Celebrating the Invisible: Aqueduct Display Fountains in Rome and America

Peter Aicher

Arion: A Journal of the Humanities and the Classics, Volume 27, Number 3, Winter 2020, pp. 67-110 (Article)

Published by Trustees of Boston University through its publication

DOI: *https://doi.org/10.1353/arn.2019.0018*

Celebrating the Invisible: Aqueduct Display Fountains in Rome and America

PETER AICHER

Some of the most famous monuments in Rome are fountains that explicitly commemorate the construction of the aqueducts that supply them. The Italian term for these special fountains is *mostra*, the same word that designates an art exhibit. Key to the term as applied by the Romans to a type of fountain is that the fountain be conceived of and inaugurated as a celebration of the aqueduct behind it. While the tradition continued somewhat less grandly with Rome's 20th century aqueducts, its most famous and rhetorically explicit examples are three papal showpieces that culminate in the Trevi Fountain. After a brief review of these fountains and the Fountain of the Naiads, I will discuss the legacy of this tradition, and departures from it, in commemorations of the monumental aqueducts of New York City and California. This comparative approach will not only reveal the role of Rome in presenting American waterworks to the public, but explore the social, political, and environmental differences that complicate the continuation of display traditions on American shores.[1]

I have argued elsewhere against the still prevalent conception that the tradition of the grand *mostre* began in ancient Rome.[2] In the face of the abundant evidence for a host of monumental fountains in ancient Rome and the empire, my argument relies on the important distinction, made above, between a *mostra* and a monumental fountain, however grand the latter may be. To complicate matters, there is some evidence that papal builders of *mostre* indeed imagined they were continuing an ancient tradition, and many modern com-

mentaries on ancient Roman fountains follow in their fallible footsteps. There are scattered examples throughout antiquity of a fountain commemorating its aqueduct and its builder, but the practice wasn't common and certainly not frequent enough to warrant the assumption of a standard practice that the popes simply continued. In fact, the papal *mostre*, for all their splendor and contribution to the charm of Rome, would, at least in terms of resources, expense, and scale, all be side-shows in comparison to the aquatic extravaganzas of the ancient imperial baths and their wall fountains. A more substantial connection between Baroque Rome's *mostre* with antiquity exists in the papal aqueducts themselves, which, in varying degrees, all reused or refurbished sections of ancient channels and re-tapped sources that had been lost to the city for centuries.

Another connection between the papal aqueducts and their ancient Roman counterparts involves the rediscovery of Frontinus's handbook on the city's nine aqueducts of his day (c. 100 CE). A century after a lone manuscript of his text resurfaced at Monte Cassino in 1429, Frontinus's description of aqueduct routes helped a papal librarian, guided in addition by the piles of deposits removed from the ancient channel in antiquity, rediscover the original sources of the Aqua Virgo.[3] Though copious and only eight miles from center city, the low-lying nature of these springs made them difficult to find—a geographical feature that will be memorialized by Trevi Fountain sculpture. Earlier papal work on the aqueduct (called by then the Acqua Vergine, the city's sole ancient aqueduct that never entirely ceased running) had occasioned a humble commemorative fountain in a small square where three streets met—hence Trevi. But the aqueduct's 16th century renovation and reconnection to the ancient springs called for something grander. It would take another two centuries until that spectacular display was created.

In the meantime, within fifty years of the Vergine's restoration, two other papal aqueducts, the Acqua Felice of 1587 and the Ac-

qua Paola of 1612, were completed, reconnecting the city to sources tapped by two other ancient aqueducts, the Aqua Alexandrina and the Aqua Traiana respectively. Sadly, the Acqua Felice's gloomy arcade cannibalized many of the fine cut-stone arches of the ancient

Fig. 1: The *mostra* of the Acqua Felice near the Baths of Diocletian. Note the central Moses statue, the inscription commemorating Sixtus V and his aqueduct, and the ornamental obelisks that figured so prominently in Sixtus V's renovation of Rome. (Author photo)

Aqua Marcia's along its route to the city, and it can be seen today shamelessly burrowing through Porta Maggiore's display of the Aqua Claudia. The display fountain of the Felice aqueduct, located at Largo Suzanna near the Termini station and the Baths of Diocletian, while the first of Rome's grand *mostre*, has its own aesthetic problems (fig. 1). The attic bearing the inscription and papal coat of arms seems top-heavy, being almost as tall as the sculptural bays beneath. But it is the central statue of Moses below that has been the fountain's most frequent target of abuse. Awkwardly proportioned and straining for Michelangelismo, the Felice Moses looks like a man angrily commanding a dog back to a mess. One can quibble that the figure embodies an anachronism: with his right hand he points to the waters that he struck from the desert in Exodus 17, while he carries in his left the tablets he received in Exodus 20. But there is no doubt about the message: the papal builder, Sixtus V (né *Felice* Peretti), was a Moses, and Rome a desert until the miraculous appearance of Felice waters. To be fair, it was indeed part of a grand and comprehensive vision of urban renewal and constituted a major advance in the city's water supply: though delivering only half the volume of the Acqua Vergine, it far surpassed its predecessor in elevation, thereby supplying a much wider region of the city with water.

The Acqua Paola, a project of Pope Paul V built a few decades later, was another high-elevation aqueduct, this time on the Tiber's right bank. It too received a *mostra*, often just called "Il Fontanone" today. It remains the most visible of the city's *mostre*, perched high and unobscured on the Janiculum Hill. Like its predecessor, it is a monumental wall fountain that forms a façade for a utilitarian distribution building behind it. It follows the Fountain of Moses in its basic structure—lower basin, a story of bays spouting water, and an attic crowned by the papal coat of arms—but is more harmoniously proportioned.

The architectural vocabulary of both the Felice and Paola *mostre* stresses their classical connections. Their basic design recalls the triumphal arch, as is appropriate for an aqueduct's conquest of natural forces. The texts of both attic inscriptions are

patterned on ancient aqueduct inscriptions in both typography and content, specifying the location of sources, the volume or quality of the water, and the length of the aqueduct.[4] But the Fontanone's inscription makes its aqueduct's link to antiquity manifest, name-dropping the ancient aqueduct whose ruins the Acqua Paolo claimed to restore. Unwittingly, by claiming to restore and expand the Aqua Alsietina, the inscription is further evidence of the importance of Frontinus's text for the post-classical understanding of aqueducts. The Alsietina was indeed the only ancient aqueduct on that side of the river mentioned by Frontinus, since the Acqua Paolo's true predecessor, the Aqua Traiana, superior to the Alsietina in both quality and elevation, post-dated Frontinus and required subsequent archaeological sleuthing to add it to the canonical list of eleven Roman aqueducts. It's an unfortunate error, because Frontinus, while providing the Alsietina as a classical precedent, has nothing but scorn for the quality of its water; he can't fathom why Augustus even built it, and considers it undrinkable. For Paul V, however, swill with a classical pedigree was evidently preferable to anonymous nectar.

Meanwhile, the Acqua Vergine continued to lack a suitable display, though not for want of ambition. Urban VIII put Bernini himself to work on it. The artist proceeded to demolish the modest fountain that commemorated the aqueduct's restoration a century earlier, but, after some expansive foundations were laid that reoriented the fountain to its current position, the project foundered. Urban died, and his successor, from a rival family, put Bernini to work on the famous Four Rivers Fountain in front of the new pope's family palace in Piazza Navona. Although supplied by the Acqua Vergine, the Four Rivers Fountain celebrates the universality of the Catholic faith rather than the aqueduct, which now lacked even a modest commemoration. This changed dramatically a century later when in 1732 Nicola Salvi, an architect and polymath with a reverence for Vitruvius and Frontinus, designed and began construction of the Trevi Fountain we know today.[5]

This is not the place for a comprehensive review of this extraordinary fountain, with its theatrical fusion of mythical

allegory, architectural rigor, whimsical depictions of nature, and the intricate play of water. Before focusing, however, on the fountain's attention to the history of the ancient aqueduct whose restored waters it displays, a brief quotation from Salvi's extensive explanation of his allegorical program will be relevant for later discussion. The fountain's meaning, Salvi explains, begins with the larger-than-life sculpture of the god Oceanus at its center: "[Oceanus] has always been referred to in terms which denote a Power as superior to other Powers, . . . one of those prime, most powerful agents among natural phenomena, and was one of the original sources of an infinite number of products which depended on him . . . This Sea is, so to speak, the perpetual source which has the power to diffuse various parts of itself, symbolized by the [fountain's] Tritons and the sea Nymphs, who go forth to give necessary sustenance to living matter." He goes on to explain how the multifarious features of the fountain flow in metamorphic profusion from this core conception like the waters that flow from beneath the imperious deity at its center.

As for the fountain's celebration of its ancient Roman waters, the inscription on the attic only begins the work of commemoration. In fact, while it refers to the aqueduct, singling out its salient characteristics of volume and purity, the papal inscription does not commemorate the rebuilding of the Aqua Virgo, which was the work of popes centuries earlier, but celebrates the creation of the fountain itself, as the worthy display of such wonderful water. This frees the aqueduct to be displayed, not as part of the Church's earlier renewal of antiquity, but as antiquity itself—a return to roots that harmonizes with the sculpture's allegorical treatment of water's elemental origins.

