

# A Hole in the Heart of the City: Framing Memory at the World Trade Center

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## Introduction

One result of the tragic circumstances of the World Trade Center's demise was the possibility to rethink the site, not from the ground up, but from 70 feet below ground level, to the depth of Lower Manhattan's bedrock. After months of debris removal, a space of tremendous potential emerged from beneath the rubble: an enormous sixteen-acre void made possible by a unique foundation system. This powerful space, which came to be known as "the bathtub", was a realm made sacred by the tragedy that played out on its surface. The fact that the void was laced with infrastructure in the form of subway and commuter rail lines made this field even more resonant.

This paper examines how the subterranean world of the WTC site and Lower Manhattan was laid bare and soon became the inspiration for framing the space of memory at Ground Zero. It discusses how several designers saw the void as a thickened urban surface that could provide the setting for, among other programs, a memorial within the context of the contemporary urban situation. Also discussed are proposals that explore the void for its potential to lend conceptual and physical form to memory on the site and in doing so reveal the subterranean world and its infrastructure, aspects of life so vital the city of New York yet so invisible on its surface.

## Two Pairs of Shadows

In late 2001, just months after 9/11, the gallery owner Max Protetch put out a controversial call for proposals to rebuild the site. Most of 125 invitees found the exhibit appalling for its timing and pointless for its lack of discernible program. Nevertheless, 60 respondents submitted proposals which were exhibited at the gallery and compiled in a book.

Although the entire site could have been considered hallowed ground, solemnity seemed to condense at the tower footprints. In no fewer than 21 of 60 proposals the footprints were marked with pools or voids as few designers could conceive of

any built form powerful enough to displace the 200' x 200' twin footprints. In fact, by 2003 when the WTC Memorial Competition Guidelines were circulated, entrants would be required to "Make visible the footprints of the original World Trade Center."<sup>1</sup> The following year, Governor George Pataki would pledge to the victims' families that nothing would ever be built over this now hallowed part of the site.

Three contributors to the exhibit considered the **entire** bathtub the embodiment of hallowed ground. These designers sought to create a new type of memorial, both extruded from life at the street-level yet connected to the subterranean realm under the streets of New York. In doing so, they created memorial precincts based on absence rather than presence and formed not by the hand of a designer but by the site and its infrastructure. In doing so they strongly influenced the eventual master plan for the entire site.

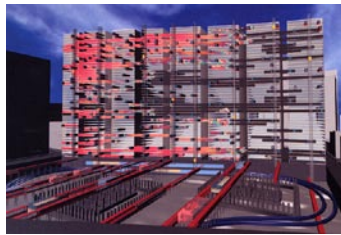


Fig. 1. LO-tek proposal to the Protetch exhibit.

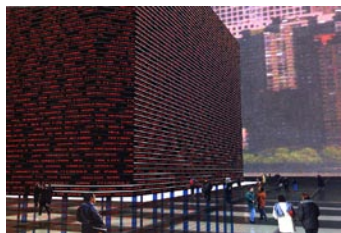


Fig. 2. Gorlin proposal to the Protetch exhibit.

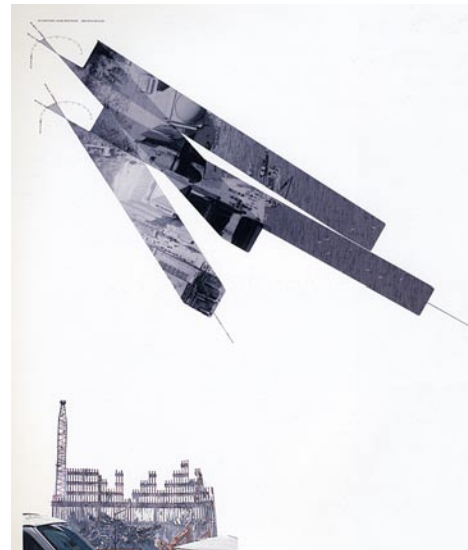


Fig. 3. Moss proposal to the Protetch exhibit.

