SACRED GROVES
IN BURIAL GROUNDS

Creating neighborhood cemeteries in the local parks of Arlington, Virginia.
Sacred Groves in Burial Grounds
Creating neighborhood cemeteries in the local parks of Arlington, Virginia.

Bowen Geng

Thesis submitted to the faculty of the Virginia Polytechnic Institute and State University in Partial fulfillment of the requirements for the degree of Master of Landscape Architecture in School of Architecture + Design at WAAC

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ABSTRACT

The thesis starts with the study of a Miao village in China, which is known as the center of the Miao culture. In Miao settlement landscape history, there is one feature that can be found in many cultures. The Fengshui Lin, also known as the Sacred Grove, protects the village. The ancient songs and tales of Miao show that the Fengshui Lin can be seen as the spirits of the ancestors (Wang, X. 2015). Since ancient times, Miao people have a tradition of respect for nature, and Fengshui Lin is the most important landscape element for them. It is not only part of the natural flexible border, but also associated with many social activities.

Sacred groves are created and evolved through human acts and the long span of human history (Jackson J. B. 1980). They play an important role in many different cultures around the world. Sacred groves may reflect the culture of society as settings for specific functions, or serve as objects of worship for people to purify their souls and refresh their spirits.

In burial grounds, there also are sacred groves which could be a place for praying and commemorating. Since sacred groves are seen as spirits of life, it is necessary to think about the relationship between sacred groves and burial grounds.

The thesis focuses on the issue of what is sacred? How to make a grove sacred or create a sacred grove in burial grounds? What kind of scenario for the design? With the inspiration of the Fengshui Lin in Miao village, the project aims to create a sacred space with trees for people who lost their family or friends in local communities. My thesis addressed these questions through a design project for sacred groves in the local parks of Arlington, Virginia. With design criteria derived from case studies and literature review, my goal is to create neighborhood cemeteries in the local parks to bring people closer to life as well as death and to let people get the experience of mortality.
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GENERAL AUDIENCE ABSTRACT

In many ancient societies, sacred groves were an essential aspect of life. In some cases, these groves encompass a large territory; in other cases they may be a few trees. These groves originated in the time following the introduction of agriculture. When societies evolving, sacred groves became not a piece of nature, but an institution that depending on custom, agriculture, and even the cycles of life.

Sacred groves are a legacy for everyone. These sacred groves may reflect the culture of society, they are not merely symbols but dynamic and complex landscapes created as settings for specific functions. These sacred groves serve not only as totems of worship, but as moments or places where people purify their souls.

Sacred groves surrounding or covering burial grounds have existed widely throughout the world (Tuan, Y. 1977). In many burial sites, sacred groves dominate the landscape. They serve the spiritual needs of the living as well as keep alive memories of the dead.

This thesis will discuss the method to make a grove sacred and develop a landscape to provide an opportunity for people to get a sense of their life and culture. The concept is to reinstate the connection between burial grounds and neighborhoods by creating neighborhood cemeteries in the local parks of Arlington, Virginia. Through thoughtful site selection and design, sacred groves can hold precious information about the history of communities for generations.
Introduction

In general, sacred groves are some specific kinds of trees that are of special religious importance to a particular culture. The significance of sacred groves, which are important features of the vernacular landscape, varies in different societies and cultures.

In China, it is thought that these groves originated in the time following the introduction of agriculture. Forests were pushed back to make way for fields, while in certain areas, trees were planted in special places, usually dedicated to a God figure or the related village deities.

The existence of sacred groves in America have nothing to do with fashion or literary allusion, and they were usually the sites of a revival, a memorial or a camp meeting, and possibly of a church as well (J. B. Jackson 1980). They were, and still are, important events in much of rural America, attracting hundreds, even thousands, of people, and often lasting several days.
A sacred grove and sacred woods are groves or woodlands of specific kinds of trees which have a religious meaning to a particular culture. In America, the grove was usually the site of a revival or a camp meeting, and possibly of a church as well. They could be NATURAL or PLANTED.

A Grove is an area dominated by any species of trees, with different tree density, tree height and ecological function.
Defending the safety of all villagers, and representing the traditional beliefs of Miao people.

Improving visitor circulation and rehabilitating surrounding habitats.

The worship of the god of heaven and praying for good harvest.

Reflecting absence.

