Springs, Streams, Swamps, and Sewers: The "Aquae Urbis Romae," A Water Map of Rome

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INTRODUCTION

This paper will introduce the subject of water as a coherent urban system - one of the multiple "grids" of public infrastructure which, like roads and rivers, combine with topography and open space as significant determinants of city growth, and effect its ultimate form. The historic center of Rome was chosen for this study because water is an profoundly important component of its form, history, experience and mythology, and because the city itself is used as a laboratory by students of architecture, landscape architecture, urban design and architectural history. By exploring the city through water, students gain a richer understanding of urban form, history, and technology, and are able to ground their theoretical and design work more fully in the context of the city.

Water is both metaphor and structure for the city of Rome, both an invisible and apparent form giver. The waters have great poetic resonance as physical and spiritual threads weaving through spatial, social and historical spheres of the city. Unconsciously one walks on water in Rome. Mysterious underground rivers flow beneath the streets and the sound of rushing water can be heard where it cannot be seen. Linked to topography the Tiber River, sacred springs, wells, aqueducts, conduits and fountains are the nodes and armature along which neighborhoods were founded and the city developed. Fragments of ancient waterworks hint at this underlying structure, while fountains celebrate its civic presence. Connected by underground conduits the fountains punctuate civic space like an urban rosary, and invite contemplation and thanksgiving.

Humble neighborhood fontanelle are essential to the identity and daily life of Rome. While the grand, libidinous, Renaissance and Baroque fountains are the loci of dreams, and a source of tremendous civic pride. For Roman and tourist alike they are major destinations. No roman is unaware of his fountains, even as he abuses them. They are not, as Eleanor Clark remarked, "*objet d'art*, held off from life and treated with respect as they would be anywhere else; there is a closeness, an imminence of touch around them that nothing in our life has except dreams and sex." There is no denying them without serious emotional damage.

WATER AND THE CITY

Roman origins are intimately linked to the Tiber River and the sacred springs on the Palatine hill. Roman mythology specifically links the founding and growth of the city - its protection and strength - to water dieties and the actual rivers, springs, lakes and fountains which were their domains. Cicero mentions that Romulus selected a place abundant in springs when he founded Rome in 753 BC. At the base of the chosen Palatine hill, was the spot where he and his brother Remus had been set adrift in the flooded Tiber River, and later found, after being condemned to be drowned. Floods, drownings, springs and rivers are crucial to the story of the founding of the city. Indeed Roman citizenship itself was intimately bound to water. To be banished from the city carried the ultimate punishment of "ignis et aquae interdictio", to be excluded from fire and water.

The growth of the ancient city was physically dependent upon draining the swamps, building sewers and developing a sophisticated aqueduct system to bring water from distant sources to be distributed to Rome's hills. Furthermore, the idea of Rome as *axis mundi* was reinforced through the distribution of water, its public display in elaborately decorated fountains, and by the provision of public bathing facilities.

As aqueducts deteriorated, were destroyed or abandoned after the 4th century AD, the population gradually shrank to occupy both sides of the bend in the Tiber, and a few other small inland areas, leaving the hills to deteriorate for nearly 1000 years. Not until Pope Nicholas V initiated a plan to restore the Aqua Vergine, and distribute its waters, was the city able to grow out from the Campus Martius. In the 16th & 17th centuries, the hills were resupplied with water from the first new aqueducts since antiquity - the Aqua Felice of Sixtus V, and Aqua Paola of Paul V. By 1748 the Nolli plan makes clear how the provisioning of water allowed the area of inhabitation to move up to the Pincian, Quirinal and Viminal hills.

Prior to the late 19th century (before water was piped directly to most homes) fountains were an essential element in the social life of every family and neighborhood. They were particularly important to women who used them as extensions to their kitchens. Here they would meet to discuss family matters, wash linens and collect water for cooking, drinking and bathing. Fountains were essential to the development of neighborhood public markets, a major social arena for women. Until the early 20th century cooking routinely took place outside the house in the street, hence fire and water shared the central space of Roman public life. The street, piazza, and fountain were physical extensions of the home. The house was in fact so relatively unimportant as to be merely a place to sleep and store one's belongings. Roman life was, and still is in large part, lived on the streets and in the piazzas of the city. The fountain also served as a backdrop for other social and political functions of the city and was an important element in the display of power and authority, and in religious and political processions and spectacles.

