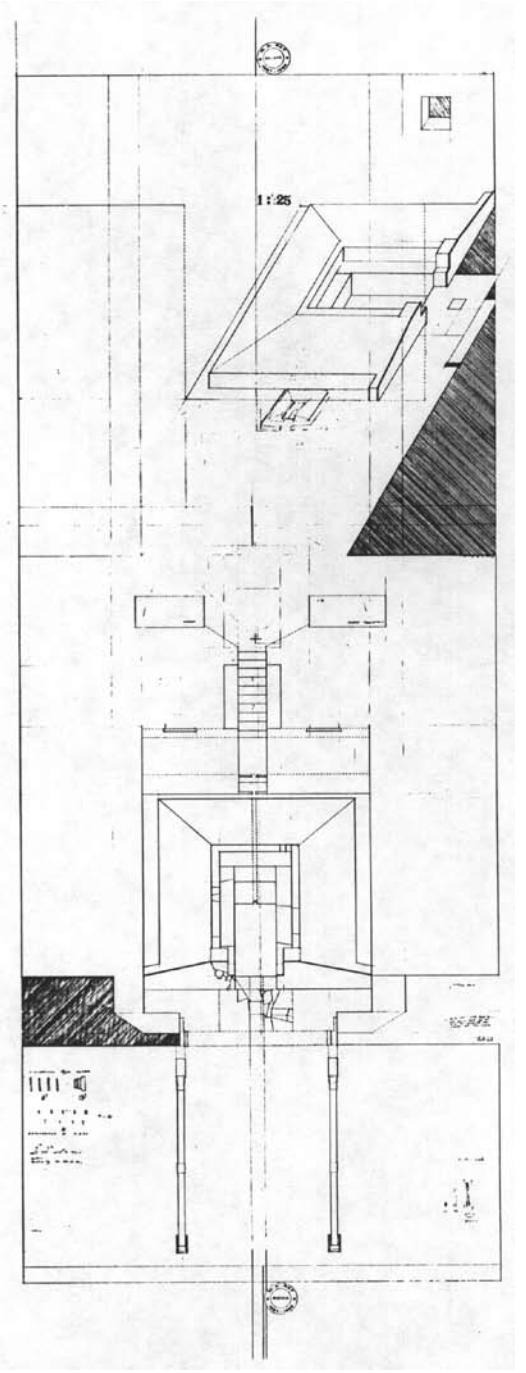
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IV

TRICLINIUM, PRAEDIA DI GIULIA FELIX

POMPEI

PROPERTIES OF GIULIA FELIX

POMPEII

The *triclinium* of Giulia Felix was buried in the eruption of Mount Vesuvius in 79 A.D. along with the rest of Pompeii, Herculaneum, and the surrounding countryside. The volcano gave only a moment's notice, capturing and preserving the furnishings of daily life intact. Casts have been made of the hollows left by the bodies of citizens and their animals, and they reveal a frozen drama of the final moments before the deluge. The eruption covered the hillside and oceanfront city of Herculaneum with a heavy layer of wet mud and lava that set and cooled into a dense and solid mass. Pompeii, on another side of the mountain, was covered with a light, dry volcanic material comprised of loose particles of pumice and ash. Excavating Pompeii is like unloading a fragile cargo by removing its gently placed packing material. The *triclinium* spent almost seventeen hundred years in this protective packing. In 1755 it was excavated for the first time, and was left open until the following year. During that time, objects and painted wall surfaces were removed and carted away to the archaeological museum in Naples. The painted wall surfaces depicted ancient Nilotic landscapes with ducks and crocodiles on a pale blue background. In 1756, the room was reburied and left for another 195 years. Then in 1951, a two year re-excavation was conducted. At that time, the marble colonnade and roofs were re-erected and the wall structure and floor surfaces were restored.

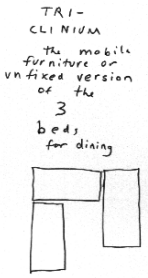
PLASTER CAST OF A BURIED MAN

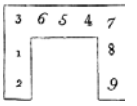
VIEW OF THE DISINTERRED TOWN

CAST OF A YOUNG WOMAN

PATER AND MATER FAMILIAS

The configuration of the *triclinium* of Giulia Felix is typical of the ancient Roman typology. With "tri" meaning three and "clinium" meaning bed, the Roman word for dining room has its origins in a room with three beds or couches. These provided space for nine diners to eat and converse in a reclining position, on the left side, propped up by the left elbow. The three beds form a u-shape, and this configuration (or a semicircular version of it) persisted through the Roman period of antiquity. Elaborate meanings developed and were assigned to each of the three positions on each couch: the position of highest honor was assigned to the couch generally located in the middle, placing the important guest at a focal point, next to the host, and in a position where attendants could be addressed without turning. Spaces left free for unexpected or uninvited guests were known as "umbrae," or shadows.





SEATING ARRANGEMENT AT A TRICLINIUM

In the three-course meal, appetizers of oysters, shellfish, onions, and eggs, main courses of meat, vegetables, fowl, and fish, and deserts of pastries, nuts, and fruit were served. Dinner parties of the rich and vulgar competed in serving such intricate and exotic items as piles of fish livers, peacock brains, and flamingo tongues. A saying arose *ab ovo ad mala* (from eggs to apples) since almost every meal began with eggs and ended with apples. The meal began in the mid-afternoon and continued on until as late as midnight. Wine was served with the meal, but after desert, serious drinking began. Some revolutionary Romans, who preferred intelligent conversation to decadent entertainment, offered the word *convivium* to replace the ancient Greek word then in use for these dinner parties, *symposium*, which translates as "drinking together."


GLASS BOWL


REMAINS OF A MEAL

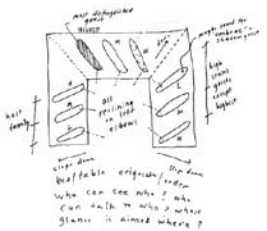

FLOOR MOSAIC OF MEAL SCRAPS-POMPEII

INSULAR WORLD, HYBRID BUILDING, MODEL OF THE CITY IN THE BUILDING

The building that comprises the *praedia*, or properties, of Giulia Felix is near the large amphitheater, and covers two entire city blocks or *insulae*. Enclosed by big, blank, external city-facing and party walls is an insular and internalized life and architecture. Inside, the ratio of building to garden is one-third to two-thirds. Programmatically, the *praedia* is akin to the twentieth-century notion of the hybrid building. It is in some ways a model of the city within the building, a concentration of individual functional elements of use and their associated typologies. Built into the fabric of the walls along the perimeter of the *praedia* are shops, baths, dining rooms, a ballfield, a *thermopolium* (hot food and drink bar), meeting rooms, a *palestra* (exercise yard), a wine shop, an oil and towel dispensary, latrines, upper-story apartments, and even a Pompeian atrium house embedded in the fabric of the larger building where the *padrona* Giulia lived. Notices are found on walls around the city advertising the facilities, or parts of them, for rent for parties, entertaining, and meetings. In a building of this type—the *caupona* or inn—Jesus Christ held the Last Supper.


BALLOON PHOTOGRAPH OF GIULIA FELIX BY WILHELMINA JASHEMSKI


HOSPITALITY TOKEN



VENEERED ROOM, WET ROOM, PERPENDICULAR OR "OUT-OF-PLUMB" PLUMBING

The *triclinium* of Giulia Felix is a continuous masonry shell forming an almost cubic room with a Roman vault on top. The lower band and shaped floor of the room are lined with a veneer of *opus sectile*, or marble sheathing. This lower level pragmatically builds a waterproofed and washable surface for food, water, and the foot bathing that preceded every Roman meal. This piece of the room is like a large sink. The top of the room and vault are veneered with *opus tectorium*, or fresco work on plaster.

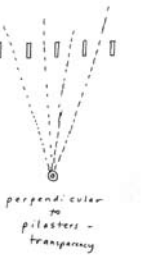
This is a wet room, a room in the house where an infiltration of fluids flushes across surfaces. Water moves across the membrane of the wall and through a built waterfall slipped into its thickness. The water's path is turned perpendicular to the plumb, vertical direction of gravity. Water moves across and against the grain, from back to front, not up to down, in a continuous flush. The path of this flush is turned ninety degrees to the usual axis of sky and earth found in the impluvium and compluvium of the Roman atrium house. In this reading, sky is ahead not above, and earth is behind not below. The water path also reverses the usual direction of water in the Roman atrium. The atrium, with its compluvium roof-opening and its impluvium rain-basin, is a water-collecting device bringing water from the outside in. In the *triclinium* of Giulia Felix, water moves from the inside out.

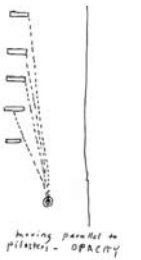
SIMULTANEOUSLY TRANSPARENT AND OPAQUE PIERS, CORNER-FUL AND CORNER-LESS, GEOLOGICAL (OR TOPOGRAPHICAL) AND EPHEMERAL (OR GOSSAMER-LIKE) ARCHITECTURE, RECLINING EYE-LEVEL HORIZON

The architecture of the piers of the house build space that is simultaneously opaque and transparent. From the outside in, the row of piers make an opaque and fat line. From the inside out, these same piers build a thin and transparent frame.

BROAD SIDE OF A THIN PIER

The architecture of the marble base of the *triclinium* contains many angles, corners, and crevices. It is corner-ful. This surface, like a built strata added to the top of the earth, could be described as geological or topographical. The curved vault above is made of continuously curved surfaces. It is corner-less. This luminously blue upper surface, when intact, was sky-like, ephemeral, and gossamer-like. The room is a room with an almost infinitely deep space of white-blue light (made by a finitely thin layer of pigment) hovering over an angular earth architecture welded to the ground. These upper and lower worlds, the upper world a place to view from a distance, the lower world a place to touch, are joined by a seam. This seam is coincident with the level of the eye, the space of the vanishing point, of the reclining body. The seam is a pure horizontal, a built horizon.





SIZE OF THE DOUBLE BLOCK SITE	66 X 87.5 METERS	217 FEET
SIZE OF THE DINING ROOM	4.68 X 4.765 METERS	15 X 156 FEET
DEPTH OF FLOOR RELIEF ABOVE GROUND	0.565 METERS	2 FEET
DEPTH OF FLOOR RELIEF BELOW GROUND	0.117 METERS	6 INCHES
PLAN DIMENSION OF THE SIMULTANEOUSLY TRANSPARENT AND OPAQUE PIERS	0.26 X 0.134 METERS	1 FOOT X 6 INCHES
HEIGHT OF "HORIZON" OFF GROUND	1.45 METERS	5 FEET

Boethius, Axel. **Etruscan and Early Roman Architecture.** 1970. Reprint. New York: Pelican Books, 1978.
Pages 182-190 cover the domestic architecture of the early Roman period.

