REMOVAL AND CONNECTION: THE CASE FOR RESTORATIVE LANDSCAPES ON COLLEGE CAMPUSES

by

GARRISON TAYLOR

(Under the Direction of David Spooner)

ABSTRACT

College students' mental health and overall well-being is steadily declining, and institutions are struggling to meet the demand for mental health resources. Although research consistently shows the positive effect of nature on mental health and overall well-being, colleges do not seem to be prioritizing naturalistic, restorative space on campus. Using existing frameworks for designing restorative landscapes, this thesis examines the specific needs of college students and creates a new framework for campus restorative landscapes. The framework is refined through case studies and evaluated as a design tool through application by redesigning an existing campus landscape.

INDEX WORDS: attention restoration, nature, restorative landscapes, therapeutic landscapes, college students, higher education, mental health, campus design

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BFA, University of Georgia, 2017

A Thesis Submitted to the Graduate Faculty of The University of Georgia in Partial Fulfillment of the Requirements for the Degree

MASTER OF LANDSCAPE ARCHITECTURE

ATHENS, GEORGIA

2024

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May 2024

DEDICATION

For Tyler Elrod-- thank you for living life with me and letting me have two dogs when you didn't want any.

And for my family. Thank you to my parents for raising me to be the design nerd I am and setting an example of lifelong curiosity, exploration, experimentation, and learning. Thank you to my in-laws for letting me live in the guest room my first year. Thank you to all the Bates girls and Mom for always taking care of me. It's ok if you don't read this whole thing.

ACKNOWLEDGEMENTS

I would like to thank my major professor, David Spooner. Your support, patience, and belief in my abilities kept me going when I wasn't sure I could do it. Thank you to my committee chair, Katherine Melcher, one of the best teachers I have had the pleasure of learning with, as well as my committee members and mentors Kaitlin Messich and Kelsey Broich. I would also like to thank my boss and mentor Danny Bivins for his sage advice and realism, Clark Stancil for the tomatoes, and everyone at Carl Vinson Institute of Government.

Finally, I would like to thank my cohort. I feel so grateful to have gone back to school when I did. It is so rare to find a group of supportive, funny, and smart people that only want the best for each other, but we did it. Thank you for accepting the workload with me.

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INTRODUCTION

The dream of my life
Is to lie down by a slow river
And stare at the light in the trees–
To learn something by being nothing
A little while but the rich
Lens of attention.

Mary Oliver, "Entering the Kingdom"

1.1 Problem Statement

Young people today face significant threats to their mental health and overall wellbeing. As the climate crisis worsens, mass violence continues, and events like the COVID-19 pandemic become more common, their future becomes increasingly uncertain. Often away from home for the first time, college students are also navigating a new environment, new responsibilities, and challenging coursework. According to the 2022-2023 Healthy Minds Study (an organization that gathers data on college student mental health), 41% of students show signs of depression and 36% show signs of generalized anxiety (Eisenberg et al. 2023). The CDC reports that "nearly all indicators of poor mental health" in college-age people increased from 2011 to 2021 (Prevention 2023).

Many schools, including the University of Georgia (UGA), employ a variety of tools to ameliorate and treat their students' distress. The University Health Center at UGA has counselors, case managers, and psychiatrists, and students have free access to both teletherapy and meditation apps. However, colleges and universities across the country are reporting counseling center demand beyond their capacity to fulfill. Despite this increase in demand, there has not been a commensurate increase in funding, leaving many campus counselors with untenable caseloads— up to 300 students in some cases (Abrams 2022). Schools are beginning to turn to more creative and holistic approaches to evenly distribute the load and reach more students that may not seek help at a counseling center (Abrams 2022). These efforts include group counseling, wellness apps, and informal peer support groups that meet in public places on campus instead of a more clinical environment (Abrams 2022).

