

ISSUES OF DEATH AND ECOLOGY: RECONSIDERING THE ROLE OF FUTURE CEMETERIES IN THE CITY

DOI: 10.26341/issn.2241-4010-2026-10a-7-K02099

Nikolaidi Galini

Architect, Technical University of Crete. Postgraduate student at the School of Architecture of the National Technical University of Athens. Co-founder of DE|ATH|FORMATION.

galnikol910@gmail.com

Lountzis Georgios Dionysios

Architect, Technical University of Crete. Postgraduate student at the School of Architecture of the National Technical University of Athens. Co-founder of DE|ATH|FORMATION.

gdlountzis@outlook.com.gr

Abstract

Burial grounds are an integral part of every social formation and social ritual. They reflect the peculiarity of cities over time and narrate the evolution of society's attitudes towards death, since they in turn constitute 'cities' of limited size. Over the centuries from scattered burial grounds to modern organized cemeteries, burial grounds constitute vital urban cells of multiple properties. These are important free urban spaces, open to the public of the city that go beyond religious rituals and can be treated as monumental 'gaps' in which its past is inscribed. From the medieval spaces that were social and crowded spaces, a displacement of the cemeteries from the core of the city is established, with the result that they function as 'organized spaces' on its borders, leaving behind the monumental burials as 'urban fragments'. Therefore, the purpose of the paper is to explore philosophical and cultural views on death from the Middle Ages to the modern era and the influence they have had on the design of modern burial grounds. The paper will focus on the emergent urban dynamics of cemeteries, studying issues of urban integration and spatial composition in the context of a climate of gentrification and a lack of open public spaces. The above problem can be understood in the light of 'Landscape Urbanism'. According to 'Landscape Urbanism', the landscape is defined as the prism through which the modern city is interpreted and at the same time the mean through which it is shaped. It is essentially an attempt to decode the urban situation in landscape terms and manage it as an ecosystem, which is studied and planned on the basis of a spatio - temporal ecology. Through the contemporary production processes of the space, the vanguard of landscape architecture design expresses the view of a 'new urban nature' which can be identified in the modern burial grounds. In addition, both incineration and conventional burial have some adverse environmental effects, with the result that some cities are already implementing innovative design strategies aimed at urban resilience. Therefore, the repersonification of the spatial issue of death projects the future form of specific spaces through their change, shrinking and even disappearance. In general, innovative design approaches to burial sites are emerging through modern technology and architecture under the gaze of the continuous ecological needs of the space. Beyond the theoretical part, the presentation focuses on two personal design research projects that examine the above issues. The first project focuses on the ways in which the question of burial is reintegrated into the urban fabric and the daily life of the inhabitants, while the second on the process by which the dead body ceases to cause disgust and returns to the city in a 'new form', identifying public space with memory.

Key words: burial sites, urban voids, death, integration, landscape

1. Introduction

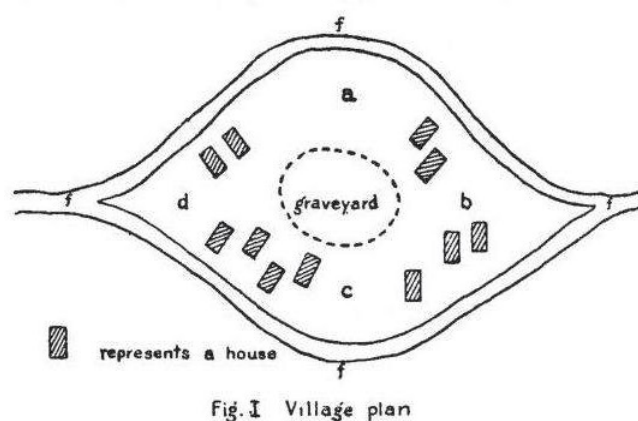
The nature of death is a fact of human existence and can regulate life itself and the behavior of man towards others, since it is not something that comes to an end but is always potentially present. Thus, life turns into a perpetual conflict with the 'hereafter'. Thinking and living the experience of death takes place through the loss of the other, which marks the foreshadowing of our own death. Death was never accepted without fear and awe, as it remained in human consciousness an undefined and inconceivable event. The dead body also contributes to this logic, occupying an intermediate position between 'here' and 'there', as it is considered vulnerable due to its perishability. Therefore, the purpose of the presentation is to investigate philosophical and cultural views on death, from the Middle Ages to the modern era. The issue of death is glossed over in the modern context, as it is inconsistent with current issues of happiness and image. In addition, the influence of the above considerations on the design of contemporary burial grounds and their looming urban dynamics through questions of urban integration and regional composition will be examined. Therefore, the re-personification of the spatial issue of death highlights the emerging urban dynamics of specific spaces through their change, shrinking and even disappearance. More generally, innovative design approaches to burial sites are emerging through modern technology and architecture under the gaze of the continuous ecological needs of the space.

2. Methodology

2.1 *Death as a matter of theoretical thought*

2.1.1 *Death and mourning as the beginning of civilization*

As Bronislaw Malinowski states, "The question of death has been a central concern for various religious beliefs of human civilization. Both the places and the practices of the burial acquired a key and symbolic character, as they were the focus of urban formations and habitation until today" (Walter, 1993:273). Historically, the cemetery is for most peoples the place to deposit the body, while burial traditions date back thousands of years and reflect social structures, habits and popular preferences. As Lewis Mumford records, "The dead was the first to have a fixed abode, a place, where the living could often visit their ancestors" (Mumford 1961). The above reference substantiates the claim that the first cities were the 'cities of the dead', i.e. that the core of every spatial organization was the Necropolis (Picture 1). Based on various archaeological findings, the burials within the urban environment and specifically within houses are able to support eventual considerations of the burial as centers of urban concentrations. "In primitive peoples there is no 'natural death', every death is social, public, collective, it is always the result of an opposing will that must be absorbed by the group, which takes place through celebrations and ceremonies related to mourning" (Makrynioti, 2008 :115). Thus one can talk about a symbolic and spatial continuity but also a gradual domestication of man with the issue of death with mourning and burial as the main mediator.