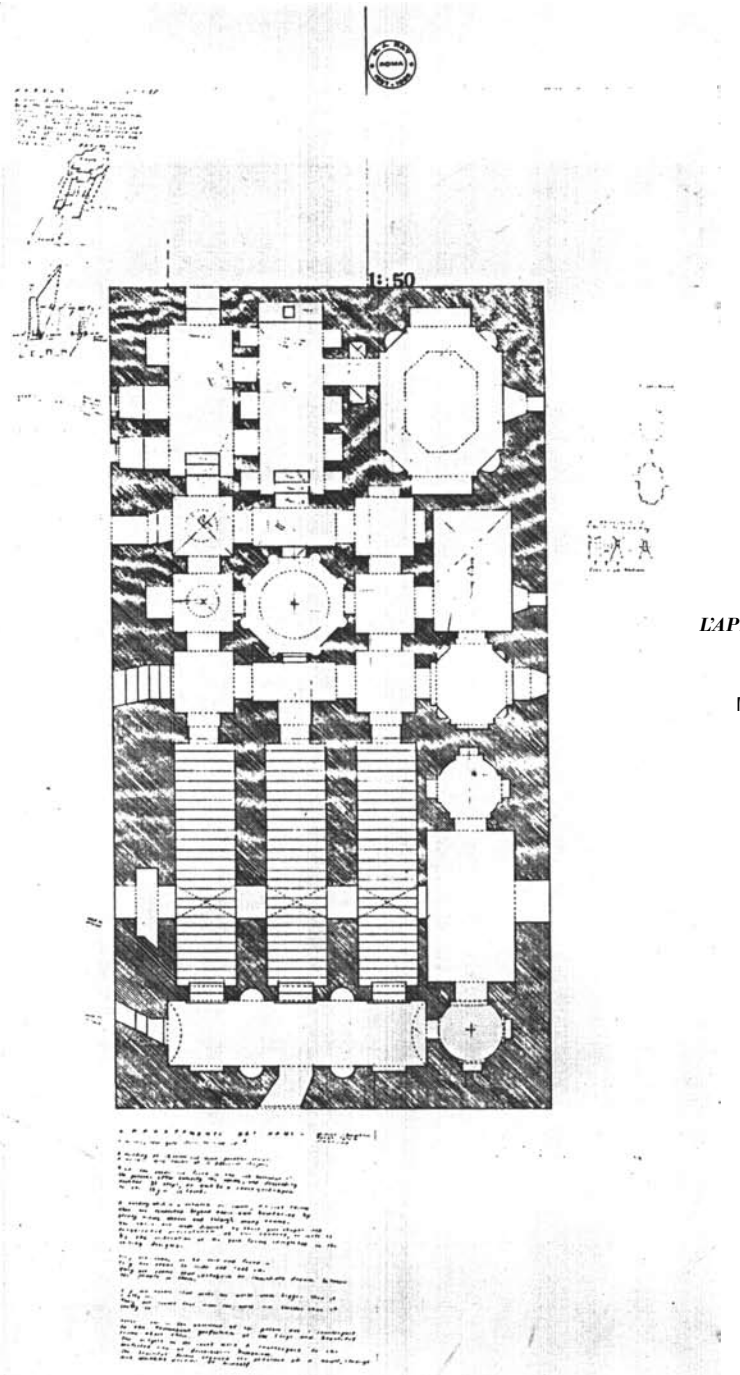
Jashemski, Wilhelmina F. **The Gardens of Pompeii, Herculaneum and the Villas Destroyed by Vesuvius.** New York: Caratzas Brothers, Publishers, 1979.
An impressive body of work that brings to life all of the temporal components of the Roman gardens. Jashemski's detective methods for deciphering scant remnants of plants, fruit trees, flowers, etc. were developed over the course of her work. The methods (which are well-documented) include root castings (which are like fingerprints for specific species) taken in the burned-out cavities within the hardened lava left by Vesuvius, and aerial balloon photographs exposing the patterns of planting.

Maiuri, Amadeo. **Pompeii.** Novara: Istituto geografico De Agostini, 1963.
Maiuri is the overseer of all of the work done at Pompeii and Herculaneum beginning with the excavations in the twenties which continue to this day. His large published volumes on Pompeii and Herculaneum are impressive documentations of the buildings of both cities in the form of text, drawings, and photographs.

Rakob, Friedrich. "Ein Grottentriklinium in Pompeji." In **Mitteilungen des Kaiserlich Deutschen Archaeologischen Instituts, Roemische Abtheilung.** 71182-194. Rome: Verlag von Loeschen & Co., 1964.
Rakob's intricate and precise drawings of the *triclinium*, along with additional unpublished observations by Christopher Parslow (Fellow of the American Academy in Rome 1987-1988), formed the basis for the drawings in this book.

Richardson Jr., L. **Pompeii, An Architectural History.** Baltimore: The John Hopkins University Press, 1988; Cambridge: The MIT Press, 1992.
Pages 290-298 comprise a history of semi-private buildings and focus specifically also on the Insula luliae Felicis.

Ricotti, Eugenia Salza Prina. "The Importance of Water in Roman Garden Triclinia." In **Ancient Roman Villa Gardens.** Edited by E.B. MacDougall. Washington D.C.: N.p. 1987.
Ricotti's paper draws and describes a series of dining *triclinia* at Pompeii and Hadrian's Villa, with special attention given to the relationship of water to architecture.



