The New Civic–Sacred: Designing for Life and Death in the Modern Metropolis

Karla Rothstein

As the human population grows, cities around the world are running out of cemetery space. Casketed burial has become logistically impractical and depletes natural resources. Cremation, frequently viewed as an environmentally responsible alternative, in fact contributes to global climate change. The sequestration of funerary practices and spaces of memorialization veils discussion of these issues and atrophies our appreciation of mortal existence and sense of connection to generations past and future. Taken as a whole, current funerary and memorialization options are unsustainable and inadequate, particularly for modern cities.

Negotiating this growing logistical, environmental, and social imperative, DeathLAB designs funerary alternatives that engage contemporary urban, ecological, and cultural realities to envision future possibility.[1] This article describes two projects from the *Perpetual Constellation* series, which draw on an emerging, sustainable technology for both disposition of the corpse and memorialization. *Sylvan Constellation* aims to amplify the capacity of an existing cemetery in Bristol, England with minimal environmental cost. *Constellation Park* aims to transcend cemetery boundaries (see Figures 1 and 2), reintegrating death into the life of New York City and creating new public space. Both projects use design to provoke thoughtful engagement with mortality, mitigate the funeral industry's effect on the environment, and provide religiously unaffiliated populations with spiritually resonant alternatives at death that reaffirm connections to community and responsibility to future generations.

The Imperative

Current funerary practices deplete the few burial plots remaining in major cities, contribute to global climate change, and consume natural resources. New alternatives are needed to address these pressing environmental and logistical issues, as well as the deleterious social effects of sequestering death from daily life.

1 Emerging from design studios taught by Karla Rothstein at Columbia University's Graduate School of Architecture, Planning, and Preservation, DeathLAB (http://www.deathlab.org/) was founded in 2013 and consists of academics, professionals, and students in architecture, environmental engineering, religion, philosophy, and sociology. This team works to create new models of mortuary infrastructure that embrace biologically sensible human disposition, support innovative civic spatial constructions, and expand forms of intimate and social remembrance.

doi: 10.1162/DESI_a_00474

Figures 1 and 2
New cemeteries designed by DeathLAB to amplify access to civic open space and intertwine personal memorials.

Logistical Constraints

New York City is running out of conventional cemetery space. Roughly 53,000 people die each year within its five boroughs,[2] where no cemetery has been established since 1980.[3] Local law in Manhattan has prohibited the establishment of new cemeteries, as well as new earthen burials, south of 86th Street for the past 160 years.[4] According to Richard Moylan, president of Green-Wood Cemetery in Brooklyn, "It's almost impossible to open a new cemetery" in New York City.[5] Moylan forecasts that Green-Wood's nearly five-hundred acres will run out of new in-ground plots within five years.[6]

This phenomenon is not limited to New York; cities across the United States and around the world are under-equipped to deal with their dead. By 2030, 20 percent of the U.S. population (approximately 75 million people) will be age 65 and over.[7] Because U.S. cemeteries are "rarely part of comprehensive plans, revitalization plans, or community conversations... interring the dead will almost certainly become a more pressing public issue in communities of all sizes."[8] Worldwide, 56 million people die each year,[9] and the burden of these deaths falls increasingly on urban areas, where approximately 66 percent of the population will live by 2050.[10] Although no comprehensive global survey of remaining cemetery plots has been conducted, anecdotal evidence points to a growing crisis. In response to severe shortages, the City of London Cemetery has begun to reuse graves over 75 years old.[11] Singapore's last remaining active cemetery leases plots for 15-year terms, after which remains are exhumed and either cremated or reinterred in smaller plots.[12] Overcrowding in Guatemala City is so extreme that the largest public cemetery disinters bodies when families cannot pay dues and discards them in a mass grave.[13] Current plots in the Sydney metropolitan area are likely to be fully occupied by 2050, and little urban land remains for new burials.[14] For these cities and many others, earthen burial cannot long remain the primary method of corpse disposition.

Environmental Impact

As available urban cemetery plots disappear, earthen burial runs up against a clear logistical limit. When these burials call for embalming and elaborate caskets, they become unsustainable not only from an urban planning standpoint, but also from an environmental one. Protocols regarding the packaging, preservation, and presentation of the corpse have irreversible negative consequences for the health of the planet, depleting natural resources and contributing to pollution.[15] No matter how fortified the memorial container, chemically embalmed tissue eventually leaches into the surrounding soil and groundwater, creating a new generation of brownfield conditions with which to grapple in years to come.