This thesis proposes that a designated restorative garden on campus could be a useful tool in the university's approach to student wellbeing. Restorative gardens can be any outdoor space that allows the user to reflect and relax. As we explore later in this work, natural settings have been found to be the most effective in terms of providing a restorative effect. Frederick Law Olmsted wrote that natural scenery "employs the mind without fatigue and yet exercises it; tranquilizes it and yet enlivens it; and thus, through the influence of the mind over the body, gives the effect of refreshing rest and reinvigoration to the whole system" (Olmsted 1880). In her book on the draining effect of social media, *How to do Nothing*, writer, artist, and teacher Jenny Odell wrote that access to parks and other natural places is vital because, "even if brief or momentary, these places and moments are retreats, like longer retreats, they affect the way we see everyday life when we do come back to it" (2019, 9). Odell explains this lasting change: "as

the perceptual details of our environment unfold in surprising ways, so too do our own intricacies and contradictions" (2019, 11).

Students spend much of their time focusing on tasks and studying, using what Rachel and Stephen Kaplan call "directed attention" (1998). Signs of fatigued attention include "lowered ability to concentrate and solve problems, heightened irritability, and a greater proneness to mistakes or accidents" (Herzog et al 1997, 165). To recover attentional ability, a specific kind of setting is required. The four features of this setting, as described by Kaplan and Kaplan (1998, 18-22,), are being away, extent, fascination, and compatibility (defined on pg. 14). As students learn about the world, they are also learning about themselves, and need time and space to reflect on and accept their own intricacies and contradictions. Using Rachel and Stephen Kaplan's Attention Restoration Theory, as well as design guidelines proposed by Clare Cooper Marcus and Claire Latané, this thesis will develop a framework for creating a restorative garden on UGA's campus to help students recover attentional ability, reflect, and experience everyday awe.

1.2 Research Questions

This thesis aims to explore the creation of a framework for designing restorative landscapes on college campuses. The following questions will be addressed:

1. What frameworks exist for designing restorative landscapes? What design elements are considered restorative?
    a. How can those design frameworks be modified to suit college students' needs?
2. How do we design a landscape on a college campus to promote restoration?

1.3 Methodology and Chapter Overview

This thesis examines existing design frameworks for creating restorative landscapes against the needs of students on a college campus. Frameworks are organized along with campus specific considerations to develop a new restorative landscape and applied to redesign an existing site on The University of Georgia campus.

Chapter 1: Introduction identifies the problem statement and theories used to investigate it. The chapter also states the questions that guide the research and design.

Chapter 2: Background provides a general overview of the source of student stress and the struggles faced by college students today. The chapter briefly reviews the history of nature and outdoor spaces as restorative. It also provides a summary of existing literature surrounding the restorative qualities of nature and everyday awe, particularly as it applies to college students.

Chapter 3: Frameworks introduces the three existing frameworks for designing restorative landscapes that will be used as a basis for creating a new framework for designing a restorative landscape on a college campus. The chapter also includes the new framework as a method of evaluation.

Chapter 4: Case Studies explores existing restorative landscapes on college campuses as well as exceptional examples from non-campus contexts. The sites are evaluated using the new framework.

Chapter 5: Site and Context gives background on UGA's campus and identifies the site to which the framework will be applied.

Chapter 6: Design discusses the design process of creating two potential concepts for the application site at the new I-STEM Complex. It also evaluates the final concepts using the campus-specific framework.

Chapter 7: Discussion and Conclusion provides a summary of the research and reviews the results of the design concept evaluations. This chapter also explores the further uses of the new campus-specific framework and discusses limitations of this project and potential avenues for future research.

CHAPTER 2

BACKGROUND

2.1 Student Stress

Despite the popular depiction of the college years as one long freewheeling party, many students experience a great deal of stress and anxiety. In her book *How to Do Nothing*, Bay Area writer and teacher Jenny Odell says even her relatively privileged students at Stanford "aren't workaholics for the sake of it; the workaholism is driven by a very real fear of very real consequences that exist both within and outside of school" (2019, 88). A survey conducted by Inside Higher Ed found that the most common concern for college students was "keeping up with coursework", followed by "pressure to do well", "concerns about money", "balancing school and work," "concerns about finding a job," "climate change news," and "international conflicts" (2022). Some of their anxieties may be resolved at some point, but most of these concerns are ongoing, lifelong fears that everyone experiences. Students today also have the underlying stress of monitoring and managing a personal brand on social media, "constantly checking its performance like one checks a stock" (Odell 2019, 15), a development whose long-term effects we are still working to understand.