Sacred Groves

Places

Activities

Garden

Praying

Burial Sites

Commemoration

Place of Commemoration

Tree Planting

Place of Worship

Social Activities with Scenic Experience

Abode of Deities

Mountain Peaks

Miao Village Temple of Heaven

911 Memorial

Yosemite

Sacred Groves

Garden

Praying

Burial Sites

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Burial History in America

Native American Burial Customs

They use trees, scaffolds, canoes, and boxes on stilts, which decayed over time, to practiced above-ground burials.

Colonial and Early American Burial Customs

Buried the dead in churchyards.

Churches were located far apart from communities, and transportation was difficult then. People took the form of family cemeteries on the plantation grounds.

Cemeteries were built on a high, well-drained point of land, and often were enclosed by a fence or wall.

The "Rural" Cemetery Movement

The "rural" cemetery movement was inspired by romantic perceptions of nature, art, national identity, and the melancholy theme of death.

America’s "rural" cemeteries typically were established around elevated view sites at the city outskirts.

In the late 19th century, landscape design and city planning merged in the work of Frederick Law Olmsted, with the rules of natural beauty and economy.

Cemeteries became part of urban parks to see "the City Beautiful". Hilly, wooded sites were enhanced by grading, selective thinning of trees, and massing of plant materials which directed views opening onto broad vistas.

Nowadays

People often do not care about how their death affects the land.

Half a billion people are going to die in the next decade, and every year, tens of millions of the 7.4 billion people on Earth will die. It seems obviously impossible to go on and on covering the land with graves.

Sacred Groves in Burial Grounds

Sacred Grove

To Live and Die Among Trees

“Trees are significant in burial grounds with many of the world’s mythologies and religions, and have been given deep and sacred meanings throughout the ages.

We, observing the growth and death of trees, and the annual death and revival of their foliage, have often seen them as powerful symbols of growth, death and rebirth. Evergreen trees, which largely stay green throughout these cycles, are sometimes considered symbols of the eternal, immortality or fertility.”
With increasing population, it seems not possible to go on and on covering the land with graves or memorials. According to CNN, half a billion people are going to die in the next decade. Every year, tens of millions of the 7.4 billion people on Earth will die. Some will be cremated, and millions will be buried in the ground, accompanied by pounds of steel, wood and toxic embalming fluid. People often do not care about how our death would affect the land where we live.

The thesis explores the cemeteries in the Washington Metropolitan Area to find where to house the dead and how to house the dead.
In America, historic events affect their creation, the span of time in which they evolved, their ceremonial functions, their aesthetic values, the reasons for the location and orientation of the cemeteries, and the underlying meaning of their embellishments.

There are only 2 cemeteries in Arlington county. One is the Arlington National Military Cemetery, which is almost filled to capacity. And the other is Columbia Gardens Cemetery set down in late 19th century. While due to population density map, it is necessary to have more cemeteries for this area.
Area Study in Arlington

Land use

Population Density in Arlington
Area Study in Arlington

Forts in Arlington

Thinking of historic sites with old trees, there are forts on the high land, along with the Potomac River. These historic forts often have old mounds and old groves. Three forts are found interesting, Fort Ethan Allen Park, Fort C.F. Smith Park, and Fort Scott Park. All of them are preserved well, and now served as parks for the community.

Within 10 minute drive from forts to the nearby churches and schools, they could serve five communities each.
Site Conditions & Analysis

1. Fort Ethan Allen Park

Fort Ethan Allen Park is located on the high land in the northern Arlington. It was an earthenwork fortification that the Union Army built in 1861 on the property of Gilbert Vanderwerken, as part of the Civil War defenses of Washington.
Tree Canopy

Historic trees on the old earthwork

Existing Conditions

Earthwork

Sports fields

Topography
Fort C.F. Smith Park was acquired by Arlington County Government in 1994. Originally unspoiled forest along the Potomac Palisades, the 19-acre park has evolved over time to include the buildings, forest, meadow, gardens and earth work ruins seen today.

The Park is located at the juncture between the boundaries of the Piedmont and Coastal Plain, and animals and plants increase the diversity of wildlife overall. The park holds a variety of habitats, including both meadow and woodland, and each habitat supports its own unique communities of plants and animals.
3. Fort Scott Park

The fort was one of the ring of Union Army fortifications that the Union Army constructed as part of the Civil War defenses of Washington. It was one of 33 forts on the Virginia side of the Potomac River that made up a defense line for the national capital city. An historic marker and a small remnant of the fort are the only evidence of the site.