Picture 1: Reo Fortune describes in 1928 the standard arrangement island villages regions of Papua – New Guinea as enclosed circles of huts, which have their facade facing the natural embankment at its geographic center village. This embankment included the remains of their ancestors.

2.1.2 *The tamed death*

The studies of Phillipe Aries constitute the most important sources for the study of the attitude of Western civilization towards this specific issue. The specific studies cover a wide period of time from the Middle Ages to the modern era and aim to give meaning to human mortality. By reference to the study of Aries, one can identify critical stages in the meaning-making of human mortality. The first is described as the stage of 'tamed death' or otherwise 'common death' and is chronologically placed during the early Middle Ages. In this particular period, death is projected in the form of punishment to people. Through this terrifying image the church of the time sought to instill fear in order to manipulate the popular and middle class. The above raises the conclusion that in no other era is so much importance attached to the idea of death as an event before which all are equal, defying the unequal order of birth, wealth and power. In general, Medieval burial grounds were social and crowded places, where commerce and other activities flourished. Essentially, Medieval cemeteries were urban spaces that transcended religious ritual and included a multitude of commercial functions (Picture 2).



Picture 2: The Turgot map of Paris in the 1870, it can be seen the Cemetery of the Innocents and his relationship with the city.

2.1.3 *The romantic death*

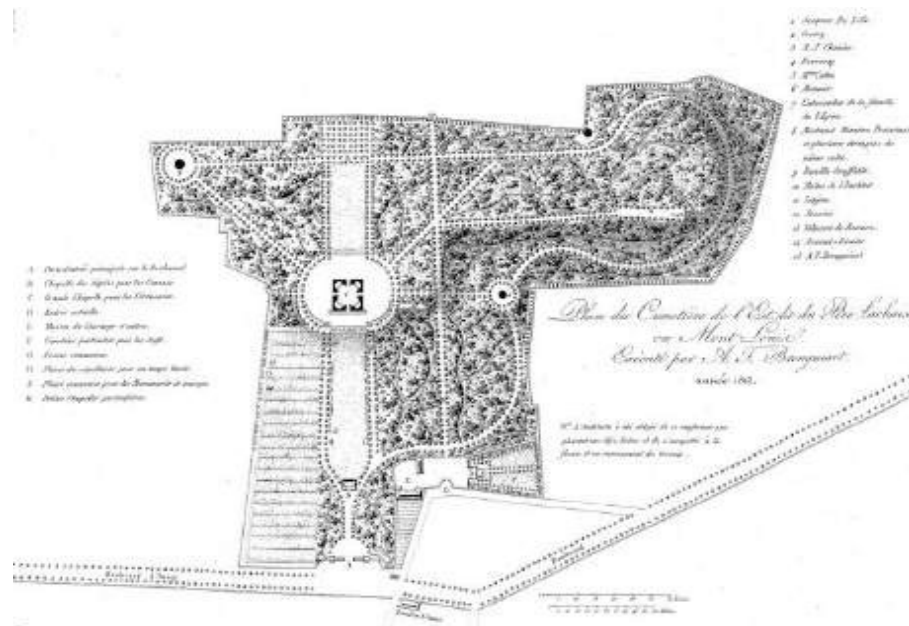
"At the beginning of the 16th century, a new model appeared, that of the 'beautiful' and 'ethicoplastic' death. This standard prevails until the 18th century and refers to a just and dignified death" (Aries, 1999:41). Therefore, the Medieval model where life is dominated by the agony of salvation at the last moment succeeds the model of the 'beautiful' and 'romantic death', in which the coming of the end is surrounded by a new romantic view. Also, the burial grounds begin to consist of a multitude of representative monuments and acquire an autonomous and supervisory position within the city after a long period of discreet coexistence with the society of the living. In the same period of time, in European cities such as France and Italy mainly, the trend of visitable 'garden cemeteries' emerged, which are characterized as essential spaces for the city's monumental stock (Picture 3).



Picture 3: Certosa di Bologna, Bologna Italy, 1334.

2.1.4 *The beginning of concealment*

At the end of the 18th century, a period that coincides with the end of the 'beautiful' and 'romantic death', an important change takes place which is a turning point in Western thought and in the urban culture of Europe. The spread of anatomy reached its peak during the 19th century and was not only due to scientific purposes but also to the effort to investigate things that were not clearly defined until then. Regarding burial grounds in the 19th century, the cemetery is considered a place of philosophical contemplation as it indicates that death is not a catastrophic event, but part of a perpetual cycle of reproduction. This results in it being directly connected to nature, while at the same time attempting to give a sense of historical continuity. The cemetery is not only a memorial site, as in the 18th century, but becomes an organized place of visitation and pilgrimage and therefore an element of preserving the city (Picture 4).



Picture 4: Brongniart map, 1813, Père Lachaise plan.

2.1.5 *Forbidden - clinicalized death and the modern condition*

From the Middle Ages to the middle of the 19th century, perceptions of death show slow but steady changes. However, in the period of industrialized Europe of the 20th century, a new perception towards the issue of death is recognized, that of the 'invisible' or 'forbidden'. "Moving into the 20th century, rapid advances in personal comforts, personal hygiene and the idea of antisepsis made people more sensitive and therefore contact with the dead body more abhorrent. This results in people banishing death from everyday life and focusing on a new uncontaminated world in which hygiene, medicine and morality are based" (Aries, 1999:411). So the banishment of death from everyday life, in which the uncontaminated world of hygiene and medicine is based, brings to the surface a new 'macabre', the 'macabre' of science. This development takes place in the early 1960s. Affluent societies marginalize death and, at the same time, promote a model of life without suffering. Furthermore, they favor the spread of an extreme cult of physical health, forgetting that it is something precarious, fragile and not permanent. Illness is presented as an exception, a misfortune, a derivative of non-observance of hygiene rules, but never as inherent to human fragility. In modern Western societies, the question of death is revived and returns to the public discourse through the politicization of biological life. Power takes the form of social and political intervention against the body of the population, there is a generalized tendency to naturalize the conditions of death, which now takes the form of state violence through visible and invisible death practices. At the same time, the burial grounds lose their dynamics and are trapped in the continuous and unstoppable construction of the cities. They thus turn into 'terrain vagues' within the urban fabric since they cannot defend themselves against the nature that has now been tamed by technical progress.