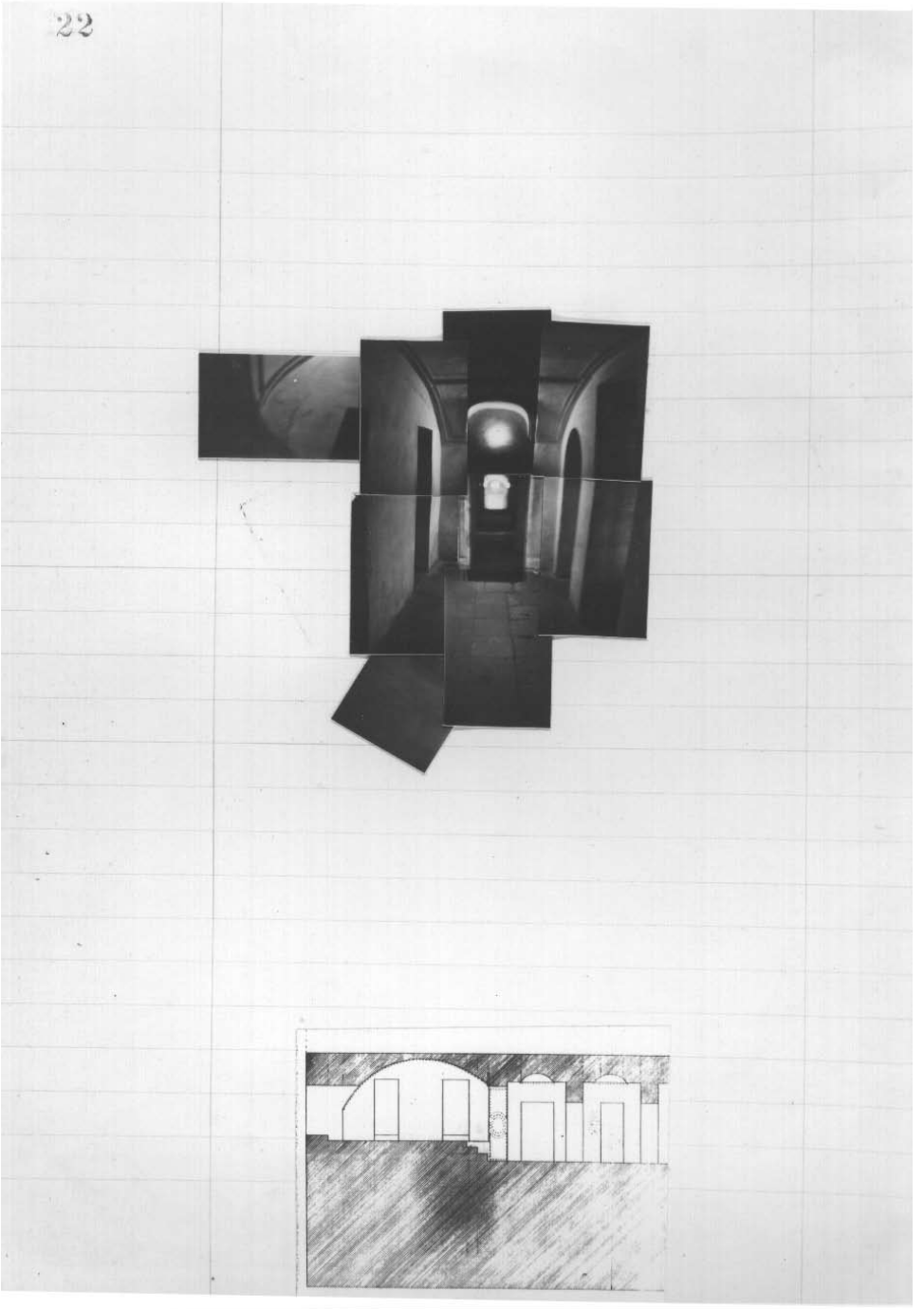
V

L'APPARTAMENTO DEI NANI

MANTOVA

MIDGET CHAMBERS

MANTUA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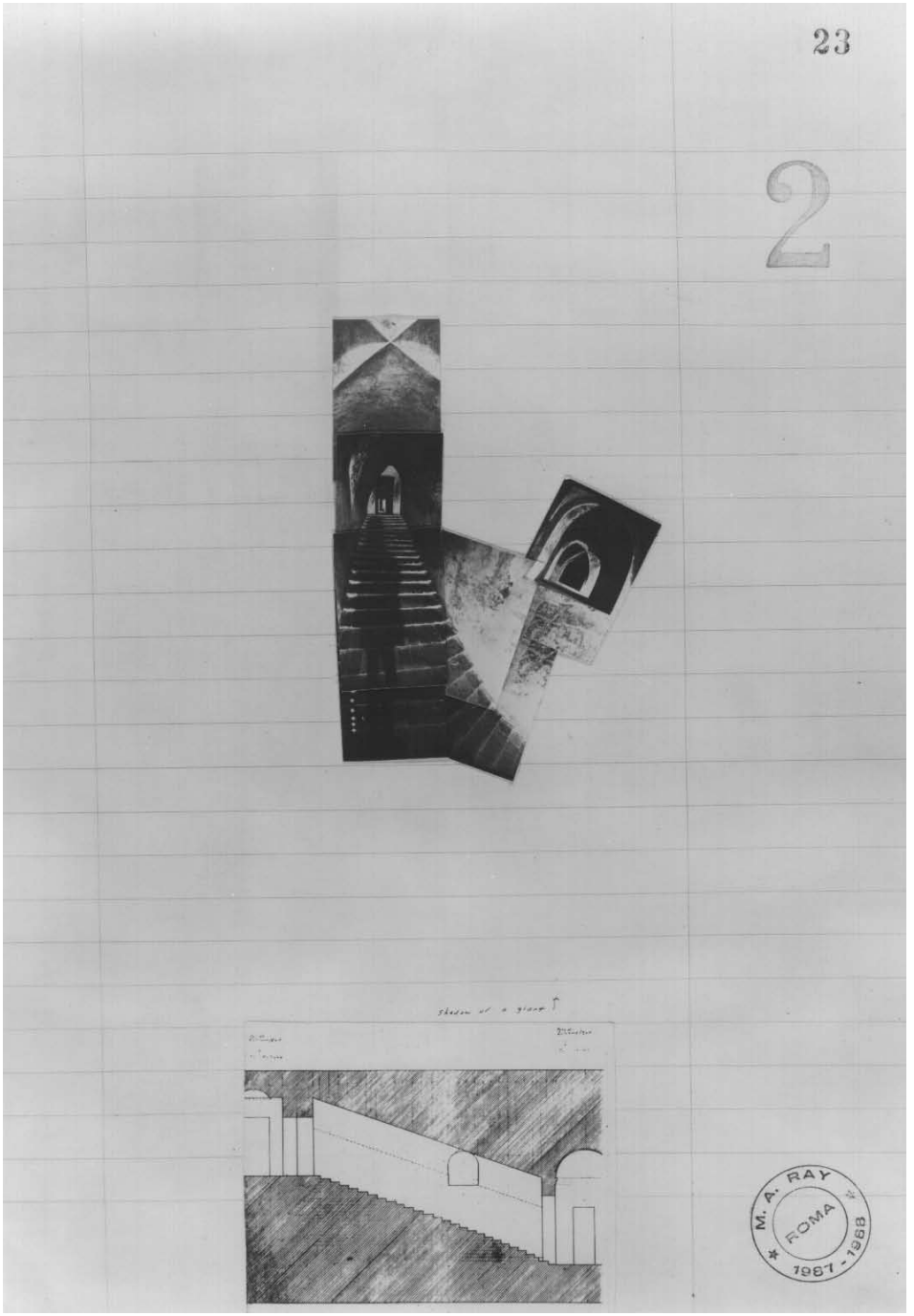
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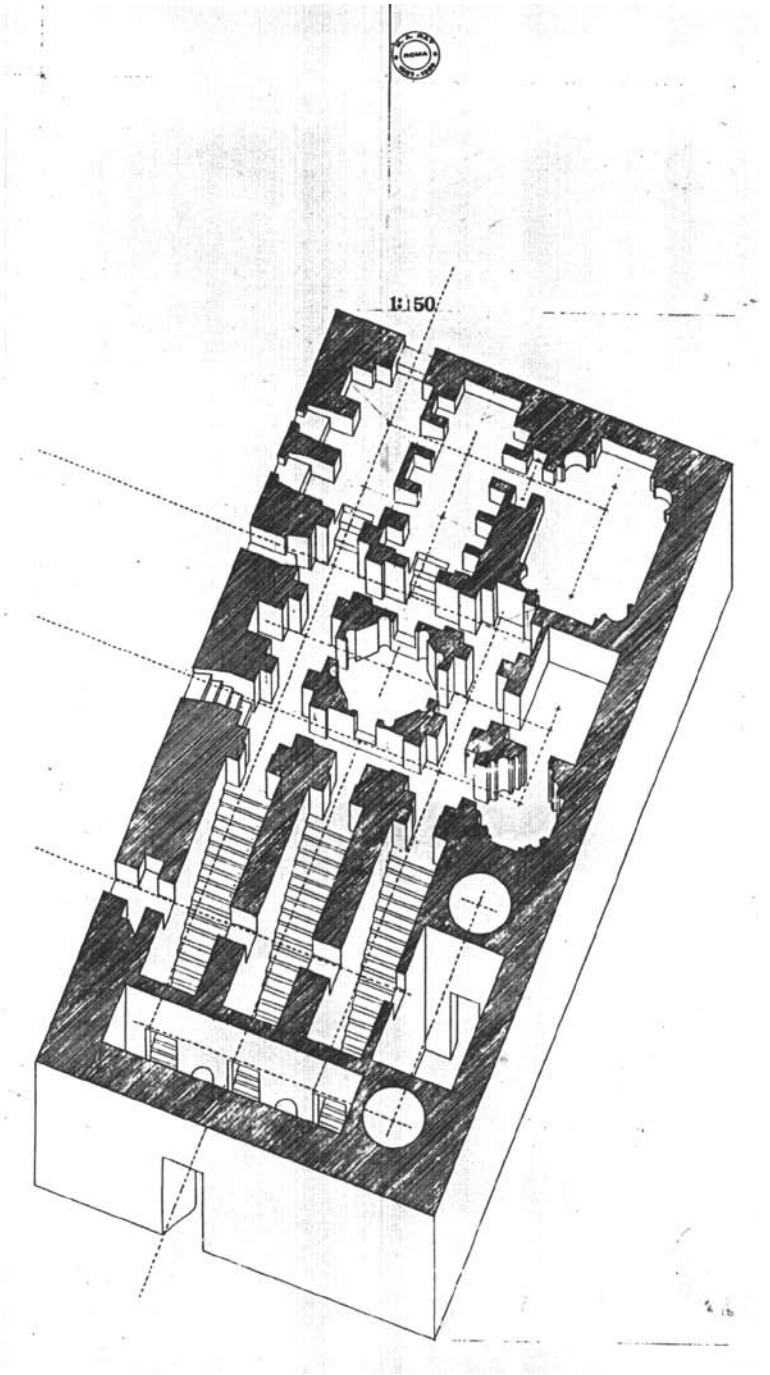
M. A. RAY
ROMA
1987 - 1988

ENTRAILED SUBSTRUCTURE.
THE OCCUPIED FOUNDATION– THE OTHER HALF OF THE FLIP-FLOP SPACE



V

L'APPARTAMENTO DEI NANI

MANTOVA

MIDGET CHAMBERS

MANTUA

This complex of twenty-one rooms (or eighteen rooms plus three stairs) on the ground level of the Ducal Palace in Mantua, known as *l'Appartamento dei Nani*, or the Midget Chambers, was built during the reign of Duke Ferdinand in 1615. By legend and local myth, because of their miniaturization, these rooms have been associated with the dwarves kept by the Gonzaga courts for amusement and companionship.

DUKE FERDINANDO GONZAGA

According to history, the rooms have also been associated with another program. In the annals of Mantua, it is recorded that 'in the courts of this palace, a resemblance of the catacombs, and of the sacred stair—the *Scala Santa*—in Rome, was built and visited by all of the city [of Mantua] during Holy Week.' On Holy Wednesday of the year 1615, Cardinal Gonzaga is recorded as having carried two prize relics, the blood of Christ, and a thorn from the crown, and deposited them in the chapel, one of the twenty-one rooms of *l'Appartamento dei Nani* built to resemble the catacombs and the Scala Santa.

The resemblance of these rooms to the catacombs is clear. These are basement chambers, dark and composed of gnarled paths. The *Scala Santa*, located at St. John in Lateran in Rome, was built by Domenico Fontana in 1589 during the pontificate of Sixtus V to house the twenty-eight white Grecian marble stairs brought to Rome in 326 A.D. by Saint Helen, mother of Constantine, from the palace of Pontius Pilate. They are, reportedly, the steps on which Jesus Christ, clad in a scarlet robe and crown of thorns, walked as he moved toward the Golgotha mound. Fontana sheathed the stair in a wooden casement, with peep-holes for viewing discernable bloodstains. Fontana added two parallel stairs to either side of the three-part marble stair for a total of five. The additions accomodated the many visitors who climbed the stairs on their knees in prayer, especially during Holy Week. The Mantuan version, with its three parallel stairs, follows the pattern of a popular etching of the *Scala Santa*, cropped so as to depict only three of the actual five. The steps of *l'Appartamento dei Nani*, although miniaturized, are faithful to the number of steps of the original: twenty-eight.

THE "SCALA SANTA," ROME

PILGRIMS AT THE "SCALA SANTA"

BUILDING INSIDE A BUILDING, FOLDED PATH–I.E., GOING DOWN ENDS UP

FACADE OF THE DUCAL PALACE

From the central piazza of Mantua, the Ducal Palace presents itself to the city as a building. Behind the uniform city wall that disguises the palace as a building is a rambling and writhing set of rooms, corridors, wings, gardens, courtyards, loggias, galleries, apartments, towers, and an intact castle. In actuality, the palace is woven from many buildings and spaces, a district within the city, over eight and one-half acres in size.

OVERVIEW OF THE DUCAL PALACE

Within this tangle of architecture, the Midget Chambers fall along a path connecting the Ducal Apartments and the public salons. For a stranger coming upon these rooms, they are like an entrapping net. The two exits disguised as dead ends, are easy to lose in this maze. If a stranger's path were to begin in the piano nobile rooms, the way to *l'Appartamento dei Nani* would be downward, and into the "basement." From this basement, the three parallel stairs travel further down, one midget-storey, into a "sub-basement." If successful in locating the disguised exit near the bottom of the stairs, the stranger arrives at a light-filled courtyard open to the sky, with all the qualities of an upper world. The stranger's path is a kind of path that folds back on itself, where going down ends up.

ENTRAILED SUBSTRUCTURE, OCCUPIABLE FOUNDATION, DEEPLY WRINKLED SURFACES, VISITING GIANT

As a basement and a sub-basement to the palace proper, these rooms act as a strong substructure for the upper rooms as the honeycombed remains of the Palace of Minos in Crete once did. To occupy these rooms is to occupy the opaque depths of a foundation.