LO-tek, the studio of Ada Tolla and Giuseppe Lignano, proposed leaving the west bathtub void, with the structural remains of the towers intact as archaeological fields, while exposing the PATH tracks and subway lines. Office space would be replaced incrementally on the east side of the site and connected to Battery Park City with street-level pedestrian bridges stretched over the void. In discussing their scheme, Tolla and Lignano explained, "There is a value to a depression in a dense urban condition. In the hyper-density of Lower Manhattan, the void left by the towers is more than a symbol of violence. It also reveals elements of the city that generally go unseen...This is not an archaeology of disaster, but an archaeology of the city."<sup>2</sup>

In the scheme proposed by Alexander Gorlin the entire bathtub was covered with glass, exposing all infrastructure below. Within this glass field at street level are two monoliths with their surfaces activated by liquid crystal displays of all victims' names. The monoliths are located on the tower footprints and stand 110 feet tall, representing the 110-story height of each tower. In Gorlin's words, "In contrast to the names that are commemorated above, visible below the horizontal glass plane is the archaeology of the ruins of the site, from the foundations of the twin towers to the subway and train lines that ran beneath. The hellish destruction is left as a sign, a record of the evil act that should not be forgotten, so that it should never happen again."<sup>3</sup>

The most restrained yet emotive proposal came from Eric Owen Moss who proposed no buildings whatsoever at the site. Calling his proposal "Two Pairs of Shadows," he left the bathtub void and inscribed it with four enormous shadow lines.

Recognizing the power of the subterranean world beneath all of Manhattan, Moss wrote “Hollow the site, Down to the river wall, Down to the trains, Deep down.”<sup>4</sup> Reaching westward from the site, the shadows were the re-creation of those cast by the towers when each was struck and when each collapsed. In his written statement, Moss described the shadows as “The first pair: The way in and the way down and the way up and the way out. The second pair: Seats...only in shadow”.<sup>5</sup>

### Memory Foundations

In summer 2002, the Port Authority of New York and New Jersey along with the Lower Manhattan Development Corporation hired several architecture and planning firms to generate six development frameworks for the site. When the plans were presented to the public in July 2002, they were soundly rejected as too dense in their planning, too singularly commercial in their programming, and too uninspired in their vision. Although four of the six plans included the footprints as part of a memorial precinct, the public still responded that the memorial be the top priority on the site and that the footprints be treated as “remarkable symbols”.<sup>6</sup>

The Port Authority and the LMDC, realizing they could not move forward on redevelopment without more positive public support, regrouped and created an exclusive competition in which seven teams of architects were to submit Innovative Design Studies for the WTC site. The guidelines asked participants to define, but not design, a memorial precinct, the design for which would be determined in a later competition. Furthermore, the brief expressed “a preference for preserving the footprints of the Twin Towers for memorial space and precluding commercial development on those locations.”<sup>7</sup>

In keeping with the competition brief, all nine submitted proposals respected the tower footprints. Proposals by Petersen Littenberg and United Architects went further than most by carving voids to bedrock, recognizing the lowest level of the site as an enduring symbol critical to the memorial experience. The proposal by Studio Daniel Libeskind went further still.

In his December 2002 submittal at the end of the first stage of the competition, Libeskind partially restored the street grid to the site, allowing Greenwich Street to bisect the site in the north-south direction and Fulton Street to bisect it east-west. Since the tower footprints occurred in the southwest quadrant of this new configuration for the site, it was the natural location for the memorial precinct. Rather than locating the memorial at grade, however, Libeskind followed the approach put forth in the earlier schemes by LO-tek, Gorlin and Moss. Namely, Libeskind proposed a void for the entire bathtub west of Greenwich and south of Fulton.