2 New York City Department of Health and Mental Hygiene, *Summary of Vital Statistics 2014: The City of New York* (New York: New York City Department of Health and Mental Hygiene, 2016), 36, http://www1.nyc.gov/site/doh/data/vital-statistics/vital-statistics-summary.page (accessed May 23, 2016).

3 Peter D'Amato, "NYC is Running Out of Places to Hide the Bodies," Crain's New York Business, January 20, 2016, http://www.crainsnewyork.com/article/20160120/PHOTOFINISH/160119883/nyc-is-running-out-of-places-to-hide-the-bodies (accessed October 16, 2016).

4 Carolee Inskeep, *The Graveyard Shift: A Family Historian's Guide to New York City Cemeteries* (Orem: Ancestry Publishing, 2006), 78.

5 D'Amato, "NYC is Running Out of Places."

6 Ibid.

7 U.S. Census Bureau, *Projections of the Size and Composition of the U.S. Population: 2014 to 2060,* 25–1143 (Washington, DC: U.S. Census Bureau, 2015), 1, http://www.census.gov/content/dam/Census/library/publications/2015/demo/p25-1143.pdf (accessed October 16, 2016).

8 Carlton Basmajian and Christopher Coutts, *Planning for the Disposal of the Dead,* Florida State University Libraries Faculty Publications (Tallahassee, FL: Florida State University, 2010), 29, http://diginole.lib.fsu.edu/islandora/object/fsu:207217/datastream/PDF/view (accessed January 28, 2017).

9 Central Intelligence Agency, "The World Factbook," https://www.cia.gov/library/publications/the-world-factbook/geos/xx.html (accessed October 16, 2016).

10 United Nations, "World's Population Increasingly Urban with More than Half Living in Urban Areas," http://www.un.org/en/development/desa/news/population/world-urbanization-prospects-2014.html (accessed May 23, 2016).

Reducing the corpse to less than 4 percent of its mass is spatially efficient, but the perception of cremation as a benign alternative to burial is inaccurate. Cremation relies on non-renewable fuels for combustion and releases noxious hot gases and carbon emissions into the atmosphere.[16] The human body consists principally of water, carbon, nitrogen, calcium, and phosphorous: elements that could contribute to the natural ecology. Despite marketing claims to the contrary, cremation eliminates this organic potential, instead converting the corpse into bone fragments (ash), greenhouse gases, and pollutants.

Although environmentally conscious consumers might reject these harmful practices, public policy relating to the death industry—akin to public housing, trash disposal, and sewage treatment provisions—is contentious and slow to evolve. Cemetery and disposition laws are parochial and contextually divergent, limiting available choice and often mandating the use of affiliated service providers and their preferred practices.[17] Still, market pressures associated with progressive cultural and environmental preferences have spurred the gradual emergence of new options. "Natural burial," which eschews embalming and elaborate casketing, is a reasonable practice where adequate land is available for conservation, but it is not an option within already overcrowded urban cemeteries. Alkaline hydrolysis, also called "resomation" or "green cremation," uses a potassium hydroxide solution at high pressures and temperatures to reduce the corpse to liquid that can be disposed through the sewer system and a small amount of inorganic remains.[18] It is currently legal in only 15 U.S. states,[19] and Catholic groups have expressed concern regarding the level of respect this method affords.[20] Human composting supports natural ecological cycles, but procedures are still in the development phase and must overcome a negative association with mass graves.[21] These approaches have made inroads against environmentally damaging practices and helped awaken public awareness. More significant shifts will require ongoing technological innovation, as well as designs that support new forms of engagement with mortality.

Social Dynamics

The imperative to retool funerary protocols, while grounded in spatial constraints and increasing ecological burdens, extends beyond the pragmatic. Current funerary and memorialization habits facilitate the sequestration of death from daily life. Countering these practices would catalyze thoughtful engagement with mortality and emphasize intergenerational accountability.

11 Damian Carrington, "Re-Using Graves Means U.K. Cemetery Will Never Run Out of Space," *The Guardian,* May 6, 2016, http://www.theguardian.com/environment/2016/may/06/re-using-graves-means-uk-cemetery-will-never-run-out-of-space (accessed October 16, 2016).