Students at UGA have a variety of mental health and wellbeing resources available. However, the majority of these resources are either online or at the health center, which is located at the far south end of campus. Student Care and Outreach provides case managers who

can help struggling students figure out what resources they need and how to get them. Counseling and Psychiatric Services, a division of the University Health Center, provides individual and group counseling, psychiatry, and assistance finding off-campus care. The University Health Center also provides links to several apps like Headspace that are designed to help teach users mindfulness and coping skills– part of an initiative by The University System of Georgia to provide access to teletherapy and increase student access to fast mental health care.

Perhaps most pertinent to this thesis is a new initiative, begun in 2022, of supplying "wellbeing hubs" throughout campus. These hubs are rooms "serving students and employees as they strive for optimal health," according to UGA's Student Well-being Resources webpage, and are advertised as being useful for prayer, meditation, yoga, teletherapy, or nursing/lactation. Most of these hubs are rooms that are private enough for the suggested activities, but one is merely a corner of a larger room, and one has several stations for multiple visitors and is also used as a conference room. For students who are on campus all day, especially those who commute from other cities, a private place to spend a quiet moment is valuable. Although there are only five such spaces so far (all indoors), students and

Figure 1: The well-being hub in Owens Library. Image: UGA

employees can propose new wellbeing hubs through the Well-being Resources webpage. There is no data available about the student use of the well-being hubs, but anecdotal evidence from the staff at Owens Library in the Jackson Street building, the home of one such space (figure 1), seems to show daily use. It has been so successful that they have added a second, more private space in a storage area that students can reserve for activities like telehealth appointments.

2.2 Nature as Restorative

Nobody is going to argue that gardens are a replacement for therapy or medication. However, as a piece of a larger system, a comfortable and inviting place to spend time outdoors is extremely valuable. Therapeutic or restorative landscape experiences "can feature both feelings of removal from, and connection to, the everyday" (Edwards 2022, 1). While these two feelings may seem contradictory, they often exist together. For example, eating lunch in a park may help an office worker feel more removed from their job, while at the same time creating a feeling of connection to the surrounding world through observing natural processes or people-watching. A restorative landscape is any outdoor space that someone can use to reflect or relax (Cooper Marcus and Sachs 2014). Some examples of intentionally designed restorative landscapes are hospital gardens, churchyard labyrinths, Zen gardens, and reflexology walking paths. A person looking for restoration can find it almost anywhere—a spiderweb on an office window, or weeds swaying in the breeze on the side of the highway. The landscapes discussed here are designed to create a restorative environment that requires little effort on the part of the visitor to access that restoration, and clearly communicate the purpose of the space. Some gardens include signage describing recommended activities, while others rely on cues like labyrinths and fountains to signal the intended use.

The terms for these types of spaces vary, and many are used interchangeably. In *Therapeutic Landscapes*, Cooper Marcus and Sachs use the terms healing garden, therapeutic garden, and restorative garden to mean the same thing. They write that this type of landscape is meant to be used in any way the visitor wants, and "therapeutic benefits are derived from just being *in* the garden"(2014, 3). In some cases, healing gardens may be attached to a memorial or other symbolic space. Another term for these spaces is "sensory garden." Sensory gardens are therapeutic gardens, but there is extra emphasis placed on the five senses of sight, touch, smell, taste, and sound through the inclusion of herbs or soft plants like lamb's ear (Fischer and Haag 2022). Although there are subtly different connotations for different terms, they all refer to a more generalized space for open-ended activity, whose main benefit comes from simply visiting. For clarity, this work will use the term "restorative landscape" where possible.

Other, similar landscapes may include what Cooper Marcus and Sachs call enabling gardens, in which visitors participate in activities led by a professional like a horticultural therapist, occupational therapist, or physical therapist (2014, 3). These gardens are also sometimes called therapeutic gardens, but they are meant to be more hands-on and may not have much room for other activities.