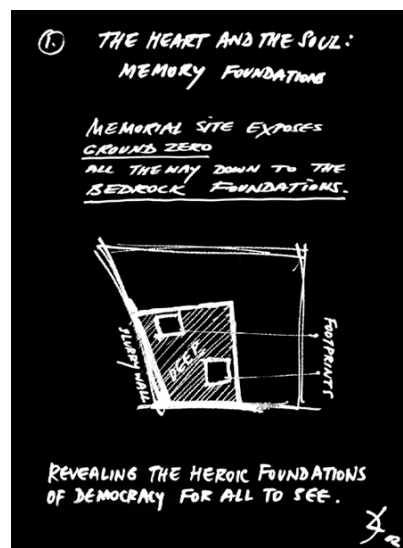


Fig. 4. Libeskind's initial proposal.



Fig. 5. Memorial precinct in Libeskind's initial proposal

When the design teams were assembled at the start of the competition, they were invited to visit the site and descend into the bathtub. Libeskind found the descent so moving and the slurry wall foundation so stirring that he sensed the opportunity to literally ground his proposal in this powerful experience. He decided then and there to extend the public realm from the vibrant space of the city at grade into the solemn space of the bathtub to bedrock, and create a memorial precinct defined not by a designer's whim but by the enduring infrastructure of the site. To Libeskind the void was not only powerful in its physical presence, but also in its symbolism: as destructive as the terrorist attack was, it could not destroy the foundations of the site.

And the fact that the disaster had exposed the underbelly of New York's transit system to the light of day at this one charged location made the strategy even more appealing: commuter rail lines, subway platforms, and subterranean pedestrian concourses could become part of this extraordinary setting for the future memorial. Libeskind appropriately titled his entry "Memory Foundations."

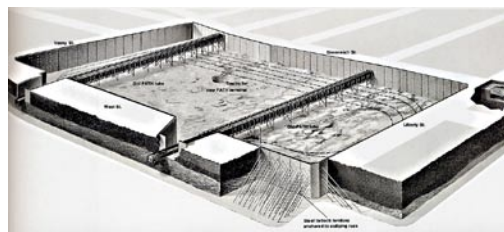


Fig. 6. Slurry wall strategy for creating "the bathtub".

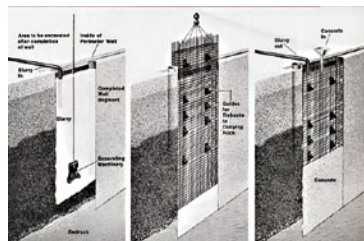


Fig. 7. Stages of slurry wall construction.



Fig. 8. Rendering of stabilized slurry wall.

Of all the subterranean elements, Libeskind was most taken by the physical presence and engineering of the slurry wall. At the time of the original towers' construction, this approach to foundation systems was widely used in Italy but relatively unknown in the US. Slurry walls were the perfect solution to the WTC foundations due to several key factors. The towers' height necessitated that their foundations be firmly anchored into the Precambrian schist bedrock that lay 70 feet below the surface. This depth, along with the sheer size of the tower footprints called for the excavation of the entire site. To do this without disturbing surrounding streets or buildings, the entire perimeter of the site had to be shored. Given the poor soil conditions at the site and the encroachment of the Hudson River the most expedient way to create a "bathtub" was using the slurry wall system. It called for digging a 22-foot long by 70-foot deep trench and filling it with sodium bentonite. Next came a prefabricated rebar cage, then concrete. Because the slurry was heavier than river water but lighter than concrete, it could hold the form of the trench long enough for the concrete to be added; the heavier concrete would displace the slurry to the top of the trench where it could be siphoned off and used in the next 22-foot panel. In other words, the WTC foundation walls are "slurry" in name only; the name refers to a single, yet crucial step of the foundation's construction rather than its actual material.

The other component of the slurry wall that would contribute to the character of the memorial precinct are tendons which dot the wall and are marked by their "high hat" anchors. These were initially used to tieback the slurry wall until sub-



grade floors were built inside the bathtub for lateral support. Since Libeskind proposed a void in place of substructure, the slurry walls would have to be supported by buttresses or horizontal bracing, adding yet another layer of infrastructure to the spatial frame of the memorial.