12 National Environment Agency of Singapore, "Care for the Dead Services," http://www.nea.gov.sg/public-health/care-for-the-dead (accessed May 23, 2016).

13 Kevin Lewis O'Neill, "There Is No More Room: Cemeteries, Personhood, and Bare Death," *Ethnography* 13, no. 4 (2012): 522–24.

14 Department of Lands, *Sustainable Burials in the Sydney Greater Metropolitan Area* (Sydney: Department of Lands, 2008), 7, http://www.crownland.nsw.gov.au/__data/assets/pdf_file/0011/645086/10214_Burial_Space_for_web.pdf (accessed October 16, 2016).

15 Each year, 800,000 gallons of toxic embalming fluid are buried in U.S. cemeteries, and nearly 2 million caskets are sold in the U.S., consuming 90,000 tons of steel, 2,700 tons of copper and bronze, and more than 30 million board feet of hardwood. Burial vaults and vacuum-sealed industrial casket bunkers require an additional 1.6 million tons of reinforced concrete and 14,000 tons of steel annually. See, e.g., Department of Lands, Sustainable Burials; "The Ten Companies That Control the Death Industry," *24/7 Wall St.*, January 13, 2011, http://247wallst.com/investing/2011/01/13/the-ten-companies-that-control-the-deathindustry/#ixzz49X4J4hkL (accessed October 16, 2016); and Rachel Dickinson, "Looking for a Greener Kind of Death," *Salon,* August 20, 2010, http://www.salon.com/2010/08/20/green_burial/ (accessed October 16, 2016).

16 In India and Nepal, wooden funeral pyres consume 50 to 60 million trees annually and produce 23 percent of the region's brown carbon emissions—the second largest contributor to global warming. See, e.g., "A New Look at Air Pollution Sources and Atmosphere-Warming Particles in South Asia," *Science Daily,* October 18, 2013, https://www.sciencedaily.com/releases/2013/10/131018132306.htm (accessed October 16,

Historian Thomas Laqueur describes death as entangled with almost everything that gives meaning to our lives:

> Like gravity or the air we breathe, it is always there, a part of being human that is so basic that it cannot be dissected out from the rest of life…. [T]he dead make civilization on a grand and intimate scale.[22]

For earlier generations, death was inextricable from life. From sacred relics and charnel houses, to battlefields and potters' fields, cities were built around and above the remains of the dead. Until the mid-eighteenth century, cemeteries were an active part of the urban fabric of Paris, Rome, and other Western European cities. Congregants encountered graveyards, nested into, next to, and under churches, during the regular rhythms of daily life and used cemeteries as spaces for convening, commerce, and even revelry.[23]

The nineteenth century heralded increasingly individual and sanitized burial rituals, with each body tidily contained in its own box. Death, in Europe and the United States, became the realm of professionals, and rules were put in place for the analysis, preparation, and disposal of corpses.[24] Real and perceived public health crises incited the removal of corpses and their decay from proximity with the living, and ex-urban oases of death began to emerge. Some corpses were concealed rather than removed: In 1825, a large potter's field in Manhattan was converted into a military parade ground and subsequently became Washington Square Park, which sits above the remains of an estimated 20,000 bodies.[25] English gardens and Paris's Peré Lachaise inspired the establishment of Mount Auburn, America's first "garden cemetery," in 1831. Four miles northwest of Boston, Mount Auburn's arboretum and 174 acres offered a romantic refuge from the city.[26] Such rural cemeteries, tethered to metropolitan centers, served as sites of recreation and offered respite from the teeming density of both public and private domains.

The broadening popularity of the garden cemetery helped inspire the U.S. park movement, which in turn undermined the cemetery's status as public space. In 1811, the New York City Commissioners' Plan officially delineated public park space.[27] In 1869, land that formerly had been Chicago's City Cemetery was transformed into Lincoln Park.[28] These new idealized forms of nature cast off their previous associations with death, and contemplative walks and picnics moved from the cultivated seclusion of the rural cemetery into secular, municipal parks, leaving the physical spaces of the dead increasingly unvisited and untended.

2016); and Dean Nelson, "Indian Funeral Pyres and Incense 'Melting Glaciers,'" *The Telegraph*, October 29, 2013, http://www.telegraph.co.uk/news/worldnews/asia/india/10412104/Indian-funeral-pyres-and-incense-melting-glaciers.html (accessed October 16, 2016).