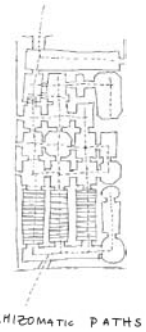
PAINTED CEILING IN THE PALACE

The surfaces of these chambers are coated with flesh-hued stucco relief. Unlike the piano nobile rooms which are finely painted, illusionistic surfaces in color, these rooms are clad with deeply dimensional patterns that are chiaroscuroed in the raking oil lamp illumination. The volumetric relief appears as a wrinkled surface, where there is excess skin in relationship to the carriage of the body.

VAULT SPRINGS FROM BELOW THE BELT

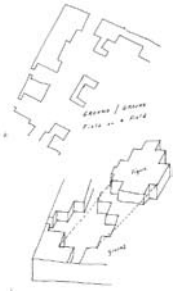
In the miniaturization of this architecture, a distortion of sectional scale occurs. In several of the rooms, the spring point of the vaults begins below the belt of the full-sized traveler. The risers on the steps of the parallel stairs are only several inches high, making for a waddling ascent/descent for longer-legged travelers. On these stairs, and in these rooms, the resident midget walks gracefully and in scale, while the visiting giants are awkward oddities.

SLIPPED CENTER, FLIP-FLOP SPACE, RHIZOMATIC ROOMS



As the plan depicts, the center of the composition is slipped off center. Combined with the fact that each string of rooms is appended by possible detours and continuations, keeping the traveler constantly propelled and in endless motion, this onward and around-moving space is the space of a transparent, rhizomatic labyrinth. It is the space of an ongoing field. Like pieces on a gameboard, travelers move around within and upon it, discovering possible relationships with other travelers, hiding, seeking, losing, finding, passing by, encountering, entrapping, nearly missing.

FIELD NOTES AND MEASUREMENTS



This rhizomatic space flip-flops in and out of focus with a second space. This other space is the space of a series of discretely shaped rooms, often centralized, that in and of themselves speak of figures as opposed to fields, and of stoppages as opposed to transparencies. To stop in one of these rooms might mean to turn and catch the eye of a fellow traveler who transgresses the stoppages by moving through the field.

UPPER LEVEL ROOMS	14	
LOWER LEVEL ROOMS	44	
PARALLEL STAIRS	33	
WAYS TO SLIP IN	11	
DISGUISED WAYS OUT	11	
WINDOWS	13	
POSSIBLE DIFFERING STRAIGHT PATHS	10	
RISE OF STAIR	0.10 METERS	6 INCHES
RUN OF STAIR	0.28 METERS	1 FOOT
LENGTH OF STAIR	3.945 METERS	13 FEET
WIDTH OF STAIR	1.56 METERS	5 FEET
FLOOR TO LOW SPRINGING OF VAULT	0.76 METERS	3 FEET
FLOOR TO HIGH SPRINGING OF VAULT	1.72 METERS	6 FEET
FLOOR TO APEX OF VAULTS	2.45 METERS	8 FEET
DOOR HEIGHT	1.85 METERS	6 FEET

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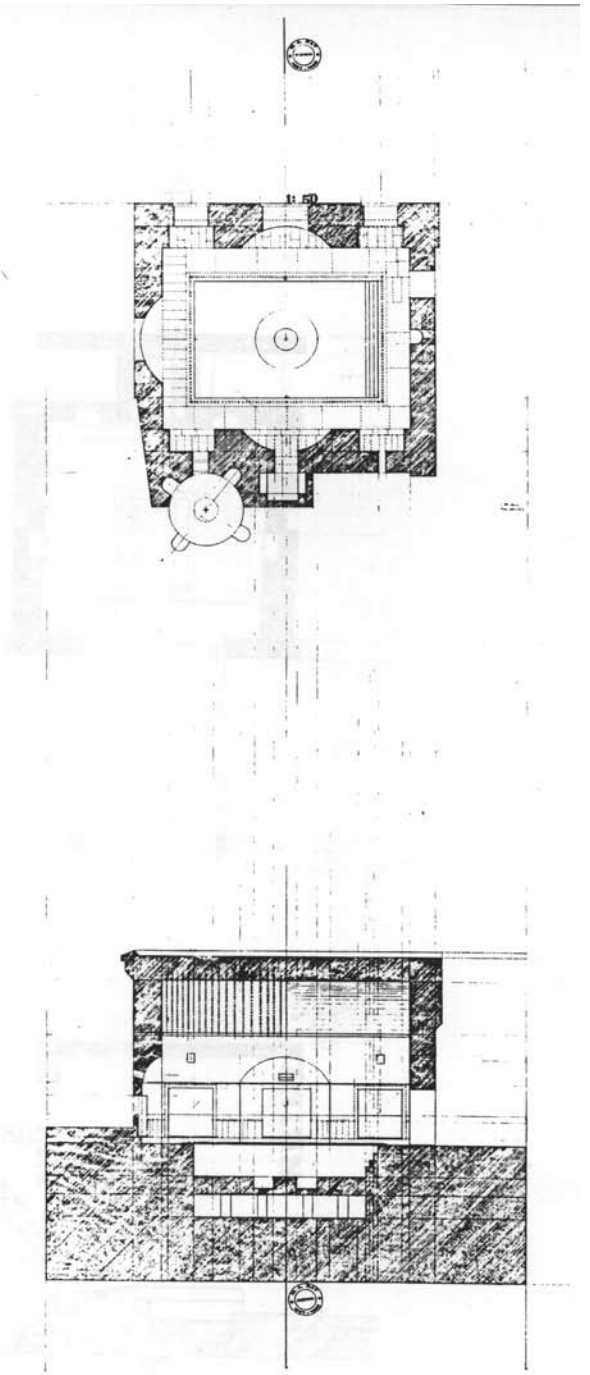