In soliciting comments on the Innovative Design schemes, the LMDC reported, “The Studio Daniel Libeskind plan received a significant response from the public. The elements that received the most attention were the memorial context and the plan’s approach to restoring the skyline. Many felt Libeskind’s approach to the memorial was dramatic and powerful through his use of the slurry wall and the bathtub area.”<sup>8</sup> In his review of the proposals Mark C. Taylor wrote that the scheme represented “a distinctive meditation on the intellectual and emotional polarities that the disaster challenges us to mediate surface and depth, light and darkness, presence and absence, form and void, difference and unity, profane and sacred and loss and recovery.”<sup>9</sup> The *New York Post* found it less inspiring, describing it as a “grotesque, anti-urban, anti-commercial eyesore seemingly conceived to suck what life remains out of the Wall Street area.”<sup>10</sup>

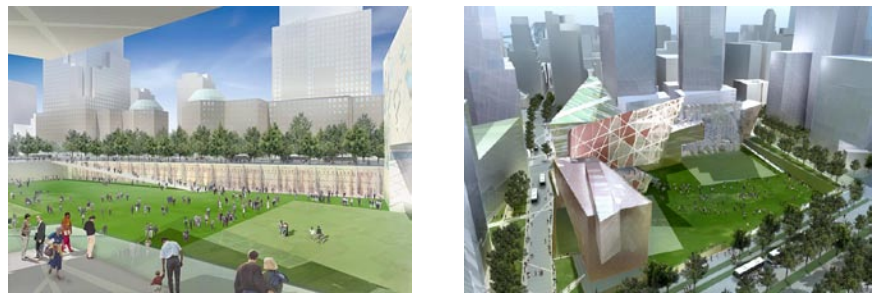


Fig. 9. Two views of the memorial precinct in Libeskind's final proposal.

The Port Authority was excited by the scheme, particularly because they saw a designer who held **their** métier, transportation and infrastructure, in high regard. On the other hand, they were concerned by the cost and technical difficulties required to transform the slurry wall from a hidden element with lateral support on both sides to an exposed wall with a new supplemental support added to the memorial side. Additionally, they were concerned that a void to bedrock precluded the use of valuable sub-grade space for expanded service programs at the site, such as truck security and bus parking. In the final phase of the competition between December 2002 and February 2003 when the Libeskind team and the Think team were allowed to refine their proposals, the LMDC persuaded Libeskind to keep the sunken memorial but raise its floor 40’ to mitigate sub-grade planning and structural issues. Although a raised floor precluded some of the memorial experiences from the PATH platforms and tracks, many of the other interactions between infrastructure and memorial remained and access to bedrock was still provided along the western edge of the memorial precinct.

The LMDC selected Libeskind’s final plan and wrote in their Summary Report that, “Memory Foundations preserves and reveals the slurry walls of the bathtub of the World Trade Center site as a symbol and physical embodiment of the resilience of American democracy and freedom in withstanding the attacks of September 11th, 2001. A Memorial Garden is created 30 feet below grade as a protected courtyard within the city. While the bathtub contains multiple levels to provide needed long-term structural stability for the slurry walls, it is possible on the west side of the site to descend some 70 feet to observe the massive slurry walls from bedrock to street level. The preserved slurry walls, together with the footprints of the twin towers, create a large, flexible 4.7 acre site for the memorial competition. An interpretive Museum sits at the center of the site, which is also one of the entrances to the bathtub Memorial Garden. At street level, Memory Foundations creates a lively public realm by restoring Greenwich and Fulton streets with a continuous street wall and at-grade retail shops and restaurants—the essence of great Manhattan streets.”<sup>11</sup>

## Reflecting Absence

To many observers the Libeskind plan was a compelling strategy for a solemn memorial in the heart of a dense, contemporary city. Others questioned whether Libeskind had gone too far and made the entire site a memorial. This opinion was in fact held by some members of the jury for the LMDC-sponsored Memorial Competition who felt Libeskind had assigned too much symbolic value to the slurry wall and the bedrock of the site, and it doing so limited the design possibilities of the actual memorial.