2.1.6 *Forbidden - clinicalized death and the modern condition*

From the Middle Ages to the middle of the 19th century, perceptions of death show slow but steady changes. However, in the period of industrialized Europe of the 20th century, a new perception towards the issue of death is recognized, that of the 'invisible' or 'forbidden'. "Moving into the 20th century, rapid advances in personal comforts, personal hygiene and the

idea of antisepsis made people more sensitive and therefore contact with the dead body more abhorrent. This results in people banishing death from everyday life and focusing on a new uncontaminated world in which hygiene, medicine and morality are based" (Aries, 1999:411). So the banishment of death from everyday life, in which the uncontaminated world of hygiene and medicine is based, brings to the surface a new 'macabre', the 'macabre' of science. This development takes place in the early 1960s. Affluent societies marginalize death and, at the same time, promote a model of life without suffering. Furthermore, they favor the spread of an extreme cult of physical health, forgetting that it is something precarious, fragile and not permanent. Illness is presented as an exception, a misfortune, a derivative of non-observance of hygiene rules, but never as inherent to human fragility. In modern Western societies, the question of death is revived and returns to the public discourse through the politicization of biological life. Power takes the form of social and political intervention against the body of the population, there is a generalized tendency to naturalize the conditions of death, which now takes the form of state violence through visible and invisible death practices. At the same time, the burial grounds lose their dynamics and are trapped in the continuous and unstoppable construction of the cities. They thus turn into 'terrain vagues' within the urban fabric since they cannot defend themselves against the nature that has now been tamed by technical progress.

2.2 *Contemporary cemeteries as multidimensional urban spaces*

Cemeteries function as spaces of coexistence of the real and the imaginary. In addition to their functional dimension, as spaces suitable for disposing of the dead, they are also public spaces where the bereaved come face to face with their loss. Therefore, in this proposal, an attempt is made to investigate the design of burial grounds as a special category of urban space. In particular, the presentation focuses on the spatial evolution of the topography of burial sites as urban monumental complexes and their emergence as points of reference in the fabric of the city and their relationship with the environment. Death is always marked and covered under the veil of architecture, whether it is a simple stone slab in the ground, or an organized burial ground. Based on the above position, the modern urban dynamic of the burial grounds is highlighted through the growing needs of the space.

The mutations recorded in burial sites over time, from the late Middle Ages to modern times, are mainly based on historical, social and cultural spatial changes. An important contribution to the investigation of the spatial evolution of the topography of cemeteries is Maria Koumarianou's study on the Fantasy of Death. The above study records the spatial dependencies and mutations of the cemeteries in relation to the urban fabric of the city. The above mutations go hand in hand with historical changes in the question of response to death, as mentioned above based on the work of Phillipe Aries. It is a sequence of spatial determinations of the cemetery in relation to the urban environment. Four phases of change are briefly recorded, namely the 'closure' of the burial grounds in the urban environment, their 'visual isolation' from the city, their subsequent 'displacement' to the outskirts of the cities and finally their 'disguise'.

As has been recorded, during the Middle Ages the burial ground was an open public space, a reference point for the city, without defined boundaries within the urban fabric. This is how the first phase of 'closure' and the coexistence of the cemetery area with the city of the living can be distinguished. However, from the end of the 19th century, a morphological and not so topographical change took place, through the construction of walls, which led to their 'visual isolation'. The cemetery space maintains its central position, but is visually isolated from the space of the living, that is, from the space that surrounds it. The above practice of 'visual isolation' is directly linked to the period of 'personification' and ultimately 'romantic

beautification' of death. This significant change in perceptions of the human response to death resulted in cemeteries gradually being displaced from the inner city. The intense building development of cities led to the incorporation of historical cemeteries into the urban fabric as 'urban fragments of memory', while in a second phase it displaced them outside their boundaries, thus turning them into ambiguous places. The gradual 'isolation' of burial sites on the outskirts of cities leads to their 'disguising', in the sense that the cemetery loses its specific spatial qualities and turns into either green spaces or undefined spatial units, a kind of 'topographical implication' in general space without a necessary urban function. The above practice raised issues concerning the museological management of historical cemeteries, where they are places of memory and remain visible in the spatial reserve of the city without traces of particular disguise. In contrast, many of the cemeteries on the outskirts of cities function as unorganized 'urban voids'. The specific burial grounds do not have a clear function due to their location, i.e. they are places without specific meaning. Despite their ostracized position in the urban fabric due to the ecstasy of the city, they have a special spatial and symbolic value as they gather elements and qualities of 'transition'. For example, "Ignasi de Sola-Morales speaks of 'terrains vagues' referring to the empty places in the urban space that lack both meaning and use. The fact that they have been 'frozen' at some point in their history, automatically makes them places that are waiting to 'wake up' in order to narrate what they have lived through.

They are areas that are not used or have been abandoned for a long time, but whose deterioration and marginalization are so evident that they are classified as residual places" (Doron, 2008:204,205). More generally, the evolution of the topography of burial sites is a symbolic practice defined as the transition from 'being' and 'appearing' to 'not appearing'. Thus, cemeteries can be studied as multidimensional spaces in the changing urban periphery since their conditions of urban integration and their topographical particularities are constantly changing. Through these transformations emerges the need and desire of the people to restore the specific spaces into everyday and familiar spaces.

2.2.1 *The urban dynamic of burial grounds*

From the analysis recorded so far, it appears that the symbolic and spatial role of the burial grounds yield multifaceted approaches to their emerging urban dynamics in the contemporary condition. The text aligns with themes of urban transformation, sustainability, and spatial adaptation in response to contemporary challenges. It explores how burial grounds, traditionally seen as static and peripheral, are now being reconsidered within the urban fabric. This analysis is particularly relevant to discussions on climate change, urban planning, and innovative architecture, making it a strong contribution to a book that deals with modern urban dynamics, environmental sustainability, or spatial reimagination.