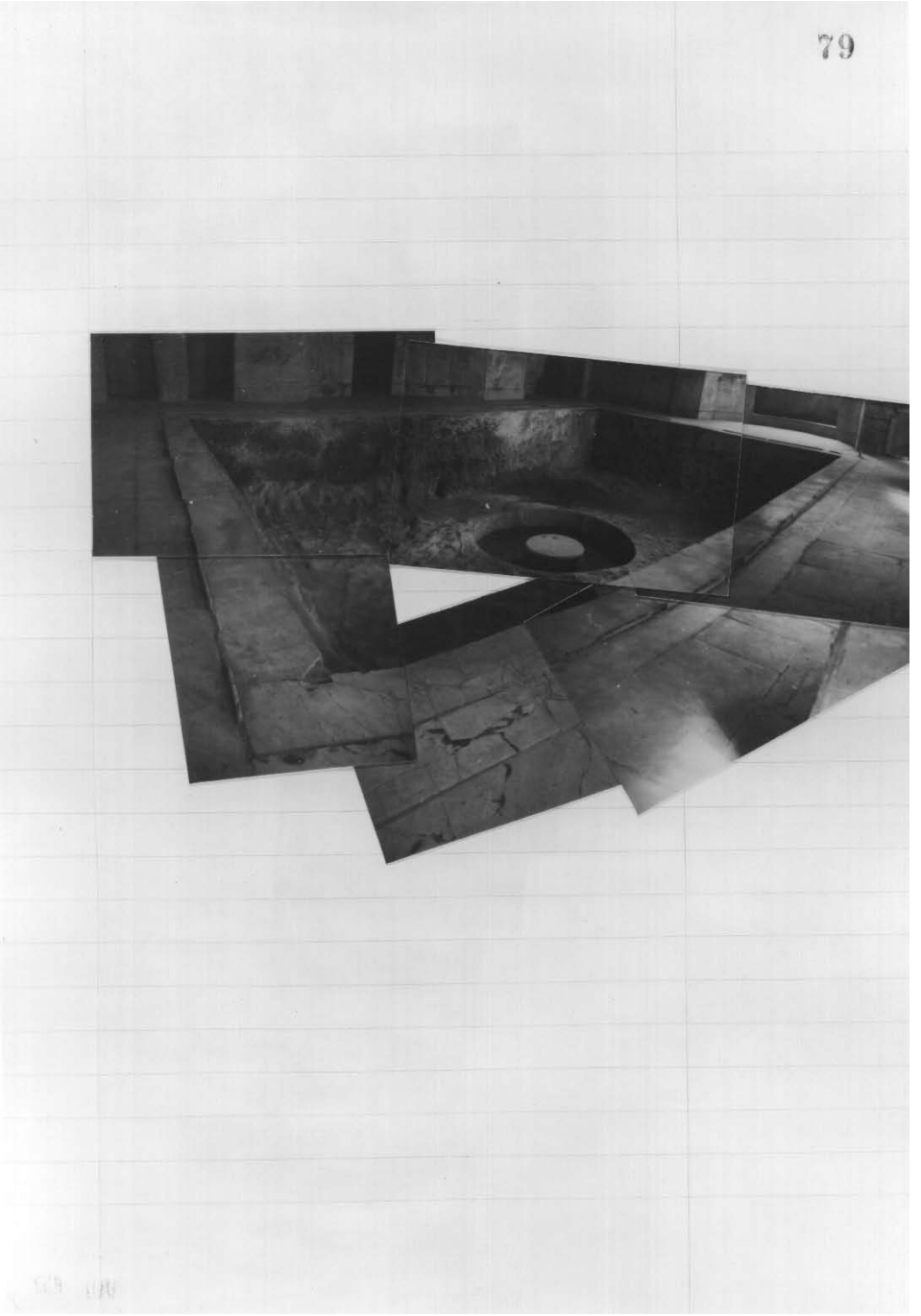
VI

TEPIDARIUM, TERME SUBURBANE

ERCOLANO

TEPIDARIUM, SUBURBAN BATHS

HERCULANEUM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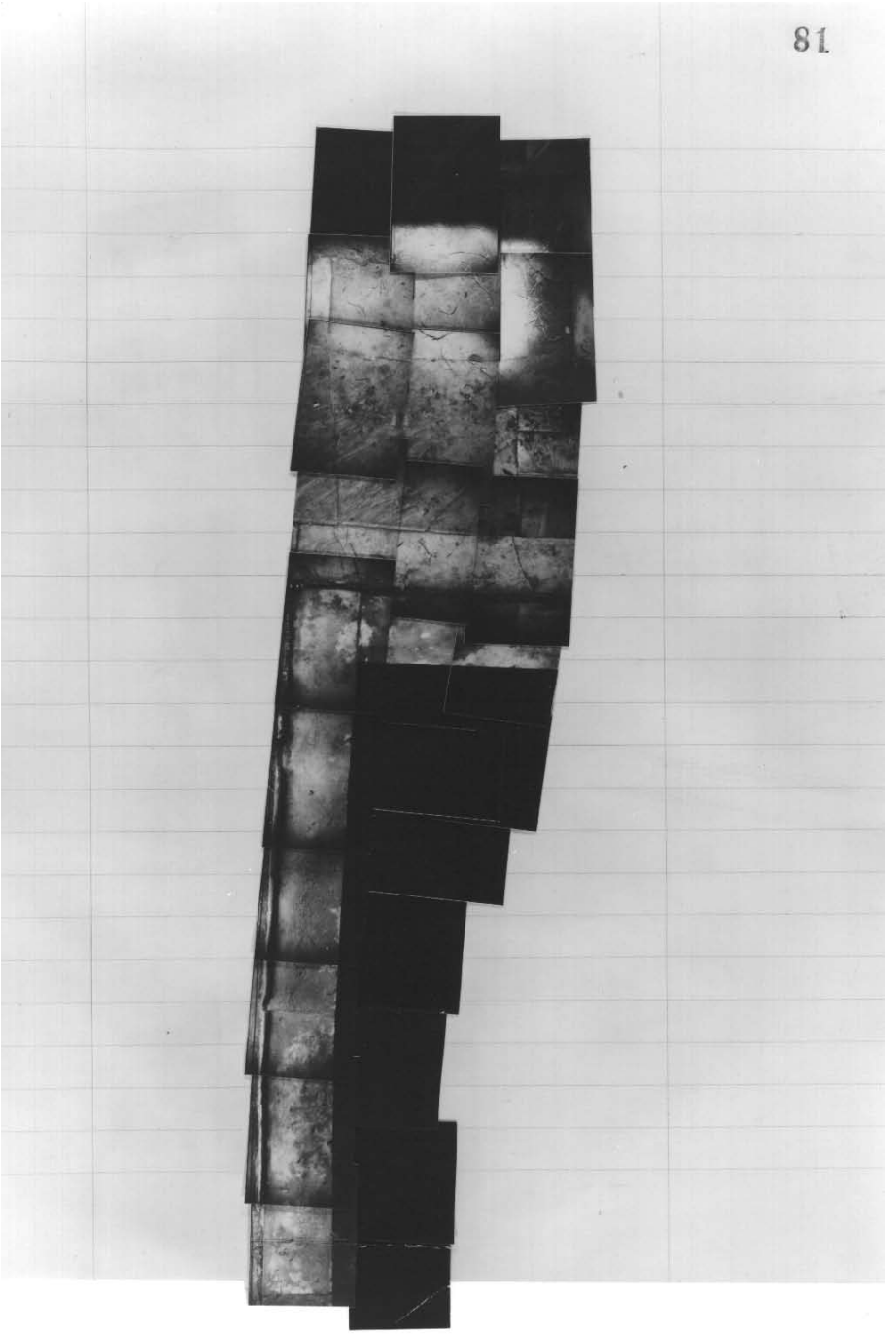
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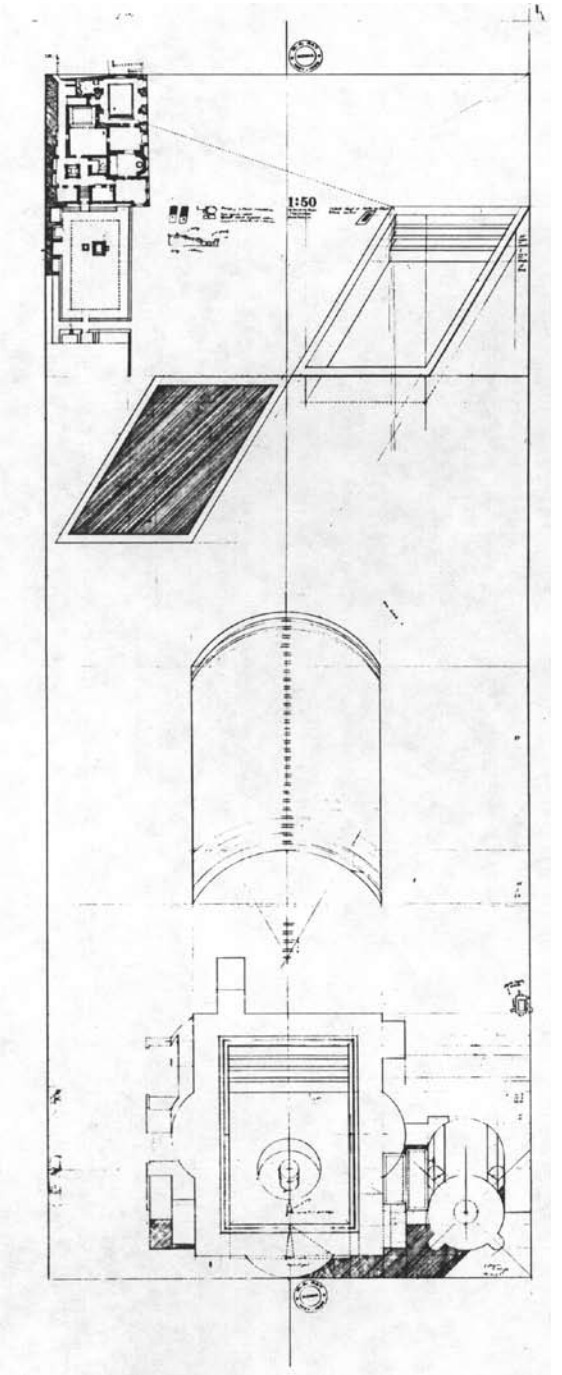
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VI

TEPIDARIUM, TERME SUBURBANE

ERCOLANO

TEPIDARIUM, SUBURBAN BATHS

HERCULANEUM

The *tepidarium* of the Suburban Baths at Herculaneum, one room of a larger building, is the space for the enactment of one part of the complete ritual of the Roman day and bath. The events of a typical Roman day began at daylight, in the first hour. The Romans divided the day into twelve equal hours, ignoring the passing of night hours. From winter to summer, the length of an hour varied according to the divisible length of daylight. The core of the workday lasted from the third hour (or about nine o'clock) until the fifth hour (eleven o'clock) when a light lunch was eaten. After a short rest, a visit was often made to the baths in the eighth hour (two in the afternoon).

PLAN OF THE SUBURBAN BATHS

OIL FLASK AND STRIGILS

Arriving at the bath, the first stop was the *apodyterium*, or changing room. Required equipment consisted of a *cista* or toiletry chest filled with flasked perfumes and oils, strigils or metal sweat scraping wands, linen towels and bathing attire (light tunics or bikinis). After changing, bathers visited the *tepidarium* as a transition before entering the rooms with greater heat. Once perspiration commenced, bathers proceeded to the hot bath or *caldarium*, and the hot sweat room or *laconicum*. Then in the *unctorium*, sweat and dead skin would be scraped off and oils applied to the skin. A trip to the cold plunge finalized the wet routine, and closed the pores. A rub down with towels was then followed with more oils and perfumes. After concluding the bath, the *cena*, or main meal of the day, was taken at the ninth or tenth hour (about three or four o'clock).

A ROMAN TUNIC

SUB-URBAN CITY, BUILDINGS AS FORM WORK

EXCAVATIONS AT HERCULANEUM

The site of the building in the city is *sub-urban*. It is at the fringe edges of the city, and, in the literal sense of suburban, it is under the city. The Suburban Bath is tucked under the lowest strata of the city terraces, and is reached by a series of descending stairs and ramps.

The geological positioning of Herculaneum is tied, like Pompeii, to Mount Vesuvius. The eruption that covered Pompeii in 79 A.D. left Herculaneum under sixty feet of mud. Unlike the light, airy, bone-dry, and quickly excavatable pumice that fell over Pompeii, sludge filled every room and crevice in Herculaneum,

drying and hardening to the density of stone. The walls of the buildings originally there to define spaces took on the role of formwork for moulded volumes. During archaeological excavations, walls have fallen and broken away from the infill, revealing a figure-ground reversal of a city. Even the sea, forced to retreat at the onslaught of moving earth, was left as a kind of inverted space: from the baths, the view to the Mediterranean is now a dark vertical screen of earth twenty meters high.

IMPRESSION OF A MARBLE BASIN LEFT BY THE ERUPTION

TEPID SPACE, HOLLOW WALLS, HANGING FLOORS, BUILDING BODY TEMPERATURE, SURFACE TENSION

Beyond the threshold of disrobing, and before immersion into the spaces of extreme hot and cold, falls the in-between space of this *tepidarium*. It is a mild and lukewarm space, a non-eventful room and a place to wait for perspiration to begin.

Circulation in the *tepidarium* refers less to the movement of bodies through space than to the flow of fluids and hot gasses within the cavities and channels inside the walls and floors. The *praefurnium*, guarded and tended by the *fornacator* or furnace operator, stoked hot air into the the baths and steam rooms through hollow-core brick tiles in the walls, and brick floor tiles spanning small pillars called *suspensurae*, or what Vitruvius called 'hanging floors.' This *hypocaust* system heated masonry to body temperature, provoking a tactile blur in the distinctions between built surfaces and adjacent living bodies.

HOT AIR CHAMBERS IN TERRA-COTTA BRICKS

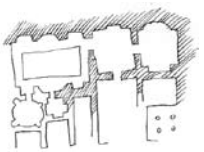
ROMAN PLUMBING

The surface of the vaulted ceiling over the *tepidarium* pool is finely corrugated in an inside-out, reversed doric fluting. In this room where condensation collected on the ceiling, the built-in grooves channeled the water—clinging by surface tension—to rivulets circumscribing the room, and returned it to the circulation system.

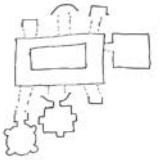
CIRCULATIONLESS SPACE, HANGER-ONS, INLAID BLACK PLANE

As a general typology, the Roman Bath, the Suburban Bath included, is a circulationless building type. For the purpose of conserving every degree of heat generated, rooms were huddled closely together. The shape and space of the thresholds and passages

between rooms were not corridors, but the actual wall thickness that resulted from juxtaposing shaped rooms.