This 12-acre park lined with nature trails and paths. It has a picnic area with a shelter, a playground, baseball/softball fields (permit takes priority), lighted tennis courts, pickleball court, practice wall and a lighted basketball court.
Site Comparison

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Site Discussion

Arlington has a population of almost 200,000 with slow and steady growth, and it is nationally recognized for the quality and diversity of its public space system. In 2003, the county was selected by Sports Illustrated and the National Recreation and Park Association as the sports town for the commonwealth of Virginia.

Arlington’s goal is to provide as many recreation facilities as possible for community use. The public spaces and recreation needs are highly concentrated during the lunch time period and after work hours. People prefer to spend time in places conveniently located near their home or jobs.

In general, people desire a multi-use sports facility, and they want natural resources protected and expanded with access to trails and the Potomac river.

In addition, the city needs more trees. Arlington county’s tree canopy is highly valued by both the citizens and county staff. From overall 2007 tree canopy study, it has an increase of 1% with very few parks showing significant reductions in tree canopy since 2011. And now, the county is challenged by its increasing population and the development.

1. Fort Ethan Allen Park

Arlington, one of the smallest and most densely populated counties in the US, suffers from a shortage of natural areas and lands for passive outdoor recreation. There is opportunity to design for low impact recreational activities such as walking and reading.

2. Fort C.F. Smith Park

Arlington contains a wealth of natural habitats. Its mature woodlands, meadows, stream valleys and backyards host more than 200 species of birds, numerous mammals, and a variety of plant communities. However, residents are separated from the wildlife by the shore of the river, and have no chance to get access to the river.

3. Fort Scott Park

With the steep slope between the park land and neighborhood, people have limited opportunity to get access to the forest. There is only a trail to get to the edge of it. Though the park is designed for high impact recreational activities, it lacks passive park lands and natural areas for people to enjoy this forest.
General Concept

"No people who turn their backs on death can be alive. The presence of the dead among the living will be a daily fact in any society which encourages its people to live." (Silverstein, S, 1977)

Huge cemetaries on the outskirts of the city keep facts of death away from us. It becomes hard to be aware of what is death. Lacking of mortality and death, we might be left depressed and less alive (Alexander, C, 1980).

Ceremonies and its functional power for the living have been undermined. It is essential to reinstate the connection between burial grounds and communities. It is a chance for the community of family and friends left alive to reconcile themselves to the facts of death and loss.

Also it seems a good opportunity to bring burial into these historic parks. In this way, it would let people get the sense of mortality, bring us closer to the deep understanding of life as well as death. With these experiences, people would live through them fully and go on.

Overall Strategy

Burial Strategy

Conventional Burial
Fully body with caskets is environmentally unfriendly because it requires large space, and the embalming fluid is toxic to the environment.

Tree Burial
Cremation ashes would be put directly on the surface of the land or in a container buried near a tree. It has lower impact to the environment. Since 2013, there have been more cremations than conventional burials. However, the ashes are found harmful when placed in or around plants. For long, cremation ashes were placed around plants as an act of returning their loved one to nature. However, ashes will not decompose when buried into ground. They hurt the surrounding plants because of the high PH level and toxic level of sodium.

The way to solve this problem is to blend the ashes with some organic mixture to make cremated remains into nutrient. The other way is to put ashes in urns. urn graves require less space and are easily maintained.
How to design a sacred grove or make a grove sacred in different context?

Both space and time were to be carefully structured.

In Greece
The place is in antiquity first, then came the deity.

In America
The action and human came first, then it sanctified a place.

Burial grounds have often been seen as sacred, especially by those whose ancestors, family and friends are buried there. The project is trying to use trees to form ordered space and create the moment for people to commemorate and pray.
1. Fort Ethan Allen Park

To improving environmental health and meet recreational need, introducing new trees, providing shades of the grove for people to enjoy passive outdoor recreation, such as sitting and reading.

Setting urn graves and flat headstones between trees.

New trees connecting with the old grove, making a wildlife corridor for animals.

Benches set for viewing to the field. Urn graves set in between the trees rings.

Photo by Geng
Setting double tree rings at the center of the lawn, interacting with the old mounds and trees. Forming a structured round shape of the space.

2. Fort C.F. Smith Park

In many woodlands, trees are planted in stands of trees. Later the weaker trees are felled to give space to the stronger ones. In this area, the quality of the woods is not well. There are many fallen and dead trees.