The historical dimensions of the Aqua Virgo, built by Agrippa in Augustus's rule, are displayed in two bas relief panels located either side of the central niche with Oceanus and directly above the allegorical statues that give plastic form to the water's qualities (abundance and purity) singled out in

the attic inscription.[6] Both reliefs are in essence origin scenes based on information found in Frontinus. Frontinus tells us that Emperor Augustus's right-hand man Agrippa built the Aqua Virgo, and that it was named for the maiden who pointed out its source to his soldiers hunting for its springs. The relief on the left, above the figure of Abundantia, shows Agrippa pointing up at aqueduct arches rising in the background, while an underling unfurls construction plans at the generalissimo's feet (fig. 2). The relief to the right, above the statue of Salubritas, commemorates the eponymous virgin in the act of revealing the aqueduct's springs to Agrippa's sol-

Fig. 2: Bas-relief on the Trevi Fountain showing Agrippa as aqueduct builder. Close inspection of the plan unfurled below him reveals that it corresponds to the bend in the arches he points at, the same bend that shapes the street alongside the fountain today. (Author photo)

diers, as one of them bends down to cup some water squirting up near the maiden's feet. Other ancient writers attribute the name of the aqueduct to its virginal purity, but Frontinus offers only the story of a hydrologically savvy girl who knew her neighborhood. Nor was Trevi her first apotheosis through art: Frontinus says she was already commemorated in his own day, in this case by a painting affixed to the wall of a shrine next to the source. The narrative of discovery, featuring difficult to find springs, jibes with the hydrology of the area: the Virgo's springs are low-lying and actually tapped below ground level.

The name of Rome's next aqueduct, the Acqua Marcia Pia, honors both an ancient aqueduct and Pope Pius IX, who was instrumental in restoring its sources to Rome. These sources, revered in ancient and modern Rome alike, are part of a vast network of springs in the upper Aniene Valley that originally supplied both the ancient Marcia and Claudia aqueducts. But there would be no lasting papal *mostra* for Pius IX. A modest display fountain was hastily erected when it came on line in 1870, but its inauguration would be the Pope's last official public appearance. Shortly after the dedication, Italian forces reunifying Italy put an end to the Papal States and reduced papal rule to the Vatican. Located on the old estates of Sixtus V, the ephemeral fountain was soon demolished during the construction of the Termini train station.

Although the aqueduct's former patron was now self-confined behind Vatican walls, the city was not about to abandon the tradition of aqueduct display fountains. After a second Marcia Pia fountain featuring statues of lions also proved wanting, a lengthy gestation resulted in the grand Fountain of the Naiads that now occupies the center of a large traffic circle in the Piazza della Republica, between the Termini station and the Moses Fountain of Sixtus V discussed above. In its reliance on mythological figures connected to water, this *mostra* resembles the Trevi. In both there is a water god, in this case Glaucus, a mortal turned god, at the fountain's center. Glaucus is engaged in a

struggle with a dolphin, and so, like the Trevi, depicts the struggle to control this slippery element—think aqueduct—though there is no wider sense of the bounty of benefits to the natural and human world that this struggle and, by extension, the labor of building aqueducts provide. Nor does the choice of Glaucus, a somewhat minor deity whose myth is most prominently told by Ovid in the *Metamorphoses*, especially deepen the message with further dimensions. There is some elucidation of water's elemental nature in the four nymphs arrayed around the basin and giving the fountain its name: each is paired with a creature that indicates their various domains— oceans, lakes, rivers, and underground waters respectively. In contrast to the Trevi's careful and deliberate mythological program, however, the water-nymphs here primarily convey sensual delight in the water sprayed on them by jets dedicated to keeping their limbs glistening. In a way, the sensual bliss of these nymphs is an effective strategy to celebrate the Marcia's water: only something quite exceptional could possibly elicit such reactions.

In other important ways, the fountain is quite different from its three predecessors, and these differences reflect changing political and social realities, in addition to changing aesthetic values. First, there is no inscription to record the builder, the date, or the aqueduct itself that the fountain celebrates. This is partially explained by the fountain's form. In place of the imposing wall fountains presenting a distinct frontal direction and raising an attic that calls out, since time immemorial, for content, there is a low, circular basin approachable, if at mortal peril, from any direction. Such a form, however, leaves room for a plaque of commemoration. That there isn't one to put the fountain and the aqueduct it celebrates into context and public memory can perhaps be excused in Rome, whose inhabitants, like their ancient urban predecessors, pride themselves on their connoisseurship of the city's various waters. It is reasonable to assume, however, that such awareness and appreciation has been abetted by concerted efforts in the past to inculcate such awareness through didactic display. Another formerly familiar

feature in fountain display lacking in the case of the Acqua Marcia Pia was a distinct, interested party—a pope, that is—who could claim the lion's share of the credit and who had the authority to advertise it.

A word on such authority before heading to American shores, since the genesis of the Fountain of the Naiads reveals conditions that will complicate displays there as well. With the popes and their funding taken off the table, the fountain's design and funding became a contested matter involving political parties, elected officials, the press, and public opinion. This is not to deny contested aspects in the creation of other fountains. The Trevi's design, in fact, was the result of a public competition overseen by the Church. But clearly the Marcia's new fountain arose in a new world of democratic processes and competing interests. A brief example must suffice. Those naked naiads stretched across or handling their creatures occasioned a hotly contested debate in city hall about whether or not to remove them even before their official unveiling. The figures were still hidden behind a fence put in place during their installation when word reached council members that the naiads were disporting themselves with shocking abandon. Several conservative religious council members argued for their immediate removal, before Rome's youth could be subjected to their corrupting influence. As debate continued, the public, tired of sneaking glimpses of the sculptures hidden behind the fence, tore it down, at which point the debate widened to public opinion and received extensive coverage in the newspapers. Despite continuing opposition (based not on the nudity of the nymphs *per se*, the nay-sayers insisted, showing some awareness of where they were, but on the naiads' particular poses and expressions), several major newspapers affirmed the artistic merit of the brazen bronzes, and they remain today.[7]

FROM THE FIRST, America's monumental aqueduct building took place in democratic space. Power still found expression

and projected authority with public display, but the supplanting of autocratic rule with various communal and corporate agencies gives such displays new dimensions and purpose, as do new media for display (e.g., photography, visitors' centers, the Internet). It was noted how the press informed debate and publicized the controversy surrounding the Fountain of the Naiads. While the relation between a free press, as forming one of the cornerstones of American democracy, and the controversies and debates that accompanied the creation of American aqueducts are topics too complex for treatment here, as is the impact of popular opinion and a voting public on the creation of displays, these are factors worth keeping in mind for the following discussion. Even the advent of the medium of photography creates shifting roles and new possibilities for display, allowing opportunities for ceremonial staging and publicity, for instance, that are not necessarily connected to expensive urban real estate. Nevertheless, amid the pluralistic approaches to the display of aqueducts in the three American communities discussed below, continuities with Rome are present, including both explicit and assumed associations with Roman antiquity.[8]

As a general rule, aqueduct building in America proceeded without the feature that was the most prominent display accorded to ancient Rome's aqueducts: the arcade. As I discussed in a previous article,[9] the majestic succession of aqueduct arches took on symbolic dimensions of imperial power, as was explicitly recognized by Frontinus. Later, these versatile arches, even in ruin, retained their symbolic force to embody imperial decline. Whatever the reasons for the demotion of the aqueduct arcade in American waterworks (including new technologies, new fashions, expense, and in some cases climate), the nation's first monumental aqueduct constitutes a striking exception. When New York City's Croton Aqueduct was finished in 1842, it received an extraordinary amount of display, some of it temporary (such as inaugural pageantry and press coverage) and some of it monumental

and surviving to this day. That aqueduct's most famous display remains the High Bridge, which carried its waters from the mainland of the Bronx to the island of Manhattan, in what was then countryside ten miles north of the city. Recently refurbished and re-opened to pedestrians, it was patterned on and celebrated as a Roman-style aqueduct arcade.

The Croton Aqueduct, however, also had downtown displays that fit the definition of a *mostra*. Two jet fountains were built for its inaugural ceremonies, one in Union Square Park, the other in the Park at City Hall. Neither fountain exists today, though a bronze plaque in Union Square Park commemorates the former fountain there, if not with pinpoint accuracy. Each fountain featured a central jet or column of water some fifty feet high displaying the aqueduct's gravity-backed pressure, around which other jets were arrayed, with a variable play of water controlled by adjustable nozzles and plates. The City Hall fountain's metamorphoses were the more elaborate, appearing in shapes designated with titles that included the Vase, the Dome, the Sheaf of Wheat, and the Weeping Willow. Without water, the fountains were little more than basins with holes in the ground. This is not to detract from the drama of such displays, as examples today demonstrate. Such fountains, however, do tend to lack a sculptural and inscribed message that might link them specifically to an aqueduct. This potentially sunders, once inaugural celebrations have faded from memory, the connection between fountain and aqueduct, to the detriment of both: the fountain no longer commemorates something greater than itself, and the aqueduct no longer surfaces to public awareness.