According to the architect Katrina Spade as recorded in her work *Urban Death*, the rationalization of the burial is deemed necessary in relation to the positive effect it can have on the environment and also on climate change. Her research project Urban Death led to the development of Recompose, a human composting process that converts bodies into nutrient-rich soil and it is based on the issue of renewing people's relationship with the question of death and not on the location of cemeteries on the periphery of cities (Eveleth 2014). Therefore, through the rapid growth of the population, in the context of a climate of urbanization, and through the lack of open public spaces, the questioning of the character and role of modern cemeteries emerges. Spade's problematic can be understood in the light of 'Landscape Urbanism'. "According to 'landscape urbanism' the landscape is defined as the prism through which the contemporary city is interpreted and at the same time the medium through which it is shaped. It is essentially an attempt to decode the urban situation in terms

of landscape and manage it as an ecosystem, which is studied and planned on the basis of a spatiotemporal ecology " (Corner, 2006:29). Through contemporary processes of space production, the vanguard of landscape architecture design expresses the view of a '*new urban nature*' (Girot 2005) which can be identified in contemporary burial grounds.

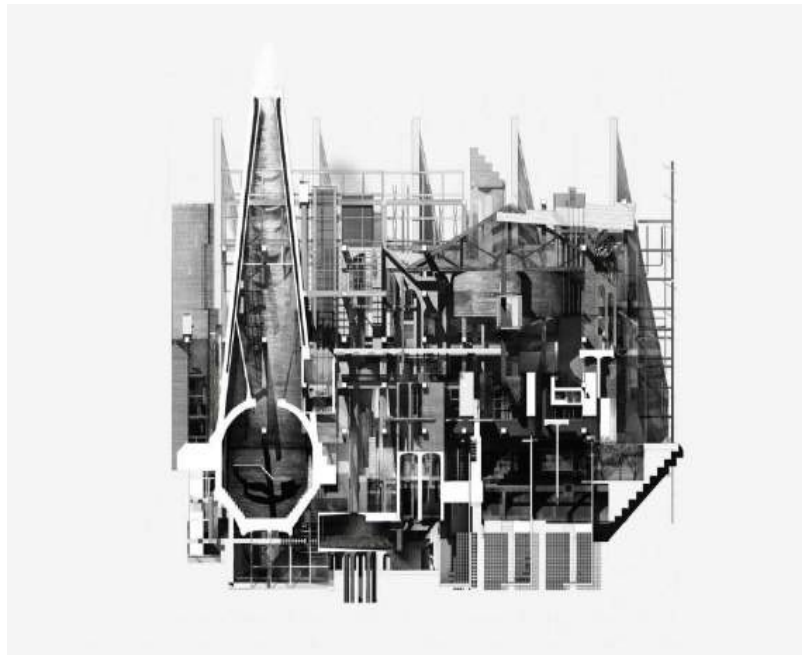
According to David Schreiner, it is necessary for city dwellers to think about conventional burials because it can become a luxury only available to the rich as urban congestion can reduce the space available for cemeteries. Cities and burial grounds are forced to adapt their relationship with each other along with emerging innovations in the handling of dead bodies so that everyone has access to a dignified burial. Therefore, the re-personification of the spatial issue of death highlights the emerging urban dynamics of specific spaces through their change, shrinking and even disappearance. The above condition is mainly detected in countries where cremation is not supported since residents pay for a burial place in cemeteries as if it were real property. So instead of growing, cemeteries simply expand. In addition, both incineration and conventional burial have some adverse environmental impacts, with the result that some cities are already implementing innovative landfill management strategies aimed at urban resilience (Schreiner 2014). More generally, innovative design approaches to burial sites are emerging through modern technology and architecture under the gaze of the continuous ecological needs of the space. Through these approaches, the study aims to examine the evolving role of cemeteries in urban settings, particularly through innovative burial practices that respond to space constraints and ecological concerns. It discusses alternative burial methods, such as vertical and underground cemeteries, and explores how these concepts integrate sustainability through bioclimatic design and biomass transformation. The focus on futuristic and eco-conscious burial solutions indicates a clear objective of assessing how urban deathscapes can adapt to both environmental needs and technological advancements



Picture 5: The Hanging Cemetery of Baghdad, Naja & deOstos, 2004

For example, in 2004 the architectural team Naja & de Ostos designed a fantasy scenario that investigates issues of extreme burial conditions. Their proposal refers to the design of a cemetery space, which hovers over the city of Baghdad and was shaped as a clash between the 'aggressive West' and 'stereotypes of the East' (Jackowski 2007) (Picture 5). The cemetery in question is clearly influenced by Takis Zeneto's *Electronic Urbanism and Utopia* and features a flying city with multiple levels and locations for various civic functions suspended by a system of cables. The "*hanging cemetery of Baghdad*" is a utopian challenge and not an actual cemetery with a specific spatial articulation as it projects multiple spiritual symbolisms. The example of student Steve Baumann's "*New London Necropolis*", (Picture 6) which deals with the interdependence between the natural and the artificial, follows a similar logic. He proposes a hybrid necropolis which, beyond the burial ground, includes the city's power

station and a market in the form of a garden through a romantic, functional and rationalist logic (Baumann 2011). A different approach to changing the shape of burial spaces is the vertical cemeteries that respond to the continuous urbanization of the space through the bioclimatic design, minimizing urban land use while maintaining burial traditions. Notable implemented examples are the “*Yarkon Cemetery*” on the outskirts of Tel Aviv in Israel (Picture 7) and the “*Memorial Necrópole Ecumênica*” in Santos, Brazil (Picture 8). An innovative example of a vertical cemetery is the “*Moksha Tower*” in Mumbai India (Picture 9), designed by architects Yalin Fu and Ishuan Lin. It is a burial skyscraper that serves the needs of different religions with the aim of freeing up space for the creation of green oases in the city. The tower above has been designed with bioclimatic criteria such as its green facade, exploring high-density, multi-level burial solutions. The green facades and natural ventilation systems in this cemetery reduce urban heat islands while minimizing land use, making it a sustainable burial solution.