To improve environmental health and help the forest, using fallen tree logs to form a structured edge of terraces.
Sapling new trees, when trees grow, transplanting some of them to lower terraces.
Giving enough space for trees to grow up healthy and strongly.

Keeping existing healthy trees, and planting new trees in order along with the contours.
Setting graves on terraces.

Existing tree

New tree

Upright headstone

Log
By cutting and filling, regrade the topography to form the terraces.

The tree log would contain soil and water for sapling new trees.
Regrading the land to form the structured terraces for both trees and people.

3. Fort Scott Park

Only one trail at the top of the parkland.

Steep slopes make it difficult to walk.
Inspired by contour farming, creating a new contour trail for neighbors to get access to the forest to enjoy passive recreations, such as walking and viewing to the community.

To minimize the impact and respect wildlife, introduce new understory trees in order along the contour trail. Setting urn graves along the trail, and the cremated remains could spread thinly on the slope.
All sites are designed to provide recreational activities, preserve landscapes, conserve wildlife habitats and minimize environmental impact.
1. Fort Ethan Allen Park
Master Plan

1. Stage I
   Double tree rings: Dawn Redwood

2. Stage II
   Single tree rings: Ginkgo

3. Stage III
   Double tree rings: Shadbush

Design Elements:
- Trees: Dawn redwood, Ginkgo, Shadbush
- Paving: Stone steps, Gravel
- Grave marker: Headstones flush with the ground
- Seating: Benches
Limited trees and lack of passive outdoor activities.

Double tree ring interacts with the existing trees, connecting the old grove on the mounds.

Regrade the contours to form the round shape space.

Flat headstones lie in between the tree rings. The inner loop is stone paving for visitors to experience the cycle of life.
As more and more people are buried here, there would be an expansion for the site. Stage I is double tree rings, stage II is a single tree ring, and stage III is small tree rings.

Regrade the stage III to create a terrace for visitors to experience a different sacred space.

All three stages have common features:
- Stone paving at inner loop
- Flat headstones along the circle
- Benches at the edge of the ring

Final stage.
In the first stage, a seating wall is created by regrading the contours. The stone steps are a way for people to experience the cycle of life. Under the tree canopy, there is forest floor where headstones are flush with the ground. In this way, it minimizes the impact to the existing landscape. The double rings provide a strong peaceful atmosphere for visitors to have the sacred moment here.
In the final stage, two rings are designed for more capacity. Although all three stages have common features, each of them has different arrangement. People could have various feelings of sacredness.
Sections
1. First Ring

Dawn Redwood
Sections
2. Second Ring

Ginkgo
Perspective

Existing trees:
Black gum
Southern red oak
Ash
American elm
Black cherry
Sugar maple
Red cedar
Black locust

Sacred groves:
Dawn redwood
Ginkgo
Shadbush
2. Fort C.F. Smith Park
Master Plan

1. Existing gravel pathway
2. Entrance to the site
3. Edge of the site
4. Sacred grove with burials
5. Stairs to lower terraces
6. Fence
7. Existing forest
8. National park area
9. G. W. Parkway

Design Elements:
- Trees: Evergreen trees, Tulip tree
- Paving: Forest floor, Gravel
- Grave marker: Upright headstones
- Seating: Benches
Low quality of the forest.

Regrade the land to create terraces.

Remove unhealthy trees, and keep good ones.

Sapling new small trees on the high terrace.
When trees grow up, transplant some of them to lower terraces. Graves are set along the contours after transplanting.

By transplanting trees to lower terraces, there would be enough space for other trees to grow tall and large.

Use logs to form the structured edges of terraces.

The pattern of graves is followed the contour lines.
The white pines create a boundary between the parkland and burial ground. Tulip trees are easy to transplant, and with little attention and care, they could provide natural beauty for a long time and high quality of the shade. The tall trunks will allow visitors to have a wide viewshed down to the river. Under the tree canopy, headstones stand in order.

There are benches at the edge of terraces towards the river. Visitors could not only have a moment of memory, but a sense of nature. We all came from nature, in the end we will return to nature.
To memorialize with ashes, planting trees is a powerful way to remember that special bond.

A tree, a grove can be a living memorial, a way to express love that has not ended with death.

For many people, trees complete the life cycle. Returning their loved ones to nature allows their loved one to live on. Also, groves allow families and friends a place to visit and remember.