Rachel and Stephen Kaplan, a husband-and-wife research team at the University of Michigan popularized the theory of attention restoration. They were environmental psychologists interested in the two kinds of attention described by William James in the 1890's: directed attention and involuntary attention (which they refer to as "fascination" to avoid confusion). Directed attention is used when we intentionally concentrate on something, like understanding a complex concept or filling out tax forms correctly. Fascination occurs when we find it hard to resist noticing or paying attention to something (Kaplan, Kaplan, and Ryan 1998, 18). Watching

a spider build a web, or a waterfall, or even a horror movie can elicit fascination. Fascination can also arise from processes like thinking or walking (Kaplan, Kaplan, and Ryan 1998, 20). The Kaplans studied the effects of a wilderness program over nine years beginning in the 1970s. Consistently, their subjects reported feeling more peaceful and clear-headed during and after the trips. The Kaplans determined that this feeling of restoration was not from the activities undertaken in the natural environment but from simply *being* in the natural environment at all (Louv 2006, 102). In other words, the ambient fascinating-ness of their surroundings alone helped people feel higher overall well-being.

The consequences of depleted or fatigued attention will sound familiar to anyone who has ever had a job or gone to school. Stephen Kaplan even uses college students as an example of attention fatigue, "the typical state of mind of students at the end of a semester" (1995, 170). He explains that the reason we are so fatigued by paying attention is because we are actively using inhibition to control distraction. Even a task we enjoy, like painting or reading, can lead to attention fatigue if it goes on too long. Someone in the grips of attention fatigue may struggle with distraction, planning, impulsivity, and irritability (Kaplan 1995, 172). In the 1985 film *A Room with a View*, a character remarks, "Mother doesn't like me playing Beethoven. She says I'm peevish afterwards," a fabulous example of the effects of attention fatigue even from an enjoyable activity.

The way to restore that fatigued attention and get yourself back to a planning, concentrating, action-inhibiting machine, according to the Kaplans, is fascination. Especially soft fascination, often found in nature, and which allows for reflection– something that further improves the restorative experience (Kaplan 1995). Reflection is important because it allows people to consider their experiences and learn from them. Again, commentary from Jenny Odell,

who writes, “as the perceptual details of our environment unfold in surprising ways, so too do our own intricacies and contradictions” (2019, 11). Reflection can help us learn about ourselves, the world, and come to terms with difficult truths. Caregivers of AIDS patients were found to be more highly functioning when they had time for reflection and contemplation about life and death, especially in a natural setting (Canin 1992). One could argue that young people today have a similar need for this type of reflection. Nearly a million Americans died of COVID in just the first two years of the pandemic, according to the latest data from the CDC. Americans turned to nature in droves during this time, according to research. In one 2020 study, 69% of people surveyed had “greatly increased their visitation rate to natural areas and urban forests” (Grima et al 2020). The same study found that 25.8% of the respondents had never or rarely visited these natural areas before the pandemic. The reason people were out there? They were looking for a way to relieve some stress and feel restored.