The shape of the *tepidarium* is a rectangle of 2:3 proportions. The rectangle is annexed by oddly shaped appendages or "hangers-on." These include a square threshold adjoining a marble-benched waiting room, semi-circular and rectangular niches, a shallow arc leading to a cross-shaped *unctorium*, niches and windows to the marina, and a four-lobed circular *laconicum*.



Inside the rectangle of the room, inlaid into the floor, is inscribed a second 2:3 rectangle. It is a large pool, that, when filled with water, would appear as a still, black plane, reflecting the torsos of the bathers. In the *tepidarium*, bodies appear as statue busts on a floor. This breathing building is more animate, more like a body, than the passive, motionless, statuesque bathers who succumb to its pools.

STUCCO RELIEF IN THE SUBURBAN BATHS

ROOM WIDTH	7.35 METERS *25 ROMAN FEET*	24 FEET
ROOM LENGTH	10.10 METERS *34 ROMAN FEET*	33 FEET
HEIGHT OF ROOM	6.80 METERS *23 ROMAN FEET*	22 FEET
POOL LENGTH	7.30 METERS *25 ROMAN FEET*	24 FEET
POOL WIDTH	4.80 METERS *16 ROMAN FEET*	16 FEET
POOL DEPTH	1.30 METERS *4.5 ROMAN FEET*	4 FEET

Deiss, Joseph Jay. **Herculaneum: Italy's Buried Treasure.** New York: Harper and Row, 1985.

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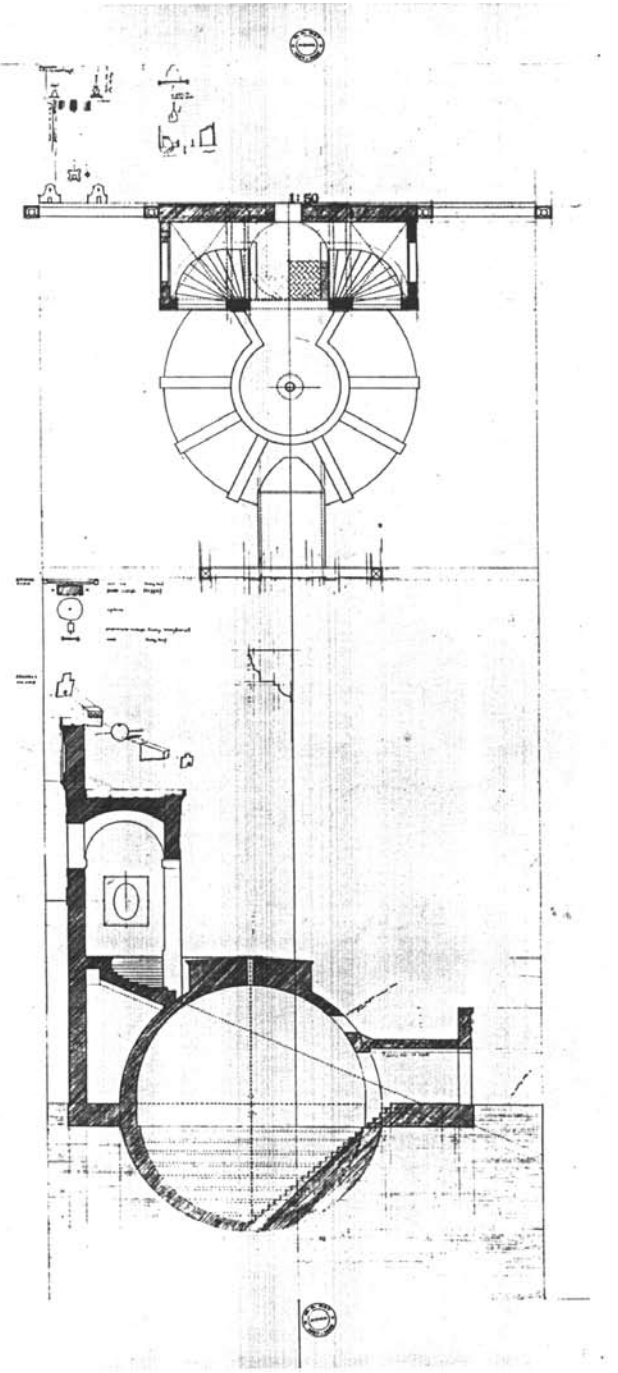
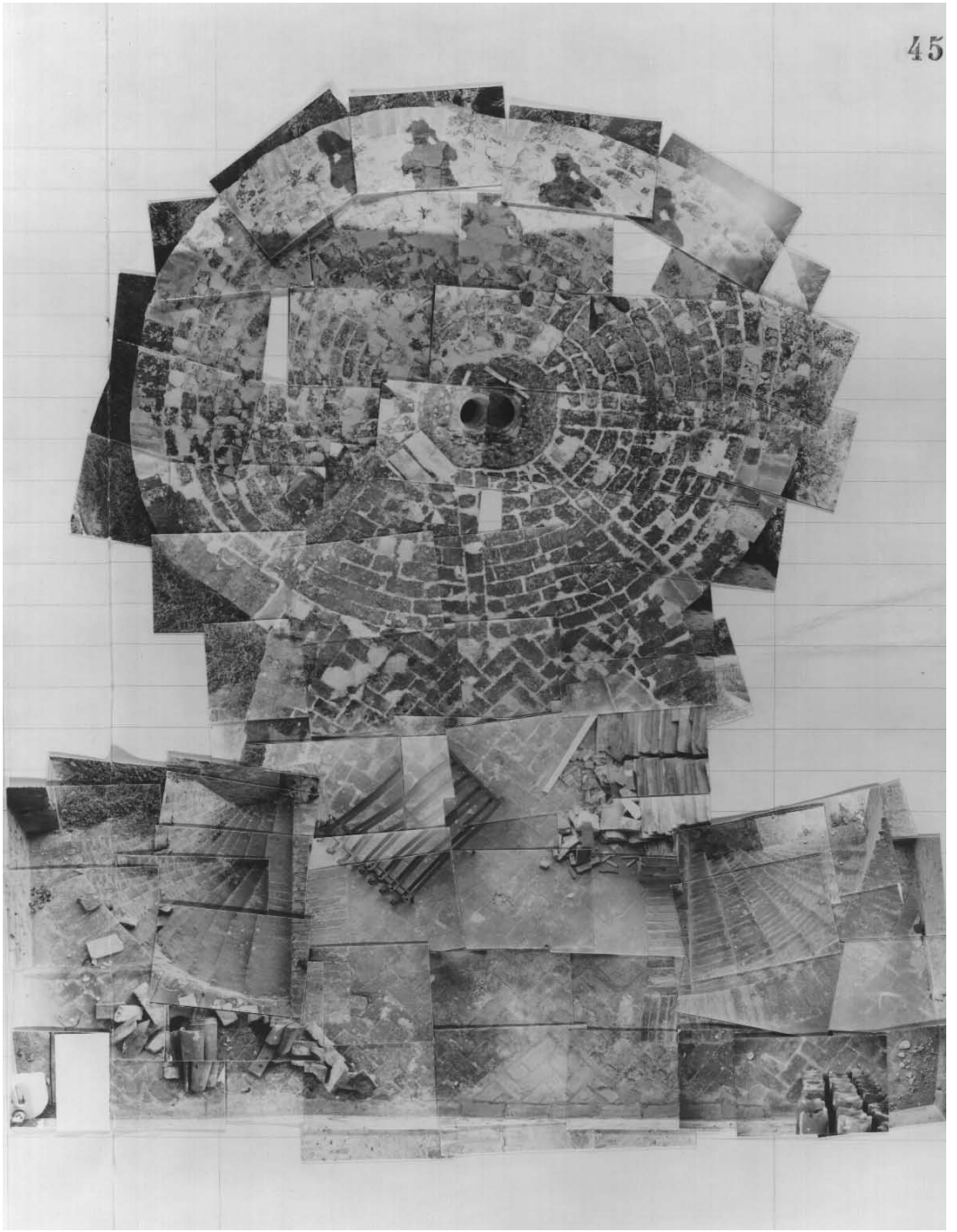


VII

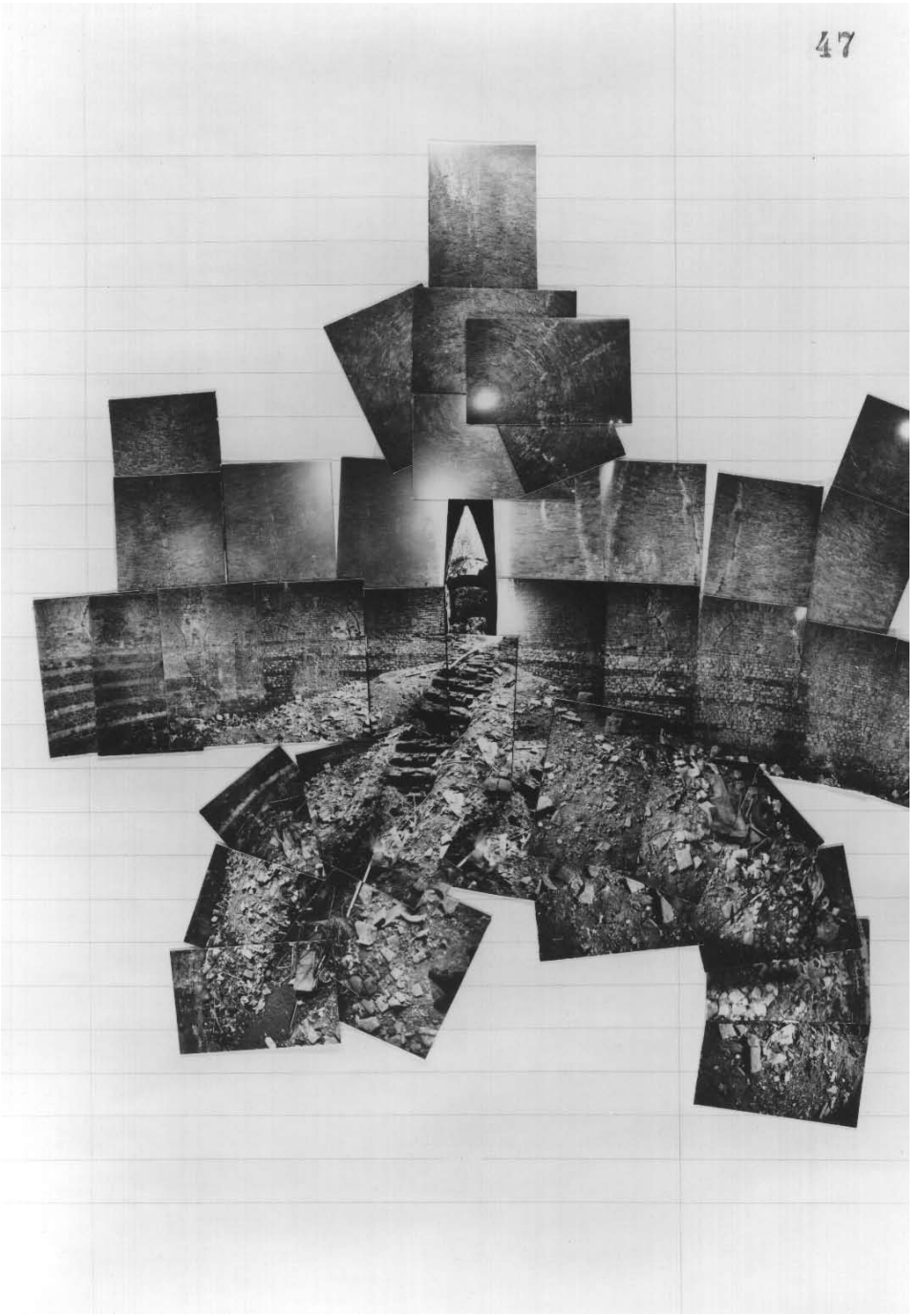
GHIACCIAIA,
VILLA RANUZZI-COSPI
BAGNAROLA