17 Tanya D. Marsh, "Rethinking the Law of the Dead," *Wake Forest Law Review* 48, no. 5 (2013): 1331.

18 Philip R. Olson, "Flush and Bone: Funeralizing Alkaline Hydrolysis in the United States," *Science, Technology, & Human Values* 39, no. 5 (2014): 667, doi: 10.1177/0162243914530475.

19 *Human Remains Disposal: Alkaline Hydrolysis: Licensure and Regulation,* Cal. Assemb. B. 967 (2017–2018), Chapter 846 (Cal. Stat. 2017).

20 Lesley McClurg, "Governor Signs Law Allowing Californians to Choose to Liquefy Their Remains," *KQED Science,* September 20, 2017, https://ww2.kqed.org/futureofyou/2017/09/20/want-to-cut-your-carbon-footprint-get-liquefied-when-youre-dead/ (accessed October 23, 2017).

21 Catrin Einhorn, "A Project to Turn Corpses into Compost," *The New York Times,* April 13, 2015, http://www.nytimes.com/2015/ 04/14/science/a-project-to-turn-corpses- into-compost.html (accessed October 17, 2016).

22 Thomas W. Laqueur, *The Work of the Dead: A Cultural History of Mortal Remains* (Princeton, NJ: Princeton University Press, 2015), 11.

23 Philippe Ariés, *Western Attitudes Toward Death: From the Middle Ages to the Present*, trans. Patricia M. Ranum (Baltimore, MD: The Johns Hopkins University Press, 1974), 20–25.

24 David Armstrong, "Silence and Truth in Death and Dying," *Social Science & Medicine* 24, no. 8 (1987): 652–53.

25 Joan H. Geismar, *Washington Square Park Phase 1A Archaeological Assessment, Borough of Manhattan* (New York: New York City Department of Parks and Recreation, 2005), 30.

26 Thomas Bender, "The 'Rural' Cemetery Movement: Urban Travail and the Appeal of Nature," in *Material Life in America, 1600–1860,* ed. Robert Blair St. George (Boston: Northeastern University Press, 1988), 506.

27 New York City Department of Parks and Recreation, "A Timeline of New York City

With the seclusion of memorials, the decline in mortality rates, and the rise of hospitals to care for the dying and of funeral homes to care for the dead, "an ever-present sense of the inevitability of death ebbed. In its place came an exaggerated faith in the ability of scientific medicine to prolong life."[29] Philip A. Mellow and Chris Shilling argue that death diminished in the public consciousness in both Europe and North America as it became

> a relatively hidden, private experience which is marked by increased uneasiness over the boundaries between the corporeal bodies of the living and dead…[leaving] many people uncertain, socially unsupported and vulnerable when it comes to dealing with death.[30]

Although Western millennials and aging baby-boomers are expressing more open interest in death, its isolation has contributed to a cultural obsession with youth, a tendency toward narcissism, an impulse to "protect" children by withholding the truth about mortality, and unpreparedness for the end of life.[31] Physical and emotional detachment of spaces of death and remembrance from everyday life has weakened the way people act on obligations to those dying or grieving, as well as a collective appreciation of the finitude of our own existence.

Although imagining radically changed death practices might be challenging, the United States is a young country with prevailing traditions less than a few centuries deep. Attitudes toward death have varied considerably over time. In the cities of medieval Europe, burial was frequently temporary, with bones subsequently exhumed and piled in charnel houses.[32] In the United States, embalmed burial has been the norm only since the late 1800s, and "undertakers" did not become "funeral directors" until 1885.[33] In 1965, shortly after the Catholic Church relaxed its ban on cremation, the cremation rate in the United States was less than 4 percent;[34] just 50 years later, that figure registered a dramatic increase—to over 45 percent—as a result of factors including burial costs.[35]

Social change occurs when priorities and perspectives evolve—a process continually reshaping human civilization. In his analyses of the cessation of specific cultural practices, Kwame Anthony Appiah observes that "the arguments are in place well before the movement begins."[36] Regarding mortuary practices, the logistical, environmental, and cultural need for alternatives is clear. Because spatial environments help to shape the human psyche, design and urban planning can foster receptiveness to change. With its *Perpetual Constellation* projects, DeathLAB strives to catalyze this change and elegantly reintegrate death into daily life.