The jury's ambivalence towards Libeskind's plan was reflected in the competition brief. It stated: "Competitors may, within the boundaries illustrated, create a memorial of any type, shape, height or concept. Designs should consider the neighborhood context, including the connectivity of the surrounding residential and business communities. All designs should be sensitive to the spirit and vision of Studio Daniel Libeskind's master plan for the entire site."<sup>12</sup> In boldface type, the brief continued, "Design concepts that propose to exceed the illustrated memorial site boundaries may be considered by the jury if, in collaboration with the LMDC, they are deemed feasible and consistent with the site plan objectives."<sup>13</sup>

When Kevin Rampe, then interim president of the LMDC, was asked in an interview if the brief could be broadly interpreted he replied, "It's hard to imagine that any memorial plan that would fill in the bathtub area to ground level would be consistent with the Libeskind plan. The entire memorial area will not be filled in."<sup>14</sup> Despite this strong endorsement of the Libeskind plan and its proposal for the sunken memorial precinct, the jury selected the proposal titled "Reflecting Absence" by Michael Arad and Peter Walker.

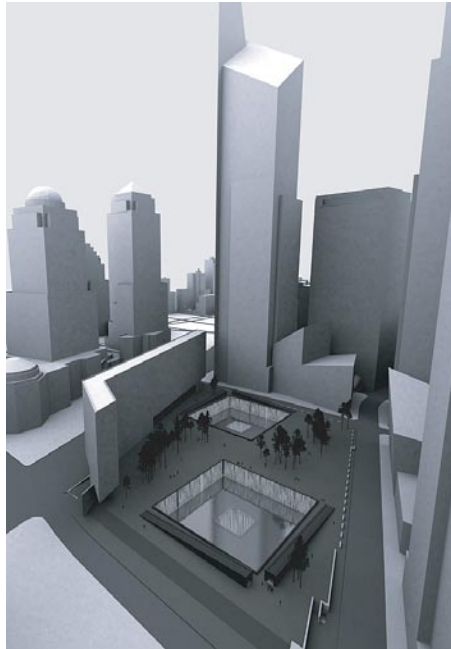


Fig. 10. Arad's initial proposal.

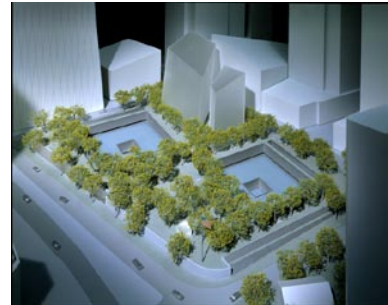


Fig. 11. Second stage proposal by Arad and Walker.

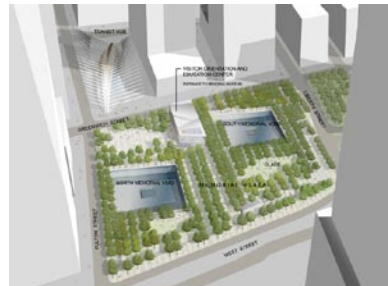


Fig. 12. Current Arad/Walker design for the memorial.

The Stage I version of "Reflecting Absence", selected as one of eight finalists, was authored by Arad alone. He proposed a stark, street-level plaza defined along its western edge by a new configuration for the museum and punctuated by the tower footprints and ramps which allowed for descent into the site. This abstract approach and concentration of the site's solemnity at the footprints recalled many of the proposals submitted to the 2001 Protetch exhibit.