2.3 Restorative Landscapes in History

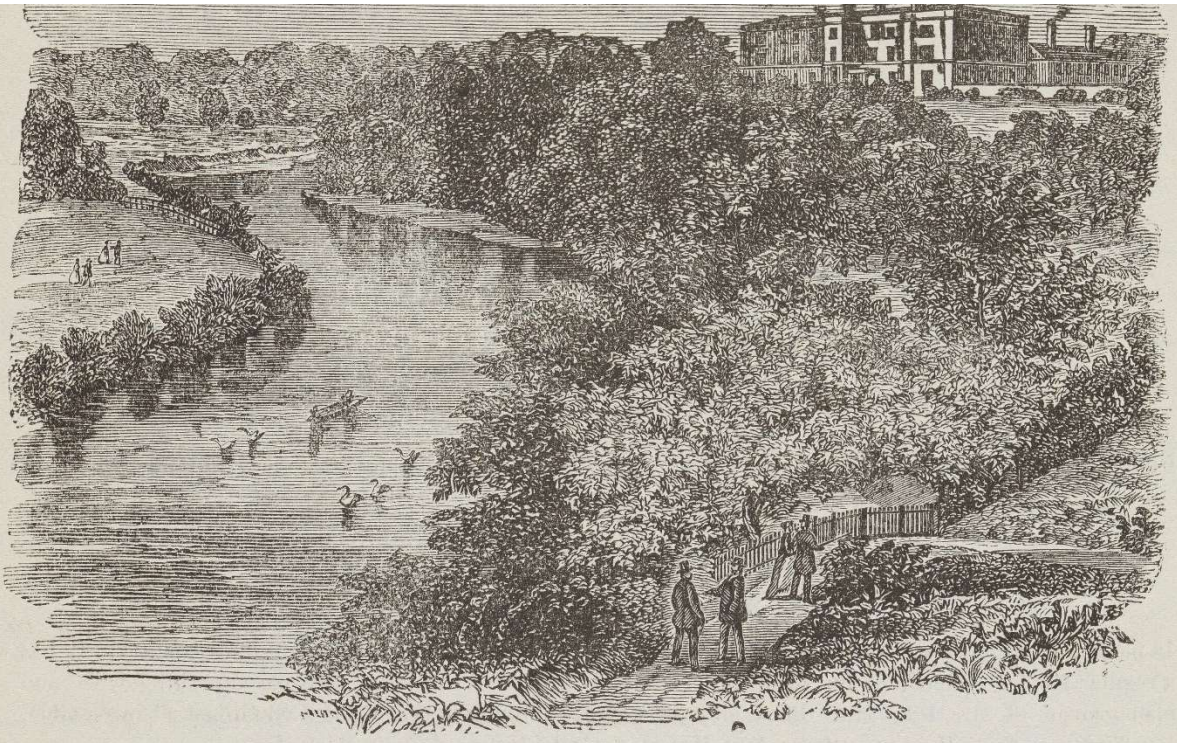
People have been using outdoor spaces for their restorative effects for a very long time, probably longer than we have records of it. Some of the earliest Western examples come from ancient Greece, where places of healing incorporated natural springs and groves of trees, as far back as 500 BCE. Early Islamic gardens (figure 2) included fruit trees, water, and shaded pavilions—things that would have been deeply

Figure 2: Old Sufi Laments his Lost Youth, Persian, ca. 1597. This book illustration shows the lush plantings and fountains typical of Islamic gardens. Image via Jstor.

restorative for those living in a desert environment. These gardens were often enclosed and private, intended to create a space for rest and contemplation (Brookes 1987, 19-23). In Chinese garden tradition going back some two thousand years, water represents "the contemplative ideal" and the "nurturing of nature," teaching humans how to still our minds. Throughout the world, Buddhist sacred spaces take the form of groves of trees, similar to the one in which the Buddha reached Enlightenment (Campbell 2016.) Classical Japanese gardens (figure 3) were created in part to "reinvigorate the human spirit" and provide a respite from the surrounding city (Slawson and Zōen 1987, 126). In Medieval Europe, nobility had enclosed gardens away from the clamoring public (Campbell 2016), and hospitals were part of monasteries, and specifically included an enclosed garden to stimulate the senses and promote healing. In the nineteenth century, with the rise of Romanticism, natural settings were not only in style but thought to be the only way for people with mental illness to recover– away from the city (figure 4). Florence Nightingale, an early proponent of hand-washing, also endorsed access to a window with a view for the convalescent, at the very least (Cooper Marcus and Sachs 2014, 8). This was also the time that Frederick Law Olmsted was building naturalistic parks in cities, as a place for the poor to get away from the cramped and dirty tenements. In his 1873 "Instructions to the Keepers of the

Figure 3: Daisen-in; Great Hermit's Temple. Built 1509-1515, restored 1961. Photo by Reuben Rainey via Jstor. This garden in Kyoto, Japan shows the small scale and idealized, but naturalistic character of gardens of this era.

Central Park," he wrote, "It must be remembered that a large majority of all the inhabitants of the city are women and children, sickly and aged or weakly, nervous and delicate persons, and that the Park is adapted to benefit none so much as those who have barely the courage, strength and nerve required for a visit to it" (444-465). If we put aside his characterization of women as similar to children, he's actually making a pretty progressive argument for inclusive design for people of all abilities. He also wrote that park designers should strive to make movement easier for the elderly and ill, and from that, "the enjoyment of every man will be increased by it, though he may not know just how."