Department of Parks and Recreation History," https://www.nycgovparks.org/about (accessed October 16, 2016).

28 Pamela Bannos, "Hidden Truths: The Chicago City Cemetery & Lincoln Park," http://hiddentruths.northwestern.edu/home.html (accessed October 16, 2016).

29 Burden S. Lundgren and Clare A. Houseman, "Banishing Death: The Disappearance of the Appreciation of Mortality," *Omega* 61, no. 3 (2010): 241, doi: 10.2190/OM.61.3.d.

30 Philip A. Mellow and Chris Shilling, "Modernity, Self-Identity and the Sequestration of Death," *Sociology* 27, no. 3 (1993): 416–17, doi: 10.1177/0038038593027003005.

31 Ibid., 419.

32 Ariés, *Western Attitudes,* 74.

33 Ibid., 98–99.

34 Singhal LLC, *Annual CANA Statistics Report 2011* (Cremation Association of North America, 2012), 12, http://blcremationsystems.com/CANA_2011_Annual_Statistics_Report.pdf.

35 See "Industry Statistical Information," Cremation Association of North America, http://www.cremationassociation.org/?page=IndustryStatistics (accessed May 25, 2016); and Kevin Sack, "In Tough Times, a Boom in Cremations as a Way to Save Money," *The New York Times,* December 8, 2011, http://www.nytimes.com/2011/12/09/us/in-economic-downturn-survivors-turning-to-cremations-over-burials.html?_r=0 (accessed October 18, 2016).

36 Kwame Anthony Appiah, *The Honor Code: How Moral Revolutions Happen* (New York: W. W. Norton & Company, 2010), 110.

Figure 3
Design montage for Sylvan Constellation at Arnos Vale Cemetery in Bristol, UK. © Columbia University GSAPP DeathLAB and LATENT Productions.

Perpetual Constellation

DeathLAB aims to alleviate the burial plot crisis and to provide ecologically responsible, spiritually resonant alternatives at death. If fully implemented, DeathLAB's projects will serve to both revitalize existing urban cemetery sites and reweave death into daily life.

The *Perpetual Constellation* designs rely on anaerobic (airless) microbial conversion, a process using natural microscopic ecosystems to efficiently break down organic matter and generate biogas, which can be used as fuel. The application of microbial digestion to corpse disposition is the subject of a current study funded by Columbia University's Earth Institute.[37]

Anaerobic bioconversion vessels are the base units of the *Perpetual Constellation* designs. Maintaining the autonomy of the deceased, each corpse will be lowered into a reusable memorial vessel wherein natural decomposition will be facilitated, and the body's latent energy converted to power a simple memorial light. The illumination will make the ineffable absence palpable, delicately materializing remembrance over the course of a year. At the end of the bioconversion process, a small amount of inorganic remains can be returned to the family as a memento, and organic remains can be used to cultivate plant life. The vessel then will be prepared for reuse.

37 In 2015, the Earth Institute's Cross Cutting Initiative granted funding to co-principal investigators Karla Rothstein and Kartik Chandran, PhD, to research new methods of corpse disposition for urban environments.