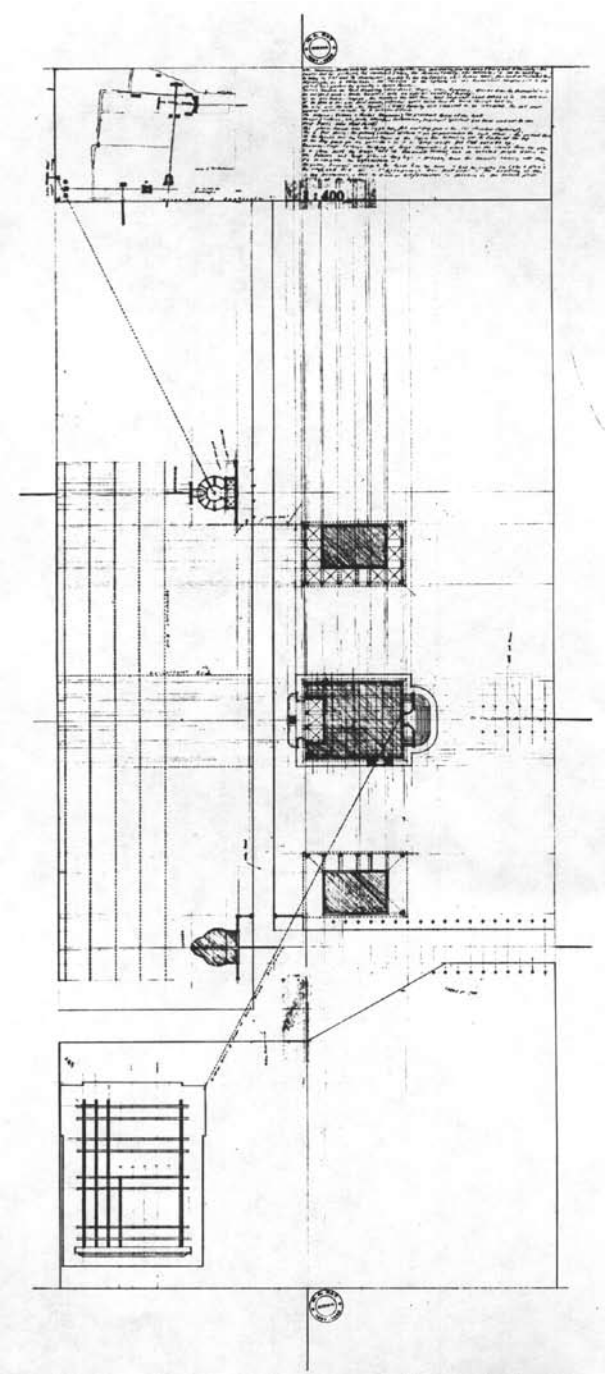
ICEHOUSE,
VILLA RANUZZI-COSPI
BAGNAROLA

FLAT SPHERE
FROM OUTSIDE-IN



DEEP SPHERE
FROM INSIDE-OUT





VII

GHIACCIAIA, VILLA RANUZZI-COSPI

BAGNAROLA

ICEHOUSE, VILLA RANUZZI-COSPI

BAGNAROLA

The Villa Ranuzzi-Cospi, or the Villa Notturni as it was sometimes known, was constructed about 1700 after a project most likely designed by the Bolognese architect Sebastiano Bertelli. The patron for the Villa, Count Prospero Ranuzzi-Cospi, was an important land owner. Ranuzzi-Cospi also owned a palace in Bologna, the city for which Bagnarola is a kind of suburb, but preferred to spend most of his time at this villa retreat. From the villa, he managed the day-to-day workings of the farm and established *l'Accademia dei Notturni*, or the Academy of the Nocturnals, an association of Bolognese men of culture who met to discuss art and literature in the salon just inside the three-bay garden loggia.

AUTHORIZATION FROM TAMBURINI TO DRAW AT THE VILLA

Villa Ranuzzi-Cospi remained an aristocratic property until the onslaught of communism challenged the notion of the gentleman-farmer out of existence. It has since hosted its own version of the story told by Bertolucci in his film **1900:** a villa that once housed a single family with its hired help now houses many families and individuals side-by-side. Bits and pieces of the land are farmed in communal and individual plots. Farmers and artists have converted work loggias, salons, and cantinas into a tangle of bedrooms, studios, kitchens, and living spaces. Some of the rooms of the house serve as the meeting halls and banquet room of the *Istituto di Prosciutto*, founded by Signore Tamburini, owner of the oldest delicatessen in Bologna.

SICKLE AND HAMMER

TAMBURINI'S SALAMI WRAPPER

The *ghiacciaia*, or icehouse, is one of several out-buildings at the villa. The narrow area on the ground floor, just behind the facade, is sometimes used as a chicken coop. The spherical ice chamber has been a convenient and ongoing compost pile for baby carriages, worn out shoes, broken mirrors, and other odd household bits.

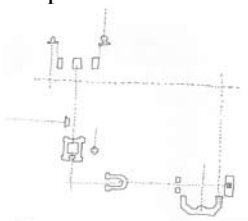
ICEHOUSE WITH SHEEP

PO FLATLANDS, LIDDED SPACE, RANK-BREAKERS IN SPACE-MAKING

The icehouse and its villa sit on the floor of the Po Valley. The ancient *Via Emiglia*, extending from Rome to points north, runs along a diagonal course through the middle of the city of Bologna. It delineates not only a political

boundary, but a topographical one as well. To the west are hills, and the roads and paths through them are capillary-like, running like veins between the contours. To the east is the Po Valley, a flat and seemingly endless surface where roads appear to run forever on perfect agricultural geometries, and whose only topographies are the artificial irrigation canals with sloped banks and subsidary channels, and a kind of atmospheric topography of cushions of fog that roll and linger in the cooler months.

Villa Ranuzzi-Cospi is one of the villas whose task, being on the flatland of the Po, is to desperately make space out of almost nothing—to build on a frontier land with only the slightest bit of anything to cling to, nestle up against, or react and respond to. The individual buildings of the villa—the main house, two farm buildings, a chapel and the icehouse—strive to define a greater space than would be possible with a single building. At a larger scale, the villa collaborates wherever possible—joining forces, so to speak—to keep the lid on space, and to hold its own against this landscape by collaborating with the other big villas in Bagnarola. By acknowledging axes and orientations, the four villas of Bagnarola together build a network of invisible lines across the land at the scale of urban planning.



Site Plan of Bagnarola w/ 3 other Villas

While these villas fight the space they don't want to name as space—the space of the giant agricultural geometry and ongoing landscape—the icehouse and chapel of the Ranuzzi-Cospi break ranks, and leave some loose ends. With their identical facades and extremely divergent bodies, the chapel and icehouse are able to accomplish a more magical task, opportunistically discovering and making use of found deep space instead of concerning themselves with making middle-ground space.

VILA RANUZZI-COSPI IN THE PO LANDSCAPE

SPHERICAL SPACE, GEOMETRICAL STRENGTH, DOME IN THE FULL ROUND, HALF-PUSHED/HALF-PULLED, MONOLITHIC BRICK

The spherical form of the icehouse makes a building with as little surface area as possible to prevent heat gain. This shape also builds in a geometrical

NORTHERN FLANK OF THE ICEHOUSE

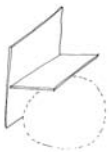
structural advantage: like a double dome, fully round, its greater strength is not produced through the use of more or heftier materials, but by exploiting a stronger geometry. While the top half, above ground, roofs the room below, the subterranean bottom half retains the earth around it like an upside down dome or a bowl. The upper half resists gravity pulling down and out on it, while the bottom half fights back against the surrounding soil that pushes up and in on it. This triaxially symmetrical structure is half-pushed and half-pulled.

PUSH and PULL

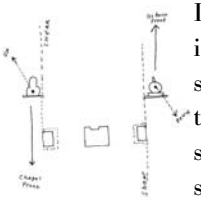
The construction of the icehouse is brick. The standard module of brick is used most often, but bricks cast to special shapes also intervene as mouldings and edgings. The effect of the surface after years of aging, as mortar and brick grow to look more alike than different, is that of a single fired monolithic piece. Like Borromini's proposals for brick walls that are "sanded" after construction to force a uniformity of surface, this building simultaneously has qualities of being constructed piece by piece and of being sculpted from one large mass of wet clay.

FLAT (EXTERIOR) PLUS DEEP (INTERIOR) PARTS, SITE SHEAR, LIFT AND DIP, DROMOS/THOLOS, AND SIMULTANEOUS CONTRADICTORY MEANINGS

The icehouse is composed of two flat parts, the planar facade and the loggia box, plus one deep part, the spherical ice chamber. The primary surfaces of the two flat parts are perpendicular to each other, the vertical face of the facade and the horizontal floor of the loggia box forming the two external surfaces. The volumetrically deep sphere sits below these exterior parts. The icehouse is a building with flat, two-dimensional exteriors and deep, three-dimensional interiors.