Two important qualifications are in order when considering Old Croton's displays.[10] First, can a fountain be called a *mostra* if there is no public awareness that it celebrates an aqueduct? If yes, then the Bethesda Fountain in Central Park, not the High Bridge, is Old Croton's most famous display (fig. 3). This fountain, crowned by Emma Stebbins's Angel of the Waters, is Central Park's most famous attraction. It is vis-

ited by millions of people each year and is featured in numerous movies, with an iconic presence in Kushner's celebrated *Angels in America*. What more could one want in a *mostra*? But the Bethesda Fountain doesn't register as or declare itself

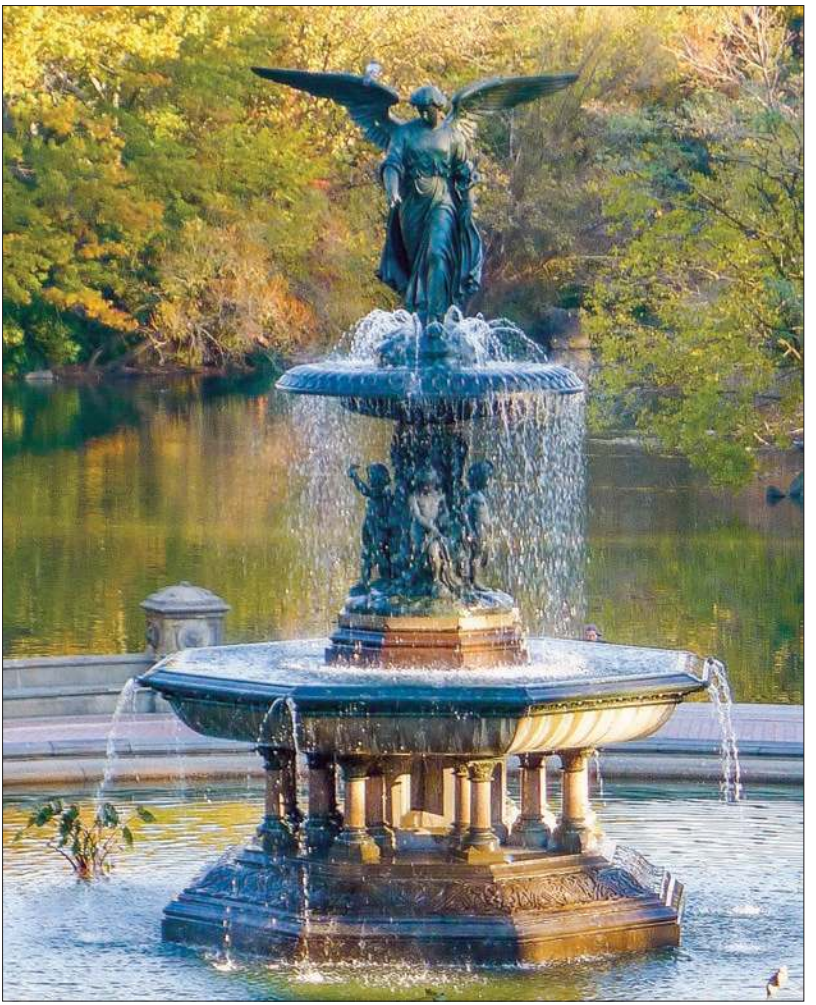

Fig. 3: Emma Stebbins's Angle of the Waters, atop the Bethesda Fountain in Central Park, NYC. (Author photo)

to be in any way connected to aqueduct water, and it is not viewed as such by any but the most antiquarian of tourists accompanied by a pedantic guidebook.

In truth, even at its inauguration the fountain's connection to the Croton Aqueduct was tenuous, and there neither was nor is an inscription that records the connection. Still, at the low-key inauguration ceremony in 1873, in a pamphlet produced for the occasion and reprinted in the Park's official report for the year, Stebbins specifically notes the parallel between the fountain Angel's healing presence at the pool of Bethesda (John 5.2–4) and the waters supplied by the Croton Aqueduct:

> An angel descending to bless the water for healing . . . seems not inappropriate in connection with a fountain; for, although we have not the sad groups of blind, halt and withered waiting to be healed by the miraculous advent of the angel, we have no less healing, comfort and purification, freely sent to us through the blessed gift of pure, wholesome water, which to all the countless homes of this great city, comes like an angel visitant, not at stated seasons only, but day by day. Every day an angel descends for us, and to remind us of this, the golden bronze angel of the fountain stands for ever blessing the waters . . . falling over the edge of the upper basin, slightly veiling, but not concealing, four smaller figures, emblematic of the blessings of Temperance, Purity, Health, and Peace. (Report, p. 8)

Moreover, the sculptor, while creating the cast for the bronze angel in the 1860s, was living in Rome not far from the Trevi Fountain, which, as discussed above, features several female figures celebrating the pure waters of the Aqua Virgo. In her study of Central Park, Sara Miller says the Trevi Fountain was "undoubtedly the source for Stebbins's tribute to New York's own prized water system."[11] Miller goes on to note the added significance of healing waters for Stebbins: her life-long partner Charlotte Cushman was by then seeking a cure in water therapies for the cancer that would soon kill her. Add to this personal concern the still-fresh devastations of the Civil War that took place during the fountain's cre-

ation, and one can understand how the Angel of the Waters was destined for a wider significance as a supernatural balm for the sufferings of humanity—a reorientation made all the easier by the absence of any inscriptions or programme that recall the fountain's inaugural connection to aqueduct water. Note too, though, how even in Stebbins' dedicatory remarks quoted above there is only the most general reference to water supply, as if the words "Croton" and even "aqueduct" would only have sullied the fountain's sublime message with references to prosaic engineering. Contrast this polarization of sacred and profane realms to the eager yoking of Moses with the prosaic aqueduct details recorded by the inscription on the Acqua Felice's fountain.[12]

A second qualification is in order when discussing and ranking any display of Old Croton: the aqueduct no longer functions. Its 123 years of service before its decommissioning in 1955 may seem a decent lifespan until put alongside the Aqua Virgo's two millennia and counting.[13] One wonders whether a more intimate connection between a beloved monument and the creation it celebrated would have committed New York to keeping the Old Croton Aqueduct in operation. Probably not, though it is quite plausible that Rome's tradition of *mostre* in general and the Trevi Fountain's wild popularity in particular have afforded some protection and maintenance for an ancient aqueduct that, like Old Croton, has been rendered (when considered simply in terms of critical water supply) obsolete.

What rendered Old Croton obsolete was not so much its own failure (in fact, its initial section has been returned to service) as the success of three subsequent aqueducts, each larger than the last and capable of delivering more than ten times the volume of the city's first aqueduct.[14] The first successor draws from the same Croton watershed some forty miles north of downtown Manhattan, while the other two, the Catskill Aqueduct in 1917 and the Delaware Aqueduct in 1945, needing to supply a city that in 1898 had been expand-

ed to comprise five boroughs, were bolder, crossing under the Hudson River to tap large reservoirs impounding streams in the Catskill Mountains over 120 miles away. It was a monumental achievement that has received curiously little commemoration in the city itself, where it invisibly arrives in tunnels bored in bedrock 600 feet below the streets.

Things began promisingly enough when the first of the Catskill aqueducts was inaugurated in 1917. Due in large part to a Catskill Aqueduct Celebration Committee created by the city's mayor "upon the request of representatives of some of the leading commercial bodies," several days of pageantry, oratory, and indeed a fountain (more on this below) welcomed the Catskill water's arrival. Prior to that, the committee commissioned E. H. Hall, a leading committee member, to write a commemorative publication in advance of the celebrations. Hall's introductory encomium to the "American genius which has achieved a stupendous engineering triumph" summarizes the feat as follows:

> Starting at an elevation 610 feet above tide level in the Catskill mountains, and creating four large lakes on its way, the aqueduct burrows under valleys, tunnels through mountains, dives under rivers to a depth of 1,114 feet below sea-level, bores through the solid rock of Manhattan Island, and delivers pure mountain water to every borough of the city. It is 120 miles long and is capable of delivering 500,000,000 gallons of water a day. The greatest of the famous Roman aqueducts was only half as long as this one, and in technical difficulty was, in comparison, like building houses with children's "blocks."[15]

In the 1830s, intensive comparisons to Rome accompanied the campaign to build the original Croton Aqueduct. Here, eighty years later, the Roman aqueduct is still serving as a touchstone for modern achievements, though Hall leaves out one key feature that the Catskill Aqueduct (as well as the Delaware Aqueduct following it and the Croton aqueducts before it) shares with its ancient predecessors: the entire work

of transporting the water—all two million tons of it daily from the Catskill Aqueduct alone—is done by gravity, even generating some electricity along the way.