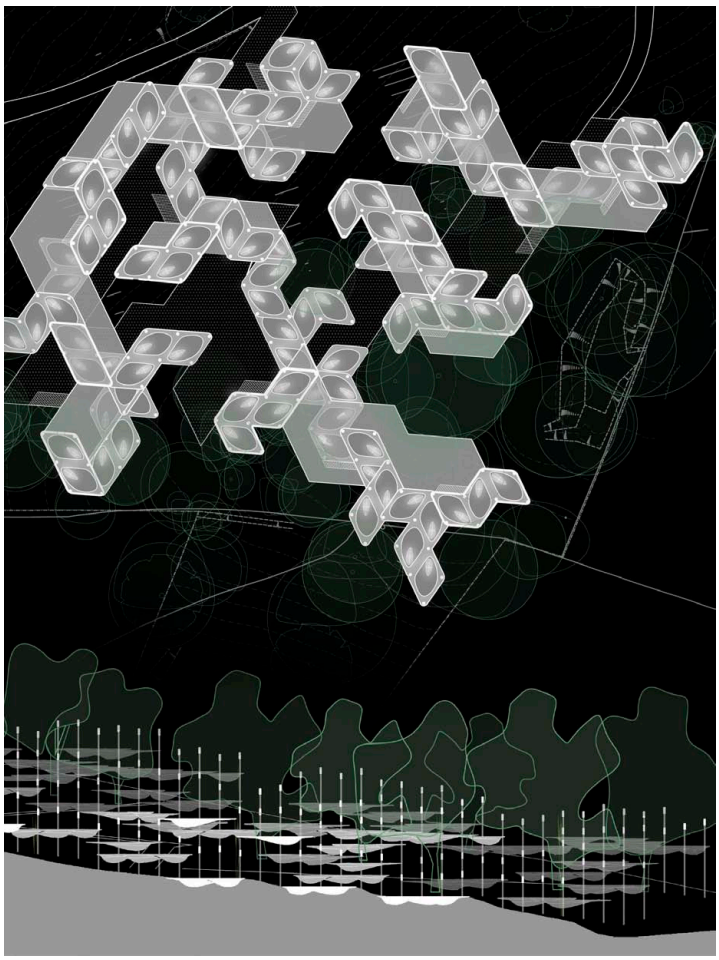

Figure 4
Field condition plan and section of Sylvan Constellation integrated amid historic Victorian monuments and woodland cemetery grounds. © Columbia University GSAPP DeathLAB and LATENT Productions.

Although the design provides for fully individual, contained disposition, networks of dozens or even hundreds of memorial vessels could amplify existing cemeteries and define new civic–sacred space. Pathways, ramps, and spaces for congregation would thread through clusters of vessels, facilitating the construction of collective experiences and signaling recognition of humanity's fragile and intertwined existence.

Sylvan Constellation was designed in response to the challenges of respectfully amplifying the capacity of Bristol's Victorian Arnos Vale Cemetery (see Figures 3 and 4). In 1987, when Arnos Vale faced partial demolition, concerned citizens came together to protect the cemetery. After a lengthy battle, the Bristol City Council took ownership of Arnos Vale and established a charitable trust for its restoration in 2003.[38] Embracing this spirit of reinvention and community involvement, Arnos Vale today remains an active cemetery while also serving as a nature conservatory, classroom, and venue for performances, fitness, and private events.

Winner of the 2016 "Future Cemetery" competition, *Sylvan Constellation* envisions 150 anaerobic memorial vessels embedded in the earth where space allows and elevated on steel pylons into

38 Arnos Vale Cemetery Trust, "From Garden Cemetery to Wilderness to Restoration," https://arnosvale.org.uk/discover/heritage/friends-history-arnos-vale/ (accessed January 28, 2017).

Figure 5
Constellation Park, suspended under the Manhattan Bridge (viewed from Brooklyn riverbank). © Columbia University GSAPP DeathLAB and LATENT Productions.

Arnos Vale's woodland canopy.[39] The prototypical layout weaves a built landscape of vessels within the existing cemetery, providing illumination for mourners, visitors, and the local children who use it as a shortcut to and from school.

DeathLAB took first steps toward implementing this proposal with a residency at Arnos Vale in summer 2016. If fully realized, *Sylvan Constellation* would double the capacity of the equivalent area of earthen burial within six years. Accepting and honoring new lives for generations to come in a business model of serial occupancy, the system would generate long-term revenue for the cemetery, and sustain lasting community engagement while minimizing the effects on the plant and animal life so crucial to Arnos Vale's educational programming.

The progress of *Perpetual Constellation* from academic theory to applied research to local prototype ideally will culminate not only in the amplification and modernization of existing cemeteries, but also in the transcendence of their bounds. Using design to

39 The Future Cemetery Project, a partnership between Calling the Shots, The Pervasive Media Studio, Arnos Vale Cemetery Trust, and the Centre for Death and Society at the University of Bath, aims to foster "high-quality research, innovation, and creative exploration into the social, cultural, and technological aspects of end of life, death, and remembrance." Calling the Shots, "Future Cemetery," http://futurecemetery.org/ (accessed April 14, 2017).