Picture 6: New London Necropolis, Steve Baumann, 2011.



Picture 7: Yarkon cemetery, Tel Aviv

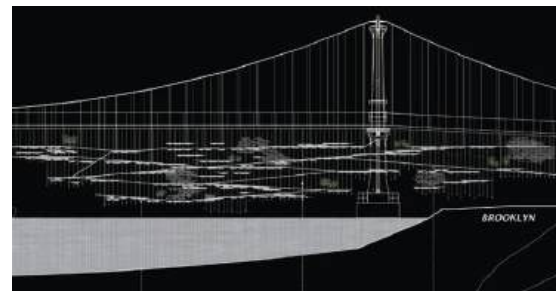
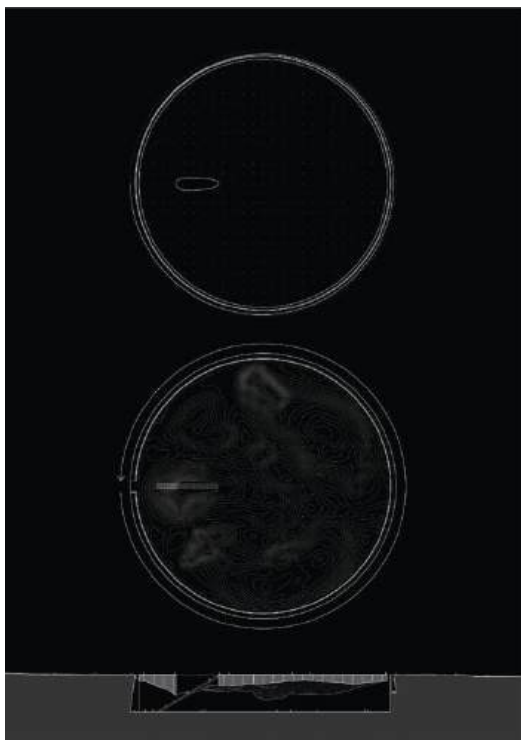
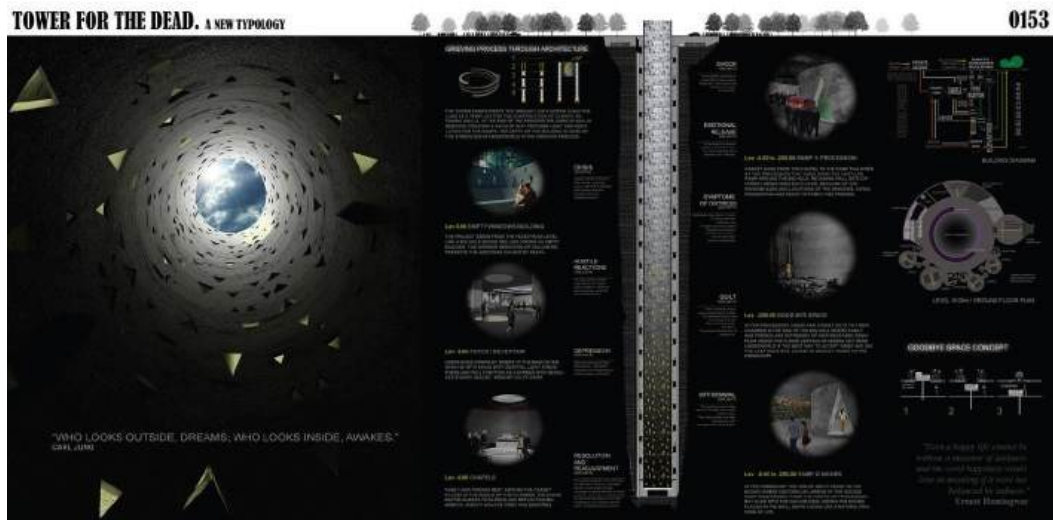


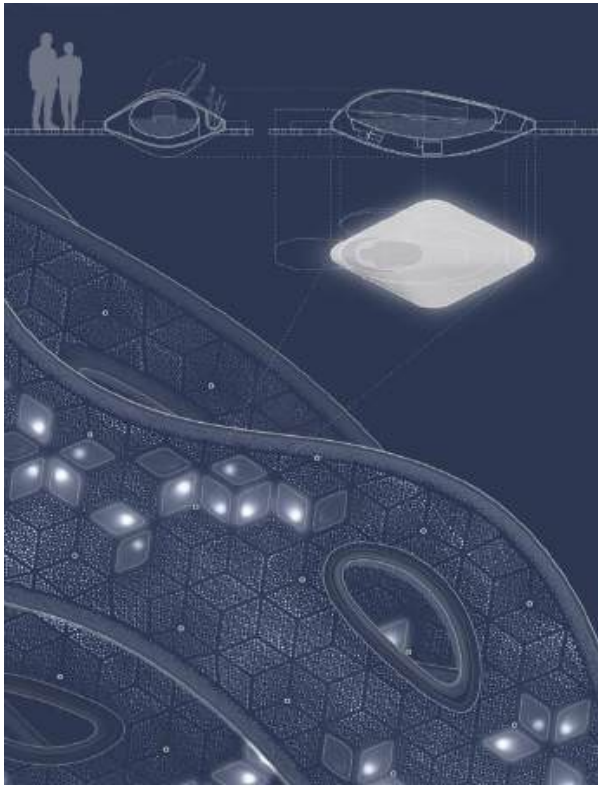
Picture 8: Memorial Necrópole Ecumênica, Brazil