Hall's eighty-page commemoration is an encomiastic mash-up, beginning with a primer on hydrology pitched, he allows, for "youthful understanding" (education is an interesting concern throughout Hall's work and indicative of just how central he feels the public is to the infrastructure). This is followed by a brief world history of water supply and of New York's earlier aqueducts, before Hall delves into the history and engineering of the Catskill Aqueduct itself. He concludes, again with youthful education in mind, with his script for an allegorical pageant titled "The Good Gift of Water," which climaxes in a sort of hoop dance representing the aqueduct channel as it delivers the distant mountain bounty to the city. (The performance of Hall's pageant scheduled for the inaugural festivities and featuring a mind-boggling 15,000 school children, was rained out, no doubt in answer to teachers' prayers). Not surprisingly, Hall's historical review goes on at some length about Rome's aqueducts, "in order that the reader may realize, by comparison, the magnitude of the Catskill aqueduct." The terms of comparison are justified. Whereas the builders and promoters of the original Croton Aqueduct undersold its achievement in relation to Rome's, there was no mistaking the intervening strides in engineering, both practical and theoretical (e.g., dynamite and predictive modeling respectively), that made Catskill aqueducts possible. Still, to burnish the achievement he must embellish the rival. As he acknowledges, he is heavily dependent for his review of Roman aqueducts on Herschel's recent translation of Frontinus, whom Hill follows in his brief summaries of the capital's ancient aqueducts. He also gives a nod to the provincial showpieces of Segovia and Pont du Gard, which "give an impression of massiveness and durability, and above all, of the force of intellect that was behind them and extended the Roman empire to such vast dimensions."

Despite further interesting aspects to Hall's reception of Rome, more relevant to this essay are his initial statements on the necessity and value of commemoration, which in this instance included both his publication and the coming festivities being planned by the Committee. "Unless there is some public demonstration, few people comparatively will realize what a great blessing has come to them and the important lessons involved." He goes on to explain what some of these lessons are: "It is a testimony of what disinterested civic spirit in co-operation with faithful public officials can accomplish. The celebration, therefore, while giving an opportunity for a merited tribute to the builders of the aqueduct, is also and chiefly an opportunity for teaching important civic lessons." As with the Croton Aqueduct before it, whose celebration gave a starring role to the democratic principles of the young nation, the cause for celebration here is as much the political process of its creation as the engineering feat itself. Specifically, the aqueduct "affords a model of honest, clean and efficient municipal government in which every citizen should take pride." But both the civic and engineering achievements must be celebrated, lest "too few New Yorkers appreciate the great foresight and constant watchfulness exercised by the guardians of their welfare . . . If the celebration shall cause the citizens of New York to pause for a moment in their ordinary affairs, and from the contemplation of the great work just completed, derive an adequate conception of this one of their many blessings, it will have served its not least useful purpose." Aqueduct commemoration is conceived of here as a vital link in good governance, elucidating and reminding citizens of what civic spirit and public officials united in purpose can accomplish for the public welfare.

This is all well and good, though one wishes to be able to ask Hall what he thought would sustain commemoration's bonds (his monograph? yearly school productions of "The Gift of Good Water"?) after the aqueduct's inaugural ceremonies faded from the memory of a citizenry no less re-

liant on the aqueduct and responsible for the considerable costs of its maintenance. It seems that some of the "leading commercial bodies" promoting the 1917 festivities may have considered this. Financed by an unknown donor and finished in time for the October festivities of that year, a jet fountain was constructed in the Central Park Reservoir (built earlier to stock Croton waters within city boundaries). During the festivities a signal from the mayor brought the fountain to life in a plume 80 feet high, a spectacle that advertised the potent gravity pressure that the Catskill aqueducts maintain throughout the city.

As with the aqueduct infrastructure itself, all such displays, especially those involving water and lighting, require frequent maintenance. Since 1917, the jet fountain in Central Park has often, for want of maintenance, lain dormant (as it must in winter anyway), but was recently refurbished for ceremonies in 2007, during the centennial of the start of work on the Catskill Aqueduct. All this would seem to bode well for a successful commemorative fountain, especially one that can be seen by the thousands who daily jog and walk on the popular path surrounding the reservoir. But the same question posed above for the Bethesda Fountain is pertinent here: is a fountain a *mostra* if no one knows what it commemorates? I am inclined to agree with what one of the foremost experts on the history of New York's water supply said about the fountain's return to service: "Mr. [Gerard] Koeppel does not think that [the Catskill Aqueduct] will be on most people's minds when they run past the reservoir. 'The average New Yorker walking or running past it might think, 'Golly, that's a nice fountain,' but I'm not sure they're going to make the connection to the city's water supply,' [Koeppel] said."[16] As with the Bethesda Fountain, this disconnect between fountain and commemoration is a natural result when there are no didactic features incorporated into the fountain—a condition to which jet fountains, however impressive the spray, are, as noted above, especially prone.

In summation, I think it is fair to say that New York's aqueducts receive scant public attention and minimal monumental celebration in the city, especially in comparison to the civic and engineering achievement involved in their creation and upkeep. To some degree, the absence of commemoration is off-set by some urban legends about New York's water that bear on its quality—that its minerality, for instance, is ideal for bagels and pizza crust. Such promotions, however, are more than countered by a surge in bias for bottled water, accompanied by a corresponding demotion of trust in municipal water supplies (notoriously justified in some cities). The maintenance of trust and public support for such large, complex, and communal undertakings is precisely what Hall saw as one of the chief functions of aqueduct display.[17]

One final note on New York's water supply and its associated display is in order before heading west, as it has bearing on issues in California as well. So massive is New York's water transfer from country to city that the ecology of the rural host region has been significantly altered by New York's aqueducts. It stands to reason some Roman aqueducts had noticeable effects on the host region, but we lack clear evidence, and the impact was limited by the relatively modest volumes of ancient Roman aqueducts.[18] In contrast, New York City's impact on the Catskills was dramatic, well documented, and well displayed. That the presence and impact of aqueducts should receive more attention there than in the city itself makes sense: in New York City, the water went under the town and the people forget; in the Catskills, the reverse in true: the water went over the towns, and the people remember. The city's six large reservoirs in the region buried some of the best bottom land in the valleys along with homes, businesses, and graveyards. After strong initial resentment arising from eminent domain and the friction of compensation settlements, coupled with the city's aggressive tactics in support of the its interests, much has been done in recent decades to improve the relationship between city and country, to the ad-

vantage of both ends of the aqueducts. But the city's efforts to control its precious resource ensure its ubiquitous presence in the lives of people living in the watersheds of the reservoirs. Most of this presence—the large reservoirs themselves filling the valleys, the infrastructure of dams and gatehouses, the NYDEP police and employees constantly posting the roads, the No Trespassing signs marking much of the vast acreage owned by the city (16% of the Catskill Mountains), even cultural events and local improvements funded by the city in its effort to maintain good relations—cannot be considered aqueduct display as conceived in this essay. And there are no grand didactic displays of the achievement, which has in the past been more a source of conflict and ill-will than a cause for celebration. There is one jet fountain (a remnant of an aeration installation) at the DEP Ashokan headquarters park where the Catskill Aqueduct begins. Nearby, a brief detour off a popular reservoir pathway leads to a stone surveyors' tower, much neglected of late, which has been retrofitted as a memorial to the politicians and engineers who built the Catskill Aqueduct. As basic as this commemoration is, its few inscriptions and a brass medallion portraying the chief engineer give more information about the aqueduct than any public monument I know of in New York City itself, Old Croton's High Bridge excepted. More instructive are the DEP's various informational kiosks throughout the Catskill region. And perhaps the most eloquent memorials to the waterworks are the simple road signs (e.g., "Former Site of Shokan") erected to commemorate each the 21 towns buried beneath the city's reservoirs.[19]

SINCE CALIFORNIA exists in a different hydrological universe from New York, one in which water transfers must conquer not just distance but the apparent geographical destiny of its entire southern and arid half, one would expect both a different awareness of water in the West and different terms for its display.[20] This is indeed true, though as with New York,

Rome continues to serve as a touchstone for the achievement, alongside new forms of both water delivery and its commemoration. The state's first ambitious urban aqueducts—the Los Angeles Aqueduct and San Francisco's Hetch Hetchy Aqueduct— hewed to the gold-standard practiced by the Romans throughout the empire and adopted by all of New York City's aqueducts: they conveyed abundant, wholesome water from source to city by gravity alone, using tunnels, channels, and inverted siphons.

Like New York before them, both California cities had to wrestle the water supply away from privately-owned companies enfranchised with a monopoly over the supply. In the case of San Francisco, whose peninsula provides little natural run-off, the Spring Valley Water Works (later "Company"), in operation from 1860 to 1930, had already begun to capture off-peninsula waters with an aqueduct drawing on the streams, wells, and gravel beds in Sunol, a Coastal Range community 35 miles southeast of San Francisco. In 1910, Company president and major stockholder William Bourn commissioned his friend and favorite architect Willis Polk to build a water temple above one of the sources in Sunol.

The Sunol Water Temple (fig. 4), which has been extensively refurbished after the 1989 earthquake and is now part of an ecological center, is a replica of the renowned "Temple of Vesta" in Tivoli, some twenty miles from Rome. The conical roof on the Sunol structure is conjecture, but the round base, columns, capitals, and architrave closely follow their ancient counterpart. Though it is positioned above an open basin of water drawn from the region, it is aptly named a temple rather than a fountain. What connects the temple (and by extension the Company's waterworks) to Roman aqueducts is not so much the structure it imitates—the original had no apparent connection to water—but the association it makes with Tivoli's topography. Classically educated at Cambridge University, Bourn knew that Rome's four longest aqueducts all converged on Tivoli (ancient Tibur) before bending south

Fig. 4: The Sunol Temple at the sources of the Spring Valley Water Company's aqueduct to San Francisco. The structure imitates the "Temple of Vesta" located in Tivoli, Italy, near where four ancient aqueducts converged on their way to Rome. (Author photo)

to avoid the valley floor's precipitous drop at the cataracts there.