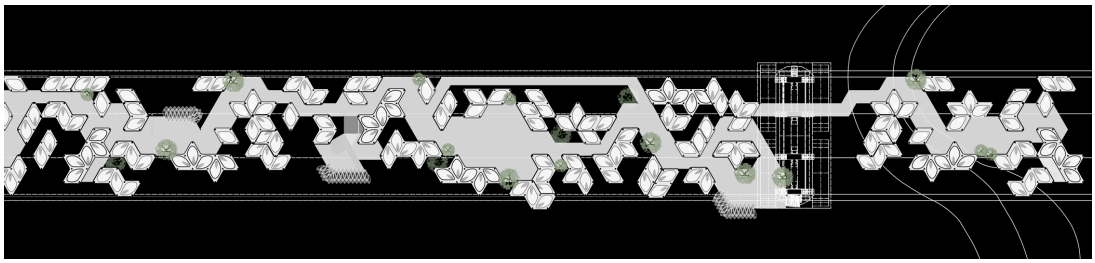

Figure 6
Constellation Park linear plan aggregating memorial vessels and public spaces of congregation. © Columbia University GSAPP DeathLAB and LATENT Productions.

inspire and provoke society's imagination of possible futures, *Constellation Park* envisions a network of memorial vessels suspended from the underbelly of the Manhattan Bridge (see Figures 5 through 8). One of the iconic links connecting Brooklyn to Manhattan, the bridge's unadorned double-decked truss and suspension structure already supports cars, subways, bicyclists, and pedestrians. *Constellation Park* calls for new processional paths ascending from the river's edge to gathering spaces for secular and spiritual ceremonies and small, semi-private sheltered sanctuaries offering refuge for mourners. Grafting onto urban infrastructure is a scalable adaptive reuse strategy comparable to New York City's exceedingly popular High Line and the multi-programmed Galata Bridge in Istanbul, as well as to new park initiatives under way in cities around the world. With a capacity of 5,400 interments per year, the *Constellation Park* project could accommodate approximately 10 percent of all annual deaths in New York City.

This design respects grief but does not cloister it. *Constellation Park* interlaces memorial illumination into the iconic New York skyline and territories of remembrance into the quotidian life of the city to emphasize the reciprocal dynamics of intimacy and collectivity. Five miles of paths interwoven through the park provide not only routes for funerary cortege, but also space for meandering, biking, and other recreational activities. When not in ceremonial use, gathering spaces could host picnics, yoga, lectures, and public performances. These interconnected spaces of remembrance and daily activity are fortified by the cycles and energies of the city, supporting grieving and contemplation alongside recreation and rejuvenation. Embracing density, this design positions death alongside other conduits of infrastructure and conveys the capacity of the city to accommodate public engagement with mortality. The conviction of DeathLAB's researchers is that integrating reminders of the past and spaces of pilgrimage and reflection into daily life adds resiliency to the social fabric and lays the groundwork for new legacies of environmental stewardship. Like access to energy and clean water, such spaces must be included in the long-term planning of any sustainable metropolis.

In the *Perpetual Constellation* projects, the ephemerality of life is reflected in temporal patterns of illumination directly connected to the interments. Each individual's bioenergy contributes

Figure 7
Constellation Park at night, seen against the Manhattan skyline. © Columbia University GSAPP DeathLAB and LATENT Productions.

to an aggregate and shifting glow, signaling implicit communion with neighbors and strangers alike. Rather than being memorialized with a discrete stone in a remote and seldom-visited location, the deceased is memorialized in an enduring collective cenotaph in the city where he or she lived. The individual is both celebrated and subsumed by the whole, emphasizing connections to a larger human community. Hearkening to premodern death rituals that were "intended to minimize the possible threat of death to the continuance of the social order,"[40] people might choose disposition in the *Constellation* projects based on their concern for contemporary pressures—a dearth of space for those who wish to live in the metropolis, global climate change, and resource consumption—as well as on their assertion of the self as a constituent in broader, eternal cycles.

Cultural transitions away from the gravesite as the locus of permanence are already under way. Although some cremains are interred, others are kept in the homes of the bereaved or scattered in locations of significance to the deceased. Increasingly, the perceived durability of online memorialization is alleviating the preoccupation with individual, physical memorials in perpetuity. Some funeral homes now stream services for mourners who cannot attend in person.[41] Digital epitaphs in "virtual cemeteries" stand in for tombstone inscriptions, and consoling posts, messages, and tweets are sent in lieu of flowers and cards. Facebook has established guidelines to deal with "memorial accounts,"

40 Mellow and Shilling, "Sequestration of Death," 415.

41 Tony Walter, Rachid Hourizi, Wendy Moncur, and Stacey Pitsillides, "Does the Internet Change How We Die and Mourn? Overview and Analysis," *Omega* 64, no. 4 (2011–2012): 281, doi: 10.2190/OM.64.4.a.