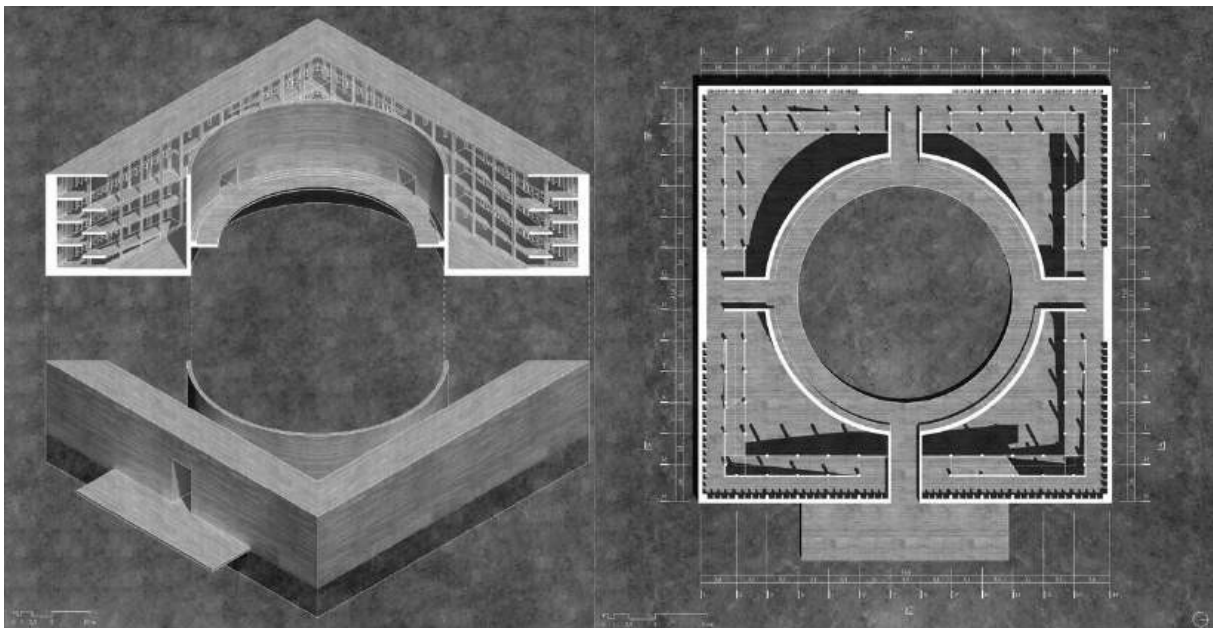
Picture 9: Moksha Tower, Yalin Fu - Ishuan Lin, India Picture 10: The Last House, Kim Chanjoong, Seoul.

Also, a proposal that caused multiple discussions on the emerging issues of urban burial is the proposal of architect Chan Joong Kim named *“The Last House”* (Picture 10). Its design is rendered as a floating vertical organic tower that through modern technology and ecology produces clean energy for the city of Seoul. A similar approach that responds to urban sprawl is the undergrounding of burial grounds. The proposal by architects López Balan, Elsa Mendoza Andrés and Moisés Adrián Hernández García called *“Tower for the dead”* (Picture 11) aims to address the increased construction of Mexico City by designing an underground burial site. It is designed with curved walls and ramps while natural light diffuses into the space through a large opening (Schreiner 2014). Another example that responds to urban overpopulation and the loss of green land is the *Inverse Void* by architects Alison Huo, Ben Chang and Shengjie Qiu. *“Inverse Void”* (Picture 12) composes an existential journey through a ramp into an underground space leaving the agricultural space untouched on the surface. The main purpose of the project is to preserve green land on the surface while leveraging thermal insulation properties for energy conservation. In the logic of changing the location of the burial grounds, one also comes across some examples that go beyond the above locations. The innovative *“Light after life”* (Picture 14) proposal treats human bodies as temporary forms but also as sources of biomass in a continuous energy cycle. Therefore, a park-like riverway consisting of burial properties that can be reused through aerobic biotransformation is proposed. The decomposition of the bodies produces biogas which takes the form of light on the river public road. A similar approach is recommended by *“Constellation Park”* (Picture 13) from the DeathLab 8 team. This particular ecological proposal uses biomass management in an identical way by composing a hanging cemetery park with multiple levels under the Manhattan Bridge (Distasio 2016). The above examples respond to the change of position and form of cemeteries in an attempt to find new spatial solutions. Also responding to the search for new spatial solutions are proposals for floating and underwater cemeteries such as Fabián Leiva's *“Floating cemetery”* (Picture 15), David Mutschlechner's *“Circle”* (Picture 17), Coen van Bergeijk's *“Sunken Bodies”* (Picture 16), and Espacio Cero's *“Columbarium in a pond”* (Picture 18). These ideas align with futuristic urban planning, where burial infrastructure adapts to extreme environmental conditions. Such projects indicate a shift toward non-terrestrial, self-sustaining burial ecosystems, which may involve solar energy integration, hydroponic systems, or climate-controlled environments.

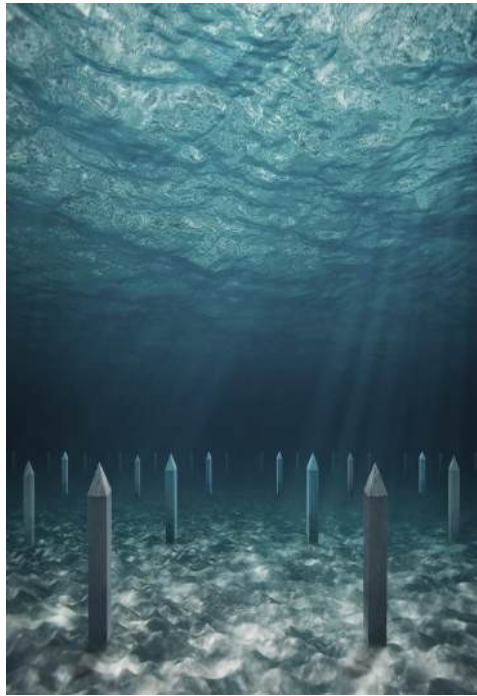




Picture 14: Light After Life.



Picture 15: Floating cemetery, Fabián Leiva.



Picture 16: *Sunken Bodies*, Coen van Bergeijk. An underwater cemetery for refugees lost in the Mediterranean sea.



Picture 17: *Circle*, David Mutschlechner. Paradise ceases to be heavenly but underwater. Proposal for an underwater and simultaneously digital burial space for all religions.



Picture 18: *Columbarium in a pond*, Espacio Cero.