The water temple's evocation of Rome had special significance for San Francisco's boosters at that time, who claimed that San Francisco was poised, with the help of the Company's water supply, to become the capital of a new Pacific empire.[21] Since the owners of the water company were engaged in a long drawn-out attempt to sell the company to the city for a nice profit, and in light of the wide-spread belief that the company was fleecing its customers thanks to its monopoly hold on the water supply, the temple can also be read as an attempt to dignify and ennoble its brand. The inscription gives a biblical dimension to the private utility's mission, cobbled from Isaiah 41:18 and Psalms 46:4: "I will make the wilderness a pool of water and the dry lands springs of water. The streams whereof shall make glad the city. S.V.W.C. MCMX." The sandy and semi-arid landscape of San Francisco no doubt made the comparison to the Holy

Land persuasive. The fusing of classical architecture and biblical references characterized Sixtus V's Moses Fountain as well, which audaciously suggested that the pope who built it was channeling the miraculous powers of the prophet. The Sunol structure's quotation in first-person deity takes the comparison a step farther before tripping on itself, casting the company in the role of God Himself even as it engaged in the business of improving His creation.

The City of San Francisco eventually bought the water company, a few years before the city's new municipal and monumental Hetch Hetchy Aqueduct began delivery in 1934. For many, this aqueduct's name itself is a badge of desecration, Hetch Hetchy being the meadowlands in Yosemite National Park flooded beneath the reservoir at the source. The use of national park lands, and the flooding of the park's second-most spectacular valley, was hugely controversial then—John Muir spent the last years of his life engaged in a failed attempt to block the dam and its defilement of Yosemite—and has remained so today.[22] Although the 160-mile long aqueduct is more visible than New York's stealthy lifelines, descending from the Sierra Mountains in parallel conduits, passing through various power plants, and carried on trestles across San Francisco Bay, the visible sections of the aqueduct are distinctly unRoman in appearance. Only when the water arrives on the peninsula, just before the Crystal Springs Reservoir twenty miles south of San Francisco, does it receive Roman treatment, at the Pulgas Water Temple (fig. 5).

The structure that is pictured in the dedication ceremonies of 1934 was a temporary structure that simply replicated the design of the Sunol Water Temple, but even the current structure that replaced it a few years later remains similar to its predecessor in design and function: a round temple, in this case roofless, with gleaming Corinthian fluted columns and an architrave with a biblical inscription, also from Isaiah: "I give waters in the wilderness and rivers in the desert, to give drink to my people."[23]

Like the Sunol temple, the Pulgas structure was centered above the aqueduct waters, in this case as they furiously rushed beneath the temple into the nearby reservoir. Today the aqueduct's water, except for a token trickle, has been rerouted through a nearby treatment facility, but the site and temple have been beautifully maintained amid the well-irrigated grassy slopes that surround its reflecting pool. Informational kiosks provide the engineering context. One reads: "The Pulgas Water Temple was designed in the Beaux Arts style by William Merchant. . . . Merchant's design features fluted columns and Corinthian capitals that reflect the historical influence of Roman engineering on the Hetch Hetchy Regional Water System."

Historian and urbanist Gray Brechin is dubious of the temple's ability to commemorate the aqueduct beyond the initial splash of its dedication:

> The water [during the inaugural ceremonies] came in with the relentless force of gravity—and that system that brought it was soon taken for granted. Not on the day of dedication, however; a *Chronicle* reporter described the new temple as "a little bit of Rome out there in the California meadow, a sort of reminder that aqueducts made Roman civilization." As they made, they continue to make, yet they are as readily forgotten as the engineers who built and the speculators who promoted them.[24]

As with New York City, there is no fountain or memorial in downtown San Francisco that might help remind its citizens of the aqueduct. In fairness, that job is at least partially accomplished by the public awareness of what earthquakes can do to infrastructure and especially by the controversy over the Hetch Hetchy reservoir in Yosemite, which keeps surfacing in referenda and the courts.

SIMILARLY, IN LOS ANGELES and southern California the public is so blatantly dependent on distant sources of water implausibly led across mountains and deserts and increasingly threatened by climate change and competing environmental

interests that there is little chance water delivery will fade from public consciousness. But the corresponding centrality of water concerns to Los Angeles has left several notable displays commemorating water supply, and they are worth exploring in connection with Rome.

The story of the Los Angeles Aqueduct has some features in common with the Catskill Mountain and Hetch Hetchy aqueducts: it was a product of the early 20th century when the Progressive movement was championing public over private utilities, managed by non-elected professionals; it involved the city in a struggle to municipalize a water supply that was privately owned; and it once again duplicates the Roman model of delivery by gravity alone, although the Los Angeles Aqueduct added sections of open canal to the modes of delivery. But, as is appropriate for an aqueduct that made the growth of Hollywood possible, there is so much more *drama* involved in the creation and history of the Los Angeles Aqueduct. This drama was generated by three features that set it apart even from the epic engineering of San Francisco and New York: the sometimes spectacular and always challenging landscape traversed by the aqueduct, the role played by a single individual in the aqueduct's creation; and the rancorous legacy of its impact on the people of the host region that supplies the aqueduct's water. A brief review of these features is in order to understand the displays associated with the city's quest for water.

At the start of the 20th century, Los Angeles was rapidly approaching the limits of its growth if left reliant on local sources of water alone. City engineer and former mayor Fred Eaton deserves the credit, or the blame, for perceiving that Sierra snowmelt in the Owens Valley 230 miles to the north could be channeled to the city by a gravity aqueduct. The Owens Valley is one of the most dramatic and beautiful places in the lower 48, a six-mile wide trench of unspoiled ranch and scrub lands stretching beneath snowcapped mountain ranges rising steeply to 14,000 feet on either side. With the valley floor at 4000 feet above sea-level, there is plenty of

elevation remaining to sustain an aqueduct gradient over the 230 miles south to the city at sea level, with opportunities to generate significant amounts of electricity along the way. But the challenges of the route were enormous. In addition to the distance and the lack of paved roads or railroad at the time, they included steep-walled canyons, a stretch of the Mojave Desert, and an intervening mountain range. The valley itself is desert-dry but watered by fairly reliable snowmelt, which is absorbed as groundwater in the valley or gathered into the thin verdant band of the Owens River. At an unremarkable location, reached today down an unmarked dirt road off the valley highway, at a site commemorated with a brass plaque erected during the aqueduct's highly publicized centennial in 2013, a low diversion dam shunts much of the Owens River water into the Los Angeles Aqueduct. The aqueduct begins as an unlined ditch, then transitions to an open-air concrete canal until the more rugged terrain requires tunneling, inverted siphons, and a covered channel. After tunneling through the coast range, the aqueduct cascades down a spillway at the northern edge of San Fernando Valley and enters the city's distribution system.

Eaton may have conceived of the project, but it was William Mulholland, the aqueduct's builder, who rose to enduring fame as both hero and villain. A character out of central casting, he was a self-made Irish immigrant who taught himself engineering and worked his way up from ditch-digging to become chief of the water department and eventually the boss of 4,000 city employees hired to build the aqueduct. Its successful completion brought him national attention and acclaim (though perhaps more people know his name from the twisting hilltop drive named in his honor).

Controversy swirled around the aqueduct project before the first dirt was turned and it continues to this day, on a scale far exceeding the friction between Catskill residents and New York City. Why this should be, when dozens of towns were wiped off the map beneath New York reservoirs that

also submerged the region's most fertile farmlands, is an interesting question beyond the scope of this article. Suffice it to say that, in addition to a multitude of historical incidents and vested interests that drove the drama, enflamed the conflict between city and source, and shaped and baked public opinion into hardened positions, it reflects a fundamentally different experience of water East and West. At any rate, the Owens Valley water wars, as the conflict is called, peaked a decade after the aqueduct's 1913 completion, when the city, to insure its present and future needs, persisted in buying up more land and water rights in Owens Valley, which enabled Los Angeles to export more and more water as the city boomed because of that water. Disputes arose over the purchase prices of properties and their water rights in the Valley. When negotiations stalled, locals prodded them along with dynamite, a phase in the aqueduct's history recalled by the abandoned guardhouses still standing next to exposed pipeline in remote canyons. More recent and on-going battles are

Fig. 6: The William Mulholland Memorial Fountain in Los Angeles. The fountain is set in a city park that summarizes Mulholland's career and displays the prominent features of the aqueduct he built. (Author photo)

carried out in the courts, which have increasingly regulated the timing and amount of the city's water transfers.[25]