2 FLAT PARTS PLUS ONE DEEP PART

In the siting of the icehouse, the flat plane of the facade is located along a shear line off the edge of the main villa structure. In a parallax view from the road, an alignment with this shear line puts the icehouse and villa visually on the same two-dimensional plane, flattening a deeper space, and supporting the appearance of the flat exterior. The same is


Site Plan : opposite Fronts, Up and Down, and Shear Lines

true of the identical chapel, with the difference being the form of architecture behind the planar facades, and the directional layout of the interiors. Behind the chapel facade, the body of the chapel lifts toward heaven. Behind the facade of the icehouse, the sphere of the ice chamber dips into the ground, away from heaven. The interior of the chapel faces out to the front through doors in the facade, looking ahead at the public road. The interior of the ice chamber and the loggia box of the icehouse face back to the fields, using the facade as a backdrop rather than a threshold.

The architecture behind the icehouse face imitates the form of the *Dromos/Tholos*, the ancient forms of the architecture of death, specifically, the long, narrow tunnel leading down to the final subterranean volume. The associations of this architecture, crossed with the other inevitable associations of a building for the conservation of food—with its suspended dining loggia and view to the fields—mingles and tangles simultaneous and contradictory meanings of death, hunger, survival, life, work, and pleasure.

DINING LOGGIA

FLAT PARTS	2	
DEEP PARTS	1	
FLAT FACADE PLANE HEIGHT	16.07 METERS	53 FEET
FLAT FACADE PLANE WIDTH	20.86 METERS	68 FEET
FLAT FACADE PLANE DEPTH	0.38 METERS	1 FOOT
FLAT LOGGIA BOX HEIGHT	13.17 METERS	43 FEET
FLAT LOGGIA BOX WIDTH	10.20 METERS	34 FEET
FLAT LOGGIA BOX DEPTH	4.30 METERS	14 FEET
DEEP SPHERICAL DIAMETER	5.00 METERS	16 FEET

Adani, Giuseppe, Marina Foschi, and Sergio Venturi. **Ville dell'Emilia Romagna, dal castello-villa all'influsso di Versailles.** Milan: Silvana Editoriale, 1982.
Both this book and the one listed below have as their subject the villas in the landscape surrounding Bologna. These Bolognese villas have been largely overlooked in the history of architecture, which has tended to favor their Tuscan, Roman, and Venetian counterparts.
Matteucci, Anna Maria, and Giampiero Cuppini. **Ville del Bolognese.** Bologna: Zanichelli, 1969.

AFTERWORD: NOTES ON THE TECHNIQUE AND METHOD OF PHOTOGRAPHY

The "composite" or "built frame" photograph is a format borrowed from the work of Sherie Scheer, David Hockney, Jan Dibbetts, and others. The format allows the "regular" camera to perform like a "hyper-camera," capturing within the final image a view built from large surface areas of light-sensitive emulsions, sometimes outdoing even the largest view cameras in their ability to capture detail.

Because of the "built" nature of the frame, the resulting image is an invented one. This invented frame has the ability to trace space (and even space through the extended time of the duration of the photograph), to edit and include with specificity, to depict multiple views (for example, in photographing the top of something, one can continue to photograph the side of the thing, leading to a kind of cubist multiple view), and to build complex relationships between the subject and its editorial edges. In these composite views, the photograph can record the enactment of space as one maneuvers or roams through it with the eye or body.* The frame might succumb to the taper of perspective into deep space, or it may counter it, or build it into something else altogether (like the almost axonometric or oblique projection view in the photograph *"Body Moves into Space: The Seam is the Space of the Vanishing Point" Triclinium* of Giulia Felix). In building the frame, we can also adjust the relationship between subject and the author. The single snapshot or post card view has the power to separate the viewer from the subject—presenting the "tourist's view," a planar view parallel to and distanced from the viewer's body. In the "built frame" photograph, the object, instead of merely a thing to look at, becomes as much, or even more so, the actual space and place occupied by the viewer. The photograph can even fluidly move in to include and turn back on us, crossing the line of viewer and object.

The actual photographs exist in two forms—one scaled to the size of the book and the other scaled to the life-size body reading them on a wall. The book-scaled versions are usually constructed from 35mm proof sheet frames and

mounted on the pages of a workbook. These are the originals reproduced in this pamphlet. The body-scaled photographs are much larger, often exceeding the dimension of the arm span and or height of the body approaching it. From a close-up viewpoint, these large photographs also exceed the cone of vision of the viewer. Because of this, the head, neck, and position of the viewer must actively adjust in order to enact the view. Some part of the photograph is scaled to correspond precisely to the real scale of some piece of the actual building or room represented.

The film for the photographs is 35mm Tri-X (ASA 400) pushed to 1600 or 3200 ASA. Most of the photographs are hand held, with the exception of *"Every Window from Every Window: A Traveler's Path in the Well"* (Pozzo di San Patrizio) and *"Body Moves into Space: The Seam is the Space of the Vanishing Point"* (Triclinium of Giulia Felix) which were both done from a tripod. Holding the camera by hand allowed for more maneuverability in the 'enactment' of the spaces. Pushing the film to a higher speed led to a highly visible grain in the large photographs, giving them an abstraction that was surprising seen against the high resolution gained by using lots of film surface area.

All of the primary photographs are taken by the author, with the exception of *"Body Moves into Space: The Seam is the Space of the Vanishing Point"* (*Triclinium* of Giulia Felix) and *"Of a Corner: Circulationless Space and the Inlaid Black Plane"* (Tepidarium of the Suburban Baths). These photographs were both taken by the team of Monique Birault and Lydia Vilppu who were traveling to Pompeii and Herculaneum, and offered to shoot the *triclinium* and the *tepidarium* according to a plan that we had choreographed before they left.

*For example, the photograph *"Every Window from Every Window: A Traveler's Path in the Well"* was taken by walking the giant loop of the superimposed ramps, photographing from each window toward every opposite window across the well shaft. The photographs from the down, and then up again, path were intertwined in order to superimpose the up and down paths, leading to a complete view of the surface of the well's interior cylinder.

NOTES TO THE TRAVELER: LOCATIONS FOR THE BUILDINGS AND ROOMS FOUND IN THIS PAMPHLET

I

The *Pozzo di San Patrizio* is located in the Umbrian town of Orvieto. Orvieto is on the train line between Florence and Rome. From the train station, take the funicular up to the plateau of the town. The well is usually open to the public during the day.

II

The Tomb of the Cornice is one of many tombs located in the *Banditaccia* Necropolis, two kilometers outside of the town of Cerveteri. Cerveteri is northwest of Rome near the coast, about a forty five minute drive. Buses leave for Cerveteri from Rome at the *Via Lepanto* station (just across the river from the *Piazza del Popolo*).

III

To visit the *Sette Sale* cistern, permission must usually be granted in advance from the *Sopritendenza Archeologica* located on the site of the Roman Forum. It is sometimes possible to request entrance from the custodian of the *Auditorium di Mecenate* in *Largo Leopardi* (up the Oppian Hill from the Roman Forum and the Colisseum). The custodian may lend you the keys if you seem to know where the entrance to the *Sette Sale* is. The entrance is behind a very large iron gate off the Via Terme di Traiano near the intersection of Via Mecenate.

IV

The *Praedia of Giulia Felix* is one of the properties at Pompeii that is usually loosely boarded up and off limits to the general public. It is possible to find a guard on the site, and with the offer of a tip, ask to have the house unlocked.

V

To see the *Appartamento dei Nani* almost always requires some permission (usually in advance) from the Sopritendenza Offices responsible for the *Palazzo Ducale*. They are located at Piazza G. Paccagnini, 3, just behind the palace. On one occasion with a small group, we met a guard named Paolo who gave us a customized tour (not the lengthy standard one which hits upon mainly the "fancy" rooms) including the midget chambers, the prisons, and Giulio

Romano's thin riverside loggia. While in Mantua to see the Midget rooms, also see the room of the giants in the Palazzo Te.

VI

The *Tepidarium* of the *Terme Suburbane* is located at the former port of the ancient city of Herculaneum. Like Pompeii, Herculaneum *(Ercolano)* is easy to reach from the city of Naples. The Suburban Baths have been for many years now closed to the public. It may be possible to go through the red tape of gaining permission, or, hope to find a guard willing to take you in.

VII

The *Villa Ranuzzi-Cospi*, its icehouse and the other villas described are located outside of Bologna in the *Borgo Nuovo di Bagnarola*. With a good map of the region immediately surrounding Bologna, you will find Bagnarola to the north, about twenty minutes drive into the farmlands.

SOURCES FOR THE ILLUSTRATIONS IN THE TEXT

note: All illustrations not credited here or in the acknowledgments are by the author.

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Vatican Manuscript; Plan and Elevation; Section
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Orvieto; Duomo
Postcard views by Edizione Giammorcaro

Entrance to the Well
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An Opened Tomb; A Street in the Necropolis; Entry of the Tomb of the Cornice
Istituto Poligrafico dello Stato, Rome

Plan of Ancient Cerveteri; Furrowed Entry; Entrance to the First Bedchamber
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Hans Hollein, **MANtransFORMS.** Washington D.C.: Smithsonian Institution, 1976

Roman Funerary Chest with Lead Pipe for Libations
Mary Johnston, **Roman Life.** Chicago: Scott, Foresman and Co., 1957

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An Early Plan of the Cistern
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Pipes and Joints; Ancient Roman Carpenters' Tools; Ancient Roman 'Paenula' or Winter Work Coat
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Giovanni Paccagnini, and Maria Figlioli Paccagnini. **Palazzo Ducale of Mantua.** Milan: Edizioni Electa Spa, 1986

The "Scala Santa" Rome
G. Bambi, **Memorie Sacre della Cappella del Sancta Sanctorum.** Rome, 1748

Pilgrims at the "Scala Santa"
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Joseph Jay Deiss, **Herculaneum: Italy's Buried Treasure.** New York: Harper and Row, 1985

Oil Flask and Strigils; A Roman Tunic; Excavations at Herculaneum; Roman Plumbing
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Impression of a Marble Basin Left by the Eruption
Joseph Jay Deiss, **Herculaneum: Italy's Buried Treasure.** New York: Harper and Row, 1985

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Icehouse with Sheep
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