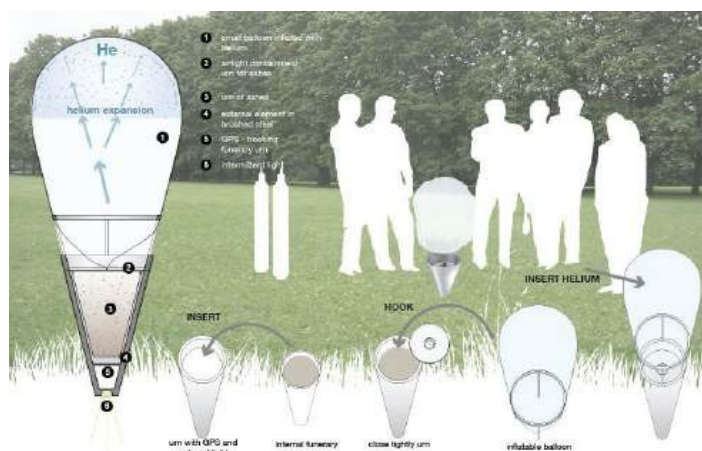
In terms of Schreiner's view of shrinking future cemeteries there are numerous examples designed with urban resilience and ecology in mind. The international ideas competition entitled “*Studies in Death*” organized by the Lien Foundation and Designboom highlighted hundreds of contemporary approaches to conventional burials. The above approaches are related to the ecological management of human remains and new mortality enclosures as the competition committee called them. A number of proposals have emerged such as biodegradable capsules and special cast molds which help transform dead bodies through natural processes (Picture 19,20,21), . In the same problematic, the *Dying* competition from the organization NON ARCHITECTURE COMPETITIONS highlighted interesting proposals for the dematerialization of burial grounds within a wider framework of ecological management. Notable proposals are “*We are the nature*” (Picture 22), by Jakub Kozaczenco, Apolonia Slesarow and Konrad Zaborski and “*The story of atoms*” (Picture 23), by Manuel Alejandro Suárez Hernández and Haruka Tonegawa. The above proposals are aimed at the development of green spaces in the urban fabric of the city through the composting of dead bodies. Nevertheless, the scenario of the disappearance of burial grounds from the urban periphery is related to utopian digital solutions (Picture 25), . Through the above competition, ideas were submitted for digital cemeteries through applications and even proposals for space cemeteries outside the earth (Picture 24),. These proposals in digital memorialization and space burials challenge traditional notions of death, replacing physical spaces with virtual archives or extraterrestrial remains disposal. This aligns with futuristic trends in data-driven mourning, where AI, augmented reality, and blockchain are used to create interactive digital legacies rather than traditional graveyards. Such approaches reduce land usage, eliminate environmental impacts, and integrate energy-efficient data storage solutions for memorial preservation.



Picture 19: Emergence, Enzo Pascual, Pierre Rivière. Coffin in the form of a biodegradable capsule.



Picture 20: Shell, studio Thesia Progetti, Sara Bertoldo. The ash is placed inside the artificial biodegradable pebble which is left on the bottom of the sea.



Picture 21: Soul in the sky, Diego Stefani, Diego Oberti, Matteo Pettinaroli, Danilo Sironi. Capsule that receives the ash and transports it to the heavens as an artificial star.



Picture 22: Wearethenature, Jakub Kozaczenco, Apolonia Slesarow & Hernández &



Picture 23: The story of atoms. Alejandro Suárez



Picture 24: Lunar Grave Capsules – The Moon is the Graveyard,



Picture 25: Necrogram. Eirini Bravou. Andy Pham.

It is clear from the above that, the research explicitly connects burial innovations to energy generation through examples such as “*Light after Life*” (Picture 14), and “*Constellation Park*” (Picture 13), which propose using decomposed human remains to generate biogas and illuminate public spaces. Additionally, The Last House and other projects integrate ecological principles into burial site designs, highlighting the potential for cemeteries to serve as active components of urban energy ecosystems. These proposals shift the perception of cemeteries from passive spaces to dynamic, multifunctional infrastructures. The above research also provides valuable insights into how cemeteries can be reimaged as part of urban systems rather than isolated spaces. It suggests vertical, underground, floating, and even digital cemeteries as potential solutions to space limitations, emphasizing the importance of ecological burial practices. By referencing architectural competitions and real-world examples, it encourages urban planners to incorporate cemeteries into city resilience strategies, turning them into functional green spaces or even sources of renewable energy. The discussion on integrating burial sites with public infrastructure, such as power stations and parks, reinforces the idea that cemeteries can coexist with and even contribute to urban sustainability goals.

The findings and proposed innovations in the text were derived through a combination of architectural research, urban studies, ecological considerations, and speculative design proposals. The conceptualization of these innovations is based on the following methodologies. More specifically the study examines the rapid urbanization and land scarcity in cities, which necessitate alternative burial methods. Findings are based on spatial analysis of cemeteries and their transformation due to population density, environmental concerns, and economic factors. Concepts like vertical cemeteries, underground burial sites, and digital cemeteries were derived from real-world constraints and experimental design competitions. In addition, based on the Environmental and Technological Research, climate change and burial sustainability drive the need for eco-friendly solutions. Innovations such as human composting (Recompose) and biogas generation from burial sites (Light After Life,

Constellation Park) stem from scientific advancements in bio-decomposition and renewable energy. Moreover, concepts of bioclimatic skyscrapers and burial towers, such as Moksha Tower in Mumbai, were inspired by urban resilience frameworks and biomimetic design principles.

As analyzed above, the research project draws from landscape urbanism (Corner, 2006) and eco-urbanism to conceptualize cemeteries as adaptive ecosystems rather than static spaces. Utopian architectural proposals, such as “*the floating Baghdad cemetery*” (Picture 5), (Naja & de Ostos) and the “*Inverse Void*” (Picture 12), underground necropolis, use speculative design to rethink death spaces in futuristic urban settings. Findings also emerged from the economic pressures of burial plots, particularly in cities where burial sites are treated as real estate assets. Innovations like digital cemeteries and space burials are responses to shifting cultural perceptions of death and memorialization. The study highlights that new technologies, for example AI-driven mourning spaces, could replace physical cemeteries, changing the relationship between cities and the deceased. It is also highly recommended that the study presents biogas production from decomposing human remains as a viable energy source. Projects like “*Light After Life*” (Picture 14), and “*Constellation Park*” (Picture 13), propose biomass transformation, where human remains contribute to renewable energy systems by generating biogas for urban lighting and infrastructure. This aligns with futuristic energy concepts such as circular economies, where waste (in this case, human bodies) is repurposed for urban sustainability.