Figure 8
Suspended public memorial park, offering new forms of civic sanctuary and perspective. © Columbia University GSAPP DeathLAB and LATENT Productions.

which are currently estimated to number more than three million.[42] In this way, social media is reasserting the place of death in virtual life, where "pictures of the dead, conversations with the dead, and mourners' feelings can and do become part of the everyday online world…. The dead and their mourners are no longer secluded from the rest of society."[43] As more social interaction, as well as the crafting and performance of identity, is conducted online, digital footprints might come to feel like a more suitable surrogate for the living self than the corpse in a tomb.[44]

Increasing secularization further amplifies potential cultural receptivity to alternative funerary design. In 2012, the Pew Center analyzed survey responses from 3,500 adults together with data from previous surveys to conclude that fully one-third of the U.S. population under age 30 consider themselves "religiously unaffiliated." Thirteen million self-described atheists and agnostics and thirty-three million with no particular religious affiliation now constitute 20% of the entire U.S. adult population.[45] The religiously unaffiliated might feel ill-at-ease with traditional funerary rites and unsatisfied or alienated by available options, but the absence of strong religious association does not obviate the importance of transitional ritual as part of the temporal cycles of mortality. Even "in these times of ambiguity and uneasiness about the meaning of death and the afterlife, the bereaved still need spaces where they can reflect upon loss and feel comfortable nurturing

42 See "Memorialization Accounts," Facebook, https://www.facebook.com/help/1506822589577997/ (accessed October 16, 2016); and Jaweed Kaleem, "Death on Facebook Now Common as 'Dead Profiles' Create Vast Virtual Cemetery," *The Huffington Post*, December 7, 2012, http://www.huffingtonpost.com/2012/12/07/death-facebook-dead-profiles_n_2245397.html (accessed October 16, 2016).

43 Tony Walter, Rachid Hourizi, Wendy Moncur and Stacey Pitsillides, "Does the Internet Change How We Die and Mourn? Overview and Analysis," *Omega* 64, (2011–2012): 281; http://journals.sagepub.com/doi/abs/10.2190/OM.64.4.a

44 Candi K. Cann, *Virtual Afterlives: Grieving the Dead in the Twenty-First Century* (Lexington, KY: The University Press of Kentucky, 2014), 106–7.

45 Pew Forum on Religion and Public Life, *'Nones' on the Rise: One-in-Five Adults Have No Religious Affiliation* (Washington: Pew Research Center,

the memory of the dead."[46] Although non-denominational in nature, the *Perpetual Constellation* projects foster the progression of rituals and provide tangible space for honor, human civility, and meaningful choice. The muted glow of a sea of simple lights will help individuals engage with death and reaffirm their place in environmental and societal cycles that continue even when they, individually, do not.

Conclusion

A society's convictions and investments in honoring the dead both reflect and (re)structure culture, public space, and relationships to time and community. The choices we make in honoring our deceased should be influenced by individual and collective psychology, necessity, philosophy, and belief. Options at death currently remain heavily prescribed by archaic rituals and legislation that often dislocate the bereaved from how they choose to live, love, and honor their deceased. By emphasizing intergenerational accountability toward collective environmental, spatial, and emotional resources, DeathLAB's *Perpetual Constellation* projects aspire to meet the needs of a growing population for whom the future health of the planet is paramount. The designs aim to offer scalable and viable alternatives to conventional funerary protocols, appealing to both environmentally conscious citizens and industry stakeholders contending with disappearing urban cemetery space. Developing inclusive civic–sacred territories within the metropolis supports diverse needs for remembrance and helps to finance and sustain crucial urban public open space. Transforming the architectural and experiential landscape of death shifts our collective relationship to this fundamental aspect of life, instigating substantive cultural and environmental change.

2012), 9, http://www.pewforum.org/files/2012/10/NonesOnTheRise-full.pdf (accessed May 23, 2016).

46 Kenneth T. Jackson and Camilo Jose Vergara, *Silent Cities: The Evolution of the American Cemetery* (New York: Princeton Architectural Press, 1989), 122.