Today water is piped to every home and the role of the fountain has changed dramatically. Stripped of its essential function of providing pure water for drinking and cooking; no longer the focal point of the social life of women; and often unreachable through barricades of parked cars, fountains still play a vital, though largely unconscious role in the lives of Rome's citizens. In an incredibly dense city they are metaphors for the public gardens that ring the city but do not penetrate its core. Even the humblest fountain is as Charles Moore might say an "aid to inhabitation" because it provides music, joy, mystery, movement and light to every passerby. Like the beads on a rosary, held together by invisible underground conduits, fountains rhythmically punctuate movement through the city and invite one to pause and contemplate. They are "hail marys" for cynic and believer alike. While no longer such a clear extension to family living space, they are still backdrops for everyday lives of Roman citizens. And to every tourist they are the scenes for moments of heightened experience. And finally, water is most simply cool and refreshing, to both body and spirit as millions of times a day people pause to drink from public fountains.

"ACQUAE URBIS ROMAE", A WATER MAP OF ROME

In spite of the importance of water, aqueducts, and public fountains to the social, cultural, political and physical life of Rome, there is no currently available monograph, guide or map that deals with water as a system in the city. Several important monographs have been published on the history of Roman fountains (principally from an iconographic or traditional art historical perspective) including "Le Fontane di Roma" by Cesare d'Onofrio and "The Waters of Rome" by H. V. Morton. Significant technical works dealing with the aqueducts include "Roman Aqueducts and Water Supply" by A. Trevor Hodge, "The Aqueducts of Rome" by Thomas Ashby and "De Acquis Urbis Romae" by Frontinus from the 1st c. AD. There is no single work that examines fountains, aqueducts, the Tiber River and its floods, hydrography, fontanelle, animal troughs, underground conduits and distribution systems together as inter-related elements of a single urban system.

My overall objective in this study is to frame fountains, these most visible and tangible symbols of water, within the context of the structure of water, (aqueducts, conduits, sewers, the Tiber, etc.) within the city. This is accomplished through creation of a series of overlay drawings presented in a single map, titled "Acquae Urbis Romae" that is a first step toward filling this lacuna in Roman urban history.

The map specifically emphasizes the approximately 400 extant water features located in the public spaces of the historic center including: 1) well documented fountains such as the Fountain of Trevi, the Triton and Four Rivers, etc.; 2) less well known neighborhood fountains, most dating from the 17 - 19th c. such as the fountains of the piazzas of San Simeone and Santa Maddelena; 3) neighborhood fontanelle - small drinking fountains similar in form to a fire hydrant, dating from 1870 - 1904; 4) animal and trough fountains located primarily at city gates; 5) fountains located in public gardens and parks (many of which were formerly private) such as those in the Pincian Gardens; 6) distribution centers and underground conduits that link major public fountains to their aqueducts; and 7) current topography at one meter intervals.

In addition the map provides a guide to the memory of water in the city by illustrating: 1) the natural hydrography of the ancient city including swamps, springs and streams; 2) ancient roman waterworks including public baths and fountains, aqueducts and sewers; 3) the course of the Tiber before embankment at the end of the 19th c.; 4) the location of memorial plaques commemorating historic Tiber floodings and the extent of the 1598 and 1870 floods; 5) missing, destroyed and relocated fountains that will help to reconstruct a history of water in the public realm; and 6) the location of 18th and 19th c. neighborhood wash houses and outdoor wash basins.

Maps are by their very nature skewed interpretations of the places they purport to represent. As personal narratives they reveal an imagined city with the real. The "Acquae Urbis Romae" presents the streets and building blocks as a background against which water features are linked to reveal the structure of water in the city. The "Acquae Urbis Romae" will be a valuable resource for examining the city systematically and will be used by architects, landscape architects, planners, urban designers and historians, students, cartographers, hydrologists and lay persons.