All this conflict has left no trace on the William Mulholland Memorial Fountain in Los Angeles, located at the intersection of Riverside Drive and Los Feliz Boulevard, near the Los Angeles River and Griffith Park (fig. 6). As the name indicates, it is as much a memorial to the man as to the aqueduct, but the park surrounding the fountain offers a far more didactic experience of an aqueduct than those provided by San Francisco's toney water temples. Set in a xeriscaped park that reflects the city's impressive achievements in lowering water consumption, the turquoise-tiled fountain itself conveys little more than the magic of mountain water gushing up in urban LA. Surrounding it, however, are various displays illustrating the engineering, geography, and builder of the aqueduct. Indeed, the display is so comprehensive that the park amounts to an illustration of Aristotle's classic schema of "four causes," as applied to an aqueduct. After the fountain, the park's most conspicuous display is the cross-section of the steel pipe (this the material cause), ten feet in diameter, that carried the water in its pressurized sections, most dramatically in the inverted siphon across the 800-foot drop of Jawbone Canyon. To the right of that in the photo is a raised gray-blue strip that snakes through the park, representing the route (this the formal cause, the blueprint) of the aqueduct, alongside a path inset with markers and medallions noting towns along the route and their mileage from the city. At the left of the photograph is a red granite boulder with an inscription that glorifies the efficient cause: "To William Mulholland 1855–1935. A penniless Irish immigrant boy who rose by the force of his industry, intelligence, integrity and intrepidity to be a sturdy American citizen, a self-educated engineering genius, a whole-hearted humanitarian, the father of this city's water system, and the builder of the Los Angeles Aqueduct." And at the center of it all, displayed in the fountain, is the aqueduct's final cause or purpose: water for Los Angeles.[26]

As with Trevi Fountain, there is also a key historical moment commemorated in the park and illustrated in the photo. The terminus of the aqueduct-ribbon is fashioned with miniature steps, representing the aqueduct cascade that aerates and displays the water where it tumbles down into the San Fernando Valley at the end of the aqueduct proper (visible today from Interstate 5 as it climbs out of the San Fernando Valley). Lacking the iconic arcades that signify the Roman aqueducts, whose job of surmounting unwanted drops in elevation has been reassigned to iron conduits under pressure, the Los Angeles Aqueduct came to be emblemized by the cross sections of pipe, and by this stepped image of its terminal cascade. This cascade was the centerpiece of a ceremony that was part of a two-day carnival of celebrations surrounding the first delivery of aqueduct water on November 5, 1913. At that ceremony, Mulholland was scheduled to formally present the water and the aqueduct to the city's mayor, but in the chaos of activity and noise of the bands when the water was released into the cascade, he simply managed to proclaim "There it is. Take it!" This bland, off-the-cuff remark, which has managed in its lapidary generality to encapsulate so many different interpretations (extractionist manifesto? plain-spoken public servant?), is also on display at the Mulholland memorial park. It is visible in the photo, inscribed inside the surveyor's circle located next to the representation of the cascade that both occasioned the remark and anchors it today in the city's topography.

Eerily, this same image, this stepped cascade, serves equally well to represent Mulholland's peripeteia as it does his triumph. Both stem from his character as summarized in the rock's inscription. His confidence in his "self-educated engineering genius" extended to the construction of dams, such as the somewhat camouflaged Mulholland Dam overlooking Hollywood today. He built another, the St. Francis Dam, in a canyon not far up-route from the terminal cascades, which impounded waters for power generation and

provided storage in times of drought or dynamite. On March 12, 1928, not long after the reservoir was filled to the dam's crest, Mulholland was called out to inspect some alarming leakage. He pronounced the dam safe and returned to Los Angeles. That same night the concrete dam gave way, sending a wall of water and debris 55 miles to the coast, killing over 450 people on its way. Mulholland, though acquitted of criminal charges, was rebuked and devastated. He left his post a few months later, his reputation shattered. The iconic photograph of the St. Francis Dam disaster is of the concrete remnant left standing like a lone tooth in the middle of the gaping valley where the dam had been. Though this remnant was soon demolished, the stepped concrete face of the dam was something of a twin image of the celebratory cascade discussed above, and it remains the iconic image of the dam disaster and Mulholland's fall. It is this same ambiguous image that towers above his life-size portrait that is on display at the water department's headquarters in downtown Los Angeles, which brings us round to Rome again.

The civic heart of Los Angeles is centered on Grand Park, nationally perhaps only second to the Mall in Washington, D.C. for its concentrated assemblage and ordered architectural display of public institutions and memorials. Whereas Central Park was conceived as an *escape* from the city, Grand Park is an *elucidation* of the city's power. In that function, it is much like the Forum of ancient Rome, especially as conceived and developed under Caesar and Augustus.

As in the Roman Forum, it is instructive to note what occupies what position in the axis of power, which confers maximum prestige on the structures facing each other at the opposite ends of its main, longitudinal axis.[27] Grand Park is surrounded by important civic buildings on its two long sides—courts, archives, various administrative office buildings, and, atop Bunker Hill, extending the park's central axis to the west, buildings of the Music Center. Occupying one of the short sides of Grand Park, anchoring the power posi-

tion at the east end of the long axis is, not surprisingly, City Hall, with its iconic tower (represented on the LAPD badge) topped by the stepped pyramidal peak modeled on archaeological recreations of Mausoleum of Halicarnassus. Occupying the other chief position of power at the west end of the axis, closing off the unobstructed view down the length of the park from City Hall, stands the headquarters of the Los Angeles Department of Water and Power, formerly headed by Mulholland in a different location. Fortunately for such a commanding position and for the central role the Department plays in city life, the John Ferraro Building that houses the Department, conspicuous with its sharply defined horizontal bands of glass, is worthy of the expectations its topography incites. Surrounded by a moat of water and capable of colorful interior lighting at night, the building displays the combined functions of the water and power supplied by the municipal utility. Other fountains located along the park's axis, while unaccompanied by any overt rhetoric about water supply, display the goods, the most dramatic and elaborate of them being the Arthur J. Will Memorial Fountain, like the Mulholland Fountain a nighttime showpiece of illuminated waters (fig. 7).

Mulholland reappears at each end of the park, at both City Hall and the LADWP Headquarters, suggesting that if there is a Romulean founder of the modern city, it is he who most closely fills the legendary role. The ground floor of the Ferraro Building contains an exhibition hall open to the public that commemorates the Department's storied past, with a focus on Mulholland's career. A larger-than-life photographic portrait of the man, looking gruff and commanding behind his mustache and dressed in a rumpled three-piece suit and his signature homburg hat, looks out behind glass over the moat of water. Behind him rises a column of white steps, that image combining triumphal cascade and tragic dam discussed earlier, showing that the Department is not wedded to a one-dimensional portrait of the Chief.

Fig. 7: The John Ferraro Building, headquarters of the Los Angeles Department of Water and Power, seen from one of the fountains on the central axis of Grant Park. City Hall occupies the other end of the park, facing the Ferraro Building. (Author photo)

At the opposite end of this "forum," the bronze doors of City Hall's main entrance are inset with bas relief panels commemorating important events in the city's history. Mulholland of course dominates one of them. Captioned "Opening Aqueduct Headgates Feb 13 1913," the relief's background is a conflation of two scenes (fig. 8). Waiting on Mulholland's gesture of command, a figure is ready to open the headgates diverting Owens River water into the aqueduct. Behind this scene, one of the aqueduct's inverted siphons is shown descending a mountainside and continuing into the foreground, passing by Mulholland in all its riveted glory. Despite the artistic gulf between the bronze relief of Mulholland and the Trevi Fountain's relief of Agrippa and the Aqua Virgo discussed earlier (fig. 2), the constituent elements of both reliefs are surprisingly similar: there is the famous builder in the foreground raising his hand as a symbol of his creative com-

Fig. 8: Mulholland depicted in a bronze relief on the doors of City Hall, among other reliefs chronicling foundational events in the history of Los Angeles. Hand raised in command like Agrippa's before him (fig. 2), the mustachioed Chief signals for the headgates to be opened. In the absence of aqueduct arches, the giant iron pipe of the aqueduct becomes its icon, seen descending a mountain upper left and exiting lower right. (Author photo)

mand. Behind and below him are workers on the aqueduct ready to act on his orders. And in both, there are images of the aqueduct itself.

The similarities suggest two desiderata for aqueduct display: a recognizable image of the aqueduct, and an aqueduct hero. Aqueducts are typically invisible for most of their length, and this was especially true of the Aqua Virgo, which was almost entirely a tunnel. Fortunately, an arcade was called for where the aqueduct emerged onto the Tiber plain, and these are the arches that represent the aqueduct on the Trevi Fountain relief discussed earlier. The LA Aqueduct has no arcade; the Cascades and the Headgates, while visible, are more associated with ceremonial activities than a vision of the aqueduct itself. The open concrete-lined canal of the aq-

ueduct alongside the Owens Valley, is, especially viewed from above, a dramatic ribbon of blue winding its way through desert landscape, but this evocative image does not translate well into sculpture or emblem. That leaves the giant steel pipe of the inverted siphons in the canyon crossings to serve in place of the Roman arcade. At any rate, something must be shown to represent the achievement.