DINSDALE PARK, NEAR DARLINGTON.

As a residence for Mental Invalids, Dinsdale Park Retreat was successfully carried on for fourteen years by Dr. MACKINTOSH, and in 1869 Dr. EASTWOOD succeeded him in the charge of the establishment. The house has always maintained a high character, and is eminently well adapted for patients of the higher and middle classes. Its southern aspect and elevated situation on the Durham side of the River Tees, overlooking a large portion of the North Riding of Yorkshire and the varied scenery of the Cleveland Hills, render it at once a healthy and cheerful residence. Attached to the mansion are more than one hundred acres of land, of which a considerable portion is laid out in gardens and pleasure-grounds. The neighbourhood has become proverbial for its beauty and salubrity. The house is well arranged for both ladies and gentlemen, and is peculiarly adapted to the requirements of invalids of the highest classes, having suites of apartments for special use if desired.

Carriage exercise, Archery, Bowls, Croquet, Billiards, Bagatelle, Daily and other Newspapers, Periodicals, Books, and Musical Instruments are provided, whilst amusement and occupation are obtained on the farm and in the gardens.

Dr. EASTWOOD has had great experience in the treatment of mental disorders and in the care of the insane. Dr. and Mrs. EASTWOOD endeavour to promote, in every possible way, the early recovery of the patients, and to give them a comfortable and cheerful home.

For forms of admission and for further particulars, application may be made to Dr. EASTWOOD, Dinsdale Park, Darlington.

Figure 4: Advertising leaflet for Dinsdale Park, ca. 1870. Descriptions of the natural surroundings and gardens make up a large portion of this advertisement for a mental institution. Image via Jstor.

2.4 Existing Research on College Students and Nature

Despite the long history of gardens used in healing, the restorative effects of the outdoors were not extensively studied until surprisingly recently. Roger Ulrich, an environmental psychologist, began studying the effects of nature on well-being in the late 1970's, including the 1979 study "Visual Landscapes and Psychological Well-Being." This study found that stressed college students viewing images of nature experienced a reduction in negative emotions like fear and sadness, as well as increased "positive affect" like affection, friendliness, and elation. The group that viewed scenes of urban landscapes experienced the opposite effect of increased anger, fear, and sadness. In the introduction of this paper, Ulrich even writes "Given the persistence and importance of the 'nature tranquility hypothesis', it is surprising that this notion has remained virtually untested by researchers," and stated that this study would be a first step in remedying that gap (Ulrich 1979). In 1984 Ulrich published "View through a Window May Influence Recovery from Surgery," a study that still has influence today (Cooper Marcus and Sachs 2014, 14). This study found that of people recovery from gall bladder surgery, those who had a view of trees from their room had shorter stays in the hospital than those with a view of a brick wall. The implication for hospitals and their administrators is that providing access to nature is good for both patients and the bottom line (R.S. Ulrich 1984). Rachel and Stephen Kaplan were also pioneering Attention Restoration theory at this time, based on the nineteenth-century observations of William James (S. Kaplan 1995). After these early researchers broke the dam in the 70's and 80's, a flood of research on this subject broke forth. There is now abundant literature on the positive effects of nature on nearly every group of people. Here we will focus on studies specific to college students and their restorative experiences in nature, followed by some

relevant research involving people of other ages. Thankfully, there is extensive work on this subject, probably due to the availability of college students in the places where studies happen.

As it turns out, spending time outdoors in nature is beneficial to college students regardless of the activity they are doing outside. When college students were asked to engage in 20 minutes of mindfulness meditation or a control task, either outdoors or in a quiet room indoors, the researchers found that "meditation did not enhance the mood benefits of being outdoors… results indicate that being outside has restorative effects regardless of whether one is meditating" (Ibes and Forestell 2022, 99-106). The study goes on to note that this effect was magnified for students who reported not spending much time outdoors, and the indoor tasks actually resulted in increased mood disturbance for some students. This appears to hold true for individuals suffering from major depression disorder as well. At the University of Michigan, participants who met the diagnostic criteria for major depressive disorder were asked to take a walk in either the campus arboretum or through downtown Ann Arbor. The study found that even when thinking about a painful memory, the arboretum walks were beneficial– even more beneficial than they were for a non-depressed group (Berman et al. 2012). When college students were asked to rate the perceived restorative effectiveness of three settings, "ordinary natural settings" were rated most highly, followed by sport settings and then everyday urban settings as the lowest (Herzog et al. 1997). College students also reported improved well-being after being asked to seek out "daily doses" of nature (Anderson et al. 2018). Beyond improving well-being and mood, college students also performed better on tasks testing cognition and executive function after a walk in an arboretum than they did after a walk in an urban setting (Berman, Jonides, and Kaplan 2008).