It is my intent that this map (to be available in both printed and computer formats) will be a tool for others and that it will be a "jumping off point" for new research. A study of water offers a particularly attractive and fruitful opportunity since in varying degrees it is a part of every street, building and space in the city. It will aid research in the following areas, among others: 1) the development of neighborhoods and the growth of the city; 2) water, gender and public space; 3) the relationship between religious and political processionals and the distribution of water; 4) the consecration of public space through the introduction of water as a symbol of the virgin 5) water and the iconography of power; and 6) the link between the public display and distribution of water and the growth of the tourist industry since the Roman Republic.

Critical Pedagogy and Architectural Education

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INTRODUCTION

In this paper, I suggest that if we are to engage in a serious reappraisal of architectural education, then our first task should be to examine how institutional and curricular practices combine to construct what we commonly accept to be the identity of an architect. The entropy of architectural schools —characterized by the ritualized, monastic abandonment of the outside world in the early years of training—can be seen as an act of force designed to ensure the production of a uniform and cohesive professional identity.

By gradually severing the connections between personal and the professional worlds, architectural education constructs a model of cultural assimilation that assigns everything that differs from the corpus of knowledge and practices embodied in the figure of the architect to a marginalized "private" realm. Students entering architectural schools learn that they must subordinate their "other" identities to the task of becoming a professional. Bombarded with complex tasks, working under highly pressurized conditions, the student is constituted as the target of a one-directional transmission of skills and information.

Yet, while architectural education continues to be based around the production of a unified, stable, and seemingly timeless professional subjectivity, the cultural character of North American society has changed dramatically over the last 15 years. The percentage of women, African Americans, and first generation immigrants from the third world in higher education has increased steadily since the late 1970s, and the trend is expected to continue. In Canada, group identities are now recognized and protected by the Canadian Charter of Rights and Freedoms. Elsewhere in the university there have been broad-based critiques of predominantly white, male, Eurocentric, heterosexual curricula.

Despite these demographic, legal, and epistemological shifts, architectural education has remained remarkably resistant to "outside" influence. History and theory programs continue to define architecture through a corpus of Christian religious monuments, public buildings, and palatial private homes whose architects inevitably belong to a select, agradually breaking apart.

The profession, slow to perceive this "disaggregation", has recently begun to suggest ways in which it can be halted. Some suggest that architects should demand more fees for their services, apparently hoping to restore some measure of continuity between the signification of expertise and its financial value. Others argue that architects should try to think of themselves as "translators" and managers of technical social expertise from outside disciplines. Still others suggest a "back to basics" approach. The Prince of Wales' call for architects to be trained in the traditions of classical humanism is perhaps the clearest example of this latter tendency.

In the argument which follows, I suggest that as educators we must step back from proposing a new global strategy for the profession to shore up its authority. Instead, the disaggregation of the field should be viewed positively - not as an end in itself - but as a part of the breaking up of hegemonic systems of knowledge and the identities they construct. Instead of "top-down" reforms, we need a selective jamming of the curricular and institutional machinery of architectural education. We should aim to produce moments of crisis and open-ended possibility, in which contested histories and a competing range of situated political issues become integral to the critical transformation of the field. This is the first step in creating a more democratic learning environment and profession.

I begin with an analysis of the model of training that currently dominates architectural education, and then evaluate an alternative set of practices informed by theories of critical pedagogy, or education for a critical consciousness. I view critical pedagogy —with some reservations— as a possible means to begin "opening up" architectural education.

Critical pedagogy attempts to show the logic of specific power relations and struggles in the educational process. Students and teachers examine how knowledge is constituted, by whom, for whom, and for what purpose.[1] Curricular and institutional practices are considered together as an instance of cultural politics that "contains not only the logic of legitimation and domination, but also the possibility for transformative and empowering forms of pedagogy..."[2] The