The Trevi and LA City Hall reliefs, with their foregrounding of the aqueduct "hero," exploit the advantage of having a recognized, storied individual associated with an aqueduct. In ancient and papal Rome, the person is typically an aristocrat, emperor, or pope who promotes and often names, as well as dates, the aqueduct, rather than anyone associated with the construction. Agrippa, while in the highest rungs of power, is something of an exception, since some of his fame was precisely the hands-on approach he took to restoring and expanding Rome's infrastructure. The Los Angeles Aqueduct couldn't have a better front man than Mulholland for its aqueduct if Hollywood had created and cast the role, a role defined in its archetypal American essentials in the inscription (quoted above) on the pink granite boulder next to his fountain. Mulholland's presence on the City Hall relief, at the exhibition at LADWP Headquarters, and in the fountain park dedicated to his memory, reveal how linked the man is to the utility, each enhancing the reputation of the other. In place of the iconic Roman arcade, Mulholland himself has become an important visual representation of the whole achievement.[28]

TWO OTHER California aqueducts and one final display are worth a brief discussion, in conjunction with a final look back at the distance traveled from the papal fountains of Rome. The Los Angeles Aqueducts 1 and 2 now supply only about 30% of the city's water. Most of the remainder comes from two other aqueducts (which serve in addition the wider southern California region): the Colorado River Aqueduct, which traverses the entire width of the state east to west,

and the California Aqueduct, which transports water down much of its length. Both of these aqueducts diverge from the Roman aqueduct model of all the municipal aqueducts discussed so far: both require vast amounts of electricity for the numerous pump stations needed to boost their water over mountains and up valleys.[29] Like their municipal counterparts, however, both are perennially involved in the intense politics surrounding water in California, especially in regard to the state-run California Aqueduct, which redistributes water from the northern and wetter half of the state for the benefit, and survival, of the more populous southern half. (The south's irrigation needs are also served by a similar, albeit federal, project, the Central Valley Project). In light of the intensity with which water issues are kept in the public eye through issues that are frequently debated and voted upon (such as, in 2019, whether to build one or more Delta tunnels to serve the California Aqueduct), there is no need of fountains to alert people to vital infrastructure. What is needed is rather a *mostra* to educate them on the issues that are and will be vital to the region's future.

There are indeed such displays, in the form of the three Visitors Centers created by the state's Department of Water Resources and spaced across the state at sites crucial to the delivery of water from north to south. The most elaborate of them, the Vista del Lago Visitors Center, is located like a rest area on Interstate 5, the main north-south highway, not far south of the "Big Lift," where massive pumps lift the California Aqueduct 2,000 feet to cross the fault-riven Tehachapi Mountains separating central from southern California. The Center is in essence a multi-room science and history museum focusing on California hydrology (both natural and manmade) and celebrating the epic achievements of water delivery even while displaying the enormous costs involved, both financial and environmental. There is a display on "Ancient Waters" that of course includes Rome, but the emphasis is on the California Aqueduct. In rooms connected by round door-

ways the shape and size of conduits, the aqueduct's history and engineering are profusely illustrated with models, interactive demonstrations, videos, captioned photos, and maps with illuminated aqueduct routes. In addition, the Center is staffed for the bus-loads of future voters brought here to learn about this lifeline of California's hydraulic civilization.

It would seem, at first sight, that the displays of the Visitor Center, pitched towards the needs of a democratic electorate and accessible only by an interstate highway, have little in common with the urban showpiece of papal patronage that is Trevi Fountain. Yet each in its way combines a celebration of an aqueduct and its history with a broader attempt at a comprehensive display of water's vital, elemental role in life. The media and language employed may be worlds apart—the one allegorical and pompous, the other scientific and pedagogical—but each of them is, among other things, a didactic primer on how water cycles through earth and sky and all living things. Earlier I gave a brief sample of Trevi's didactic scope with a quotation by Salvi (the fountain's architect) on the symbolism of the statuary, which represents the diffusion of Oceanus's power into the rest of creation under various hydrological guises. The display at Vista del Lago explains the same process as the "hydrologic cycle," illustrated with various displays of water's diffusion and metamorphosis into vegetative and human form.

Trevi Fountain, in addition to its allegorical figures, contains scores of tiny flora and fauna whimsically carved into its rock, as beneficiaries and incarnations of water's creative power. One of the Visitors Center's displays revealing a similar conception of water's protean powers might be called the Burger *Mostra*. It consists of a hamburger bun, four feet in diameter, constructed of fabric and containing a cushiony beef patty topped with quilted layers of cheese, tomato, and lettuce (fig. 9). Each layer can be lifted for more detailed information hidden within, but the placard on the wall summarizes the lesson: "Before you eat that BURGER . . . did

you know how much water it takes per serving?" A diagram breaks down the volume of water that goes into growing and processing each of the burger's parts, totaling (with suspicious precision) 698 ½ gallons. This and other displays as-

Fig. 9: The "Burger Mostra" at the Vista del Lago Visitors Center. This is one of three California centers dedicated to educating the public about the state's water supply and the California Aqueduct in particular, which provides southern California with much of its drinking supply. (Author photo)

sociated with the various states and multifarious "incarnations" of water and the hydrologic cycle elucidate like Salvi's grand program at Trevi the various guises of water in the world. And, like the Trevi Fountain's celebration of water's role in human flourishing and its commemoration of its aqueduct's origin story, the Center devotes exhibitions to the California Aqueduct's role in agriculture, industry, and urban life of California. The aqueduct's history is also commemorated,

as at Trevi, with panels on the politicians and engineers who championed and built it.[30]

There is of course no danger here that one of the Department of Water Resource's roadside displays will eclipse Trevi Fountain's fame and preeminence in water display. Such is the power of art, illuminated by the nimbus of antiquity, that the display of an aqueduct of modest dimensions and impact receives more attention than do California's environment-altering and mind-bending water-works. Trevi Fountain would also seem to be immune, outside scholarly debates, from the controversies that involve monuments caught up in the vortex of shifting and contested visions and interests. Trevi's message is conveyed in a mythic and hierarchical medium that was an apt and proper expression of the power of the Church, as eternal and unchanging in its essence (so the message) as the elemental power of the substance the fountain celebrates. The message of the democratic Burger *mostra*, on the other hand, is much more unstable, as is suitable for its context: a fractious democracy informed by ever-evolving science, juggling competing interests, and, due in part to the economic activity made possible by aqueducts, confronting the uncertainties of a changing climate. Even in its still young career as a *mostra*, its message, "Before you eat that Burger . . . ," has only grown more provocative. In light of the growing awareness of the connections between especially beef production and climate, and with increasing recognition of the true cost of irrigation in the arid West, what was once a gentle suggestion that some dietary discretion is in order now reads more like the message the poet Rilke took away when contemplating a rather different cultural artifact: "You must change your life." In contrast, for most visitors today, the Trevi's message is, like the fountain's water itself, recursive: toss a coin in the basin to ensure your return.

NOTES

1. For their help in researching this article, I wish to thank Diane Galusha (see note 14), the media office at the Los Angeles Department of Water and Power, the staff at the Eastern California Museum in Independence, CA., and the staff at the California Department of Water Resource's Vista del Lago Visitors' Center. This essay also benefited from work-in-progress presentations at Kenyon College and the Getty Villa.

2. Peter Aicher, "Terminal Display Fountains (*Mostre*) and the Aqueducts of Ancient Rome," *Phoenix* 47 (1993), 339–52.

3. For a detailed and contextual understanding of the Felice and Paolo aqueducts and fountains, see Katherine W. Rinne, *The Waters of Rome: Aqueducts, Fountains, and the Birth of the Baroque City* (New Haven 2010). On Frontinus and the rediscovery of the Aqua Virgo's sources, see Rinne, 44.

4. The Fountain of Moses inscription reads: "Beginning work in the first year of his pontificate and finishing it three years later in 1587, Pontifex Maximus Sixtus V brought, by means of a winding aqueduct, water collected from numerous springs to the left of the Via Praenestina in the region of Colonna, from a reservoir 20 miles away and a source 22 miles away. He called it the Felice, after his own name before he was Pope." The Acqua Paola inscription reads: "In 1612, the seventh year of his pontificate, Pontifex Maximus Paul V, using both the ancient channels of the Aqua Alsietina and others newly built, brought to Rome water collected from wholesome sources in the region of Bracciano, 35 miles away." Both accounts contain the elements, and typography, of the aqueduct inscriptions at Porta Maggiore and Porta Tiburtina that are visible today alongside the Acqua Felice. The text of Frontinus, however, is also detectable, whose precis for each aqueduct includes dating by both year and ruler, the length of the aqueduct, the type of its source, and location of the source, typically in relation to a major road.

5. For a comprehensive history of the Trevi and its predecessors, see John A. Pinto, *The Trevi Fountain* (New Haven 1986). Pinto quotes in full a translation of Salvi's writings on the iconographical program of the Trevi, 220–23.

6. Salvi's original design called for giving even more prominence to the foundation story found in Frontinus (Pinto, 203), and thus more prominence to the message that the Church and Pope Clement XII were reviving the greatness of imperial Rome. For the niches below each panel on either side of the monumental central statue, Salvi envisioned a full-standing statue of Agrippa on the left, below the relief of Agrippa as aqueduct builder, and a statue of the maiden (the so-called Trevia) on the right, beneath the relief of her showing the soldiers the location of the springs. After Salvi died in 1751, and eleven years before the fountain was finished, Salvi's emphasis on the aqueduct's history was changed in favor of the allegorical statues that occupy these niches today.