This site will be the place where the ashes become one with a new green life. When nourished by ashes, the tree becomes a living symbol of a special life.
Sections
Cross section
Sections
Detail section
Existing trees:
- Black cherry
- Black locust
- Box elder
- Red cedar

Sacred groves:
- Tulip tree
3. Fort Scott Park
Master Plan

1. Existing trail
2. Existing woods
3. Designed contour trail
4. Understory structure: Sacred grove
5. Pathway to neighborhoods

Design Elements:
- Trees: Understory trees
- Paving: Forest floor, Gravel
- Grave marker: Upright headstones
- Seating: Benches
No trails in the woodland.

To minimize the impact to the good quality of the woods, explore 10 ft contour lines and grade a little to form the trail.

The pattern of graves and benches is following the proposed trail.
Planting with native trees understory. Full shade trees on the both sides of the trail.

Part shade trees to enclose the trail, giving more secrecy.

Introducing tall part shade trees at the corner of the trail.
Wild flowers, ferns, shrubs, understory trees and canopy trees all make a rich woodland that is beautiful and biologically dynamic. Understory environments are often overlooked in landscapes, yet they provide a great opportunity to increase the diversity of woodland flora.

Many of trees are easy to grow and will thrive in shady locations in urban area. Also, plants could receive more direct and indirect sunlight than plants on north facing slopes. Adding multiple layers with trees is important. These layers not only provide habitats for birds, but make a beautiful landscape more than just planting the ground level.

The trail follows every 10 ft contour lines with sloping less than 5%. Dogwoods create a ceiling above the trail, and holly trees form the boundary between woodland and sacred space. Upright headstones and benches stand on the upper side of the trail.
Sections
Detail section

Canopy Tree Layer

Understory Layer
Perspective

Existing trees:
- Black oak
- American elm
- Hickory
- Chestnut oak
- Wisteria vine
- Sugar maple
- Black cherry
- Willow oak

Sacred groves:
- Full shade:
  - Dogwoods, Holly tree
- Partial shade:
  - Sugar maple, Beech tree
Conclusion

In the research part, the thesis is focused on how to understand sacredness. Mircea Eliade said a sacred space, whether grove or mountain or spring, becomes the focus of settlement and thus produces a community and a ritual based on territoriality. In some place, a sacred site which can be reached only by passing through a series of outer spaces keeps its secrecy. Since sacred groves can be found in many cultures and places, there is a great chance to create a sacred grove or make a grove sacred in Washington Metropolitan Area.

Trees are often related to life cycle and spirits. In terms of life cycle, death comes first. By studying burial customs and cemeteries in Washington DC, here are two major findings: Arlington only have two cemeteries with high dense of population, and large cemeteries locate outskirts of the city.

Arlington has a total population of 222,800 residents in 2017, and according to Virginia Department of Health, the amount of total death is about 1500 persons per year. Soon these two cemeteries will be filled up to its capacity, thus it is essential to expand burial grounds. Because modern cemeteries are away from us, it keeps us from making contact with the experience of death and mortality. The ceremony of death and its power for living have been overlooked. To bring burial grounds back to our community is important. The idea of the thesis project is to find historic parks in communities to reinstate the connection between burial grounds and neighborhoods.

According to CNN, 50.2% of Americans choose cremation in 2016. Since 2015, people choose cremation more than conventional burial for the first time. The report indicates 49.5% of Americans choose cremation compared with 45.4% selecting conventional burials. Conventional burial takes large space and is toxic to the environment, while cremation just needs a small space and has little impact to the environment. Cremation has become the new tradition. With cremation ashes, tree burial is a good way for landscapes.

All three sites are in different conditions. By analyzing sites, each of them has its own problems. Fort Ethan Allen Park has limited trees and lacks passive outdoor recreation. Fort C.F. Smith Park has low quality woods with many dead trees, and people could not get access to the woodland and have no passive outdoor recreations in Fort Scott Park. The concept is to preserve landscapes, conserve wildlife habitats, minimize environmental impact and provide recreational activities. In each site, the project aims to create unique moments and feelings in different contexts.

This thesis is not just a series of design projects, but a topic to let me think what is sacred, where and how could we design sacred groves in burial grounds. In general, structured space with trees and graves is the key to sacredness. Then, find the problems and opportunities of the site, and it will lead you a way to the answer.
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