For his Stage II submittal Arad was encouraged to move the museum back to the location outlined by the master plan (southwest of the intersection of Greenwich and Fulton Streets) and to transform the plaza into a tree-filled park. To assist with the greening of his scheme, Arad enlisted the help of Peter Walker. The jury named their scheme the winner and commented, “In its powerful, yet simple articulation of the footprints of the Twin Towers, ‘Reflecting Absence’ has made the voids left by the destruction the primary symbols of our loss. By allowing absence to speak for itself, the designers have made the power of these empty footprints the memorial... While the footprints remain empty, however, the surrounding plaza’s design has evolved to include beautiful groves of trees, traditional affirmations of life and rebirth. The result is a memorial that expresses both the incalculable loss of life and its consoling regeneration. Not only does this memorial creatively address its mandate to preserve the footprints, recognize individual victims, and provide access to bedrock, it also seamlessly reconnects this site to the fabric of its urban community.”<sup>15</sup>

In the three years since its selection “Reflecting Absence” has evolved into a memorial experience that begins in a tree-filled park punctuated by two cascading reflecting pools. The public can enter a visitor center (designed by the Norwegian firm Snøhetta) and descend to the Museum Hall level where they can view the reflecting pools or enter the Memorial Museum. The ramped museum experience continues down to bedrock where the box beams of the towers can be seen as well as the full height of the slurry wall. Ironically, many families of victims have vehemently argued that a below-grade museum is both degrading to the deceased and a safety hazard for visitors. At the time this paper was written a group of families was continuing to fight for an above-grade location.



## Conclusion

Although it appears the opportunity to re-envision the future of Ground Zero, of Lower Manhattan and possibly the contemporary American city has been lost in the excruciating process to redevelop the WTC site, a glimmer of hope and progress emerged in the attempt by designers to rethink the nature of the urban memorial by engaging the powerful infrastructure of the WTC site.

It is crucial to ask troubling questions about how the World Trade Center site, imbued with the solemnity of remembrance as well as the aspirations of New York’s future, has become so thoroughly banal. This paper, however, sought to raise more modest but still important questions: how did design proposals for the WTC memorial come to include such infrastructural elements such as footprints, slurry walls, bathtubs, bedrock, commuter and subway lines? How did this embrace of the unexpected change the nature of the contemporary urban memorial?

## Notes

1. Lower Manhattan Development Corporation, "World Trade Center Site Memorial Competition Guidelines," 19.
2. Ada Tolla and Giuseppe Lignano, "Reconnecting Downtown," in *A New World Trade Center*, Max Protetch (New York: HarperCollins Publishers, 2002), 87.
3. Alexander Gorlin, "The Dream of Vishnu," in *A New World Trade Center*, Max Protetch, (New York: HarperCollins, 2002), 51.
4. Eric Owen Moss, "Two Pairs of Shadows," in *A New World Trade Center*, Max Protetch, New York: HarperCollins, 2002), 101.
5. Ibid,101.
6. Civic Alliance, "Preliminary Report" of Listening to the City held July 20 and 22 July 2002 at New York's Jacob Javits Center, 2.
7. From its press release "Lower Manhattan Development Corporation Announces Design Study for World Trade Center Site and Surrounding Areas," August 14,2002.
8. Lower Manhattan Development Corporation, "The Public Dialogue: Innovative Design Study."
9. Mark C. Taylor, "Beyond Mourning, Building Hopes on Ground Zero," *New York Times*, 29 December 2002.
10. Steve Cuozzo, "A New Horror—Save Us, Gov. Pataki," *New York Post*, 28 January 2003.
11. Summary Report on the Selected Design for the WTC Site, 4-5.
12. Lower Manhattan Development Corporation, "World Trade Center Site Memorial Competition Guidelines," 10.
13. Ibid.
14. Kevin Rampe quoted in Edward Wyatt, "Supporters Object to Efforts To Alter Ground Zero Plan," *New York Times*, 12 June 2003.
15. Lower Manhattan Development Corporation, "WTC Memorial Jury Statement for the Winning Design", 13 January 2004.