From the above examples, the effort to find new handling strategies for cemeteries under the gaze of new possibilities of destigmatizing mourning in modern societies can be understood. In this context, the emerging urban dynamics of the cemetery may shift to scientific fields that go beyond their functional dimension. The proposed innovations were conceptualized by analyzing urban and environmental constraints (spatial limitations, pollution, burial costs) adopting scientific and technological advancements (biodegradable burial pods, biogas extraction, underground and vertical cemeteries, exploring speculative architectural proposals (floating, underground, or energy- generating cemeteries) and considering socio-cultural and economic shifts (digital cemeteries, space burials, and changing attitudes toward mourning). Analyzing the urban resilience, that refers to a city’s ability to adapt to environmental, social, and economic challenges, including population growth, climate change, and land scarcity, the need of spatial transformation of burial grounds to address these issues, emerges.

3. Conclusions

In conclusion, this research highlights the evolving relationship between death, burial practices, and the urban environment, demonstrating how cemeteries have transformed from central elements of city life into peripheral and often neglected spaces. Historically, cemeteries were integral to the spatial organization of urban areas, serving not only as places of mourning but also as social and cultural landmarks. However, as societies progressed and industrialization took hold, death became increasingly concealed, shifting from a visible and communal event to an isolated and private experience. This transformation has had a direct impact on the way burial sites are designed and integrated into the urban fabric.

The study emphasizes that modern urban challenges—such as rapid population growth, land scarcity, and environmental concerns—necessitate a reconsideration of burial practices. Traditional methods, including in-ground burials and cremation, are increasingly being questioned due to their spatial and ecological impact. As a response, innovative approaches have emerged, including vertical cemeteries, underground burial spaces, and digital memorialization, which seek to address these pressing concerns. Furthermore, technological

advancements have introduced eco-friendly alternatives such as human composting, biogas generation, and burial designs that incorporate bioclimatic principles to reduce the environmental footprint of cemeteries.

Another critical aspect of this research is the reimagining of cemeteries as active components of urban life rather than static and forgotten spaces. By integrating burial grounds with public infrastructure, green spaces, and renewable energy systems, cemeteries can be repurposed to serve not only as places of remembrance but also as contributors to urban sustainability. This shift in perception challenges the traditional notion of cemeteries as solely places for the dead and instead positions them as dynamic, multifunctional spaces that can coexist with the city and provide environmental benefits.

Ultimately, this study underscores the necessity of redefining cemeteries in light of contemporary urban and ecological challenges. Rather than allowing these spaces to remain detached and obsolete, cities have the opportunity to reintegrate burial grounds into the urban landscape through innovative design and sustainable practices. By doing so, cemeteries can continue to serve their symbolic and cultural roles while adapting to the needs of modern society, ensuring that they remain relevant and functional within the continuously evolving urban condition.

References

- Ariès Phillipe, *The Hour of our Death. The classic History of Western Attitudes Toward Death Over the Last One Thousand Years*, translated by Helen Weaver, Vintage Books. A Division of Random House, New York 2008.
- Ariès Phillipe, *Western attitudes towards death: From the Middle Ages to the Present*, translated by Patricia M. Ranum, 1974.
- Ariès Phillipe, *Δοκίμια για το θάνατο στη Δύση (Essais sur l'histoire de la mort en Occident)*, translated by Lampsa K., Glaros publications, Athens 1988.
- Ariès Phillipe, *Ο άνθρωπος ενώπιον του θανάτου – Ο εξαγριωμένος θάνατος II*, translated by Theodosia Nikolaidis, Estia Bookstore publications, Athens 1999.
- Corner James, *Terra Fluxus - Waldheim, Charles, Landscape Urban-ism Reader*, New York: Princeton Architectural Press.
- Doron, Gil, '...those marvellous empty zones at the edge of the cities', στο *Heterotopia and the City: Public Space in a Postcivil Society*, Michael Deheane & Lieven De Cauter, Routledge 2008.
- Eleventh Rose, *The New Urban Cemetery The future of burial might take us from cradle to compost*, September 2014.
- Foucault Michel, *Discipline and Punish: The birth of the Prison*, translated by Alan Sheridan, Pantheon Books, 1977.
- Foucault Michel, *Για την υπεράσπιση της κοινωνίας*, translated by Titika Dimitroulia, Psychogios publications, Athens 2002.
- Griot Christophe, *Vers Une nouvelle nature στο: Institute for Landscape Architecture, Swiss Federal Institute of Technology, ETH Zurich, (ed.). Landscape Architecture in Mutation*. Zurich: gta Verlag, 2005.
- Jackowski Nannette, *The Hanging Cemetery of Baghdad (RIEAeuropa Concepts Series)*, Springer, 2007.
- Koumariou Maria, *Η αντίληψη του θανάτου μέσα από μία σημειολογική και ανθρωπολογική προσέγγιση του αστικού νεκροταφειακού χώρου*, School of Architecture, National Technical University of Athens, Athens 2007.
- Mumford Lewis, *The city in History*, Harcourt, ed. Brace & World, New York 1961

Schreiner David, Rethinking Urban Cemeteries, <https://www.100resilientcities.org/rethinking-urban-cemeteries/>, October 2014.

Tony Walter, Sociologists Never Die: British Sociologists and Death, in David Clark ed., *The Sociology of Death*, Oxford 1993.

Worpole Ken, *Last landscapes – The architecture of the cemetery in the West*, Reaktion Books Ltd., 2003.

Makrynioti Dimitra, *Περί θανάτου - Η πολιτική διαχείριση της θνητότητας*, μτφ. Κώστας Αθανασίου, Εκδόσεις νήσος, Athens 2008.