7. Cesare D'Onofrio, *Le Fontane di Roma* (Rome 1957), 273–77.

8. The focus on New York, Los Angeles, and San Francisco is not a random one. All three municipalities were engaged in the early decades of the 20th century in constructing aqueducts on a scale sensed to be epic, at a time when American pride was finding expression in engineering projects boasting to be equal or superior to any in the world. This was epitomized in the building of the Panama Canal in the same years, a prodigy to which each the aqueducts of all three cities were compared, in addition to the frequent parallels drawn to Rome.

9. Peter Aicher, "New York's Democratic Aqueduct: Old Croton and Rome," *Arion* (Fall 2018), 26.2.

10. Much like the original Aqua Anio in ancient Rome became the Old Anio ("Anio Vetus") when the Anio "Novus" was built, the original Croton Aqueduct has answered to Old Croton after a newer aqueduct tapped the same sources.

11. Sara Cedar Miller, *Central Park: An American Masterpiece* (New York 2003), 65.

12. Admittedly, Stebbins was engaged in a wider project for aqueduct structures—sculptures for the intake and outake gates of the park's new curvilinear reservoir (today the Jacqueline Kennedy Onassis Reservoir)—which shows that there was some wider concern to commemorate the water supply. In the inauguration of the fountain, however, there was a curious lack of ceremony, an absence mentioned in the official park report of the year's activities: "No ceremony was used on the occasion [of the statue's dedication], but a large band gave appropriate music, and a great multitude of people manifested cordial enjoyment and warm appreciation of the work" (Board of Commissioners' Report for 1873, p. 8). One can imagine a number of causes for the absence of ceremony: sexism, the relative obscurity of the artist, her retiring and diffident nature. But the situation was also complicated by her brother's role as a key member of the Board of Commissioners for the Park during the decade that saw his sister's fountain planned, commissioned, and paid for out of public funds. For some of the complexities that Stebbins's relationships with her brother and Charlotte Cushman generated, see Elizabeth Milroy, "The Public Career of Emma Stebbins: Work in Bronze," *Archives of American Art Journal*, Vol. 34, No. 1 (1994), 2–14. For more on Stebbins's years in Rome with an ex-pat community of artists, see Emma Stebbins, *Charlotte Cushman: Her Letters and Memories of her Life*, published in 1879.

13. As some compensation for the abandonment of historic infrastructure, taking Old Croton off line has freed it from the security restrictions that apply, in varying degrees, to working aqueducts, especially since 9/11.

14. For a comprehensive history of New York's aqueducts, see Diane Galusha, *Liquid Assets: A History of New York City's Water System* (Fleischmanns 2016).

15. E. H. Hall, *The Catskill Aqueduct and Earlier Water Supplies of the City of New York* (New York 1917), 5.

16. Diane Cardwell, "Central Park Reservoir Fountain Returns to Life," *New York Times*, July 30, 2007 (https://cityroom.blogs.nytimes.com/2007/07/30/central-park-reservoir-fountain-is-given-life-again/).

17. The quality of NYC water is certainly an achievement worth celebrating. It continues to earn exemption from filtering—in part a consequence of the city's active role in Catskill ecology—and undergoes scrupulous testing on a constant basis, with the results made public. In contrast, regulations on bottled water are much less rigorous, with little information required on the bottle. Aqua Fina and Dasani are now exceptions, required to state on their labels that they originate from public water supplies before undergoing further treatment.

18. While estimates for the water volumes of a Roman aqueduct vary, it is safe to say that the volume delivered by all of ancient Rome's eleven aqueducts combined was significantly less than half the volume supplied by the Catskill Aqueduct alone.

19. The Kensico Dam in White Plains (impounding the Catskill and Delaware waters some thirty miles north of the city,) and the New Croton Dam near Croton-on-Hudson are both worth a visit. Kensico Dam Plaza has the infrastructure to be the most impressive display of New York's aqueduct water, though the cascades and reflecting pool at the base of the dam have of late lacked the funds for the maintenance required to operate. Also worthy of note is an interesting 540 square-foot "Relief Map of the New York City Water Supply System," recently refurbished and installed in the Queens Museum (Flushing Meadows Corona Park). The display tracks the routes of the aqueducts and their reservoirs, accompanied by a wealth of interesting information and historical photographs lining the walls. Relatively few New Yorkers know it exists.

20. Erwin Cooper, *Aqueduct Empire* (Glendale 1968), 33, boils down the geographical challenge: "While more than 70 percent of the runoff is found in the rivers of the northern one-third of the state, over 70 percent of the water is needed in the central and southern portions." While Marc Reisner's *Cadillac Desert* (Penguin 1993) is a popular highly-readable classic on Western water, Cooper (though outdated) and Norris Hundley, *The Great Thirst: Californians and Water: A History* (Berkeley 2001) provide more balanced accounts with a focus on California water. See also Mark Arax, *The Dreamt Land: Chasing Water and Dust across California* (New York 2019).

21. For the story of the Spring Valley Water Company and the Sunol Water Temple in the context of San Francisco's hunt for water, see Gary Brechin, *Imperial San Francisco: Urban Power, Earthly Ruin* (Berkeley 2007), chapter 2, "Water Mains and Blood Lines."

22. For history and ongoing controversy over Hetch Hetchy, see John W. Simpson, *Dam! Water, Power, Politics, and Preservation in Hetch Hetchy and Yosemite Valley Park* (New York 2005).

23. Isaiah 43.20. In an instance of understandable textual engineering, the temple's King James quotation omits, in addition to the closing descriptive " . . . my people, *my chosen*," the beginning of the verse as well: "The

beast of the field shall honour me, the dragons and the owls: because I give waters, etc."

24. Brechin (note 21), 117.

25. Justly celebrated as Polanski's *Chinatown* is as a film, its mythic mix of water supply, conspiracy, capitalist greed, incest, theft, and murder has baked misconceptions into the public's understanding of the historical water wars, which centered on complex disputes over equitable compensation for land and water rights. Admittedly, greed, chicanery, and insider dealing played prominent roles in the aqueduct's creation and in the distribution of its benefits, but practitioners of these vices included wealthy interests in Owens Valley as well as the city. In fact, a leading proponent of local Valley interests and one of the fiercest critics of Los Angeles was none other than its ex-mayor, Fred Eaton, the press-savvy co-founder of the aqueduct. By rallying local forces, he hoped to pressure the city to purchase the property he'd amassed in the Valley. For a recent general account of the creation of the Los Angeles Aqueduct, see Les Standiford, *Water for Angels: William Mulholland, His Monumental Aqueduct, and the Rise of Los Angeles* (New York 2015); for a more data-driven economic and legal study of the process of LA's land acquisitions in Owens Valley, see Gary D. Libecap, *Owens Valley Revisited: A Reassessment of the West's First Great Water Transfer* (Stanford 2007).

26. Since its dedication in 1940, the fountain has required major renovations in 1996 and 2013. This is one of the costs of aqueduct display: it too, like the infrastructure it celebrates, requires ongoing maintenance. For more images and history associated with the Mulholland Memorial Fountain, see Hadley Meares, "The Mulholland Memorial Fountain: A Grand Fountain to a Man and Water" (2013), https://www.kcet.org/history-society/the-mulholland-memorial-fountain-a-grand-monument-to-a-man-and-water. Hadley also recounts an incident related to the ongoing conflict between the city and Owens Valley: "In 1976, the [city's] plan to pump more water from the Owens Valley subterranean water table reignited the long simmering California Water Wars. On September 15, there was a dynamite explosion at the famed Alabama Gates [near the aqueduct's source]. The next day, an arrow with a stick of dynamite strapped to it was shot into the [Mulholland Memorial] fountain. Police believed it had been shot from a heavy longbow and was intended to detonate on impact. It did not," she dryly concludes without commenting on the likely reason.

27. When Caesar and then Augustus dismantled the Roman Republic, they also reshaped the Forum to reflect the power and authority of the new regime: the Senate House was rebuilt and realigned as a sort of appendage on Caesar's new forum, and the speaker's platform (Rostra) was moved from its ancient position to anchor the north end of the Forum Romanum's newly rationalized rectangle. After Caesar's assassination and deification, Octavian/Augustus built a temple to his father that filled up the opposite end of the rectangle from the Rostra. He also completed the basilicas lining the long sides between temple and Rostra, thus surrounding and shaping Rome's ancient core with monuments of the new regime.

28. There is another center-city Los Angeles park with an intriguing display of the region's water supply, but I relegate it to a footnote because it is slated for demolition in favor of a new design. Apparently little loved and (what else could account for the absence of affection?) even less understood, Pershing Square Park constitutes a concrete allegory of the region's water supply. From the base of a bell tower seven stories tall, purple and peaked to represent the Sierra sources, emanates a one-story aqueduct "arcade" that turns a corner to pour its water into a basin riven with the image of a seismic fault-line. Scattered around the park, human-sized concrete orange spheres represent the irrigated orange groves that have figured so prominently in the city's branding and mystique.

29. The Metropolitan Water District (southern California's multi-city water agency) itself uses almost 30% of the electricity generated by Hoover Dam, much of that for pumping Colorado Aqueduct water 242 miles across the state. Water conveyance state-wide uses roughly 7% of California's electricity. These figures reveal why the Roman model of gravity-powered aqueducts remains the gold standard for water delivery.