College students also need somewhere to socialize, and outdoor space on campus is the perfect place—it's free, and they are probably already there. According to the American College Health Association (ACHA), undergraduates spend far more time informally "socializing with friends" than they do attending events together (2024). One study found that teens aged 14 to 18 preferred outdoor environments where they could "be with their friends," "be with nature," and "look out and not be seen" (Owens 1988, 17). Another study showed that college students primarily use campus green space to meet friends, relax during breaks, and spend time in nature (Foellmer, Kistemann, and Anthonj 2021, 6). For college students, being in nature and being with friends go hand in hand.

There is also a wealth of studies on the benefits of nature involving non-college-age people. After all, many students are older than the typical range of 18 to 22, and university employees are also important users of campus space. When asked to have a "nature experience" of ten minutes or more three times a week for eight weeks, urban dwelling adults were shown to have a significant drop in the stress hormone cortisol (Hunter et al. 2019). In another study, university employees were asked to take a walk on their lunch break in either winter or summer, or complete a relaxation video indoors. The walk was found to be more relaxing and mentally restorative no matter the season, but was especially effective for improving energy in the winter (Jonsen et al. 2022). In a study based on data from the British Household Panel Survey (similar to the US Census) and land use data, people living in urban areas with more green space generally report lower mental distress and higher well-being (White et al. 2013).

One of the theories as to why nature "works" to improve well-being is awe. Awe is an experience that most people can say they have had but can be difficult to define. Michelle Shiota, a researcher of awe, describes it as when "we feel the presence of something greater than the

self, but also part of it– identity expanding to include connection with humanity and living beings in the self-concept" (2021, 87). Dacher Keltner, another researcher who studies awe alongside Shiota, describes it as "the feeling of being in the presence of something vast that transcends your understanding of the world" (2023, 7). This could be something as big as seeing the Grand Canyon or the view from the top of a mountain, or as small as light filtering through leaves or watching a bird build a nest. Keltner also studied the effects of going on an "awe walk" with neuroscientist Virginia Sturm and found that the participants felt awe more often the longer they practiced it (2023, 104-105). This suggests that openness to awe is not an inherent trait, but something people can learn. Nature experiences are the most-used example when people are asked to describe a time they felt awe (Shiota et al. 2007), although it can be induced by any number of things, from music to acts of kindness. A recent study of undergraduate students found that "as students navigate the academic and social demands of a busy semester, daily doses of nature elicit awe and improve well-being, above and beyond the effects of other positive emotions" (Anderson et al. 2018, 1200). Awe can also alter our perception of time. In a recent study involving college students, researchers found that awe, more than happiness, led the participants to report that they felt that "time is more plentiful and expansive" (Rudd, Vohs, and Aacker 2012, 1132). The perception of not having enough time or having little time available has even been linked to depression symptoms (Roxburgh 2004), so it stands to reason that feeling like time is plentiful might help people feel better. The same study also found that experiencing awe led to reduced impatience, increased willingness to volunteer time, and in a survey of adults, higher life satisfaction (Rudd, Vohs, and Aacker 2012). Keltner and others advocate for cultivating small moments of awe whenever we can, enriching our lives and promoting well-being.

CHAPTER 3

FRAMEWORKS

How do we design a place on a college campus to elicit awe and promote restoration? We know that natural environments promote awe and improve well-being (Anderson et. At 2018). We know that it only takes twenty to thirty minutes in a natural environment to significantly reduce stress (Hunter et al. 2019). But how can an environment be designed for mental restoration? What design elements best promote mental wellness? And how can those design elements be tailored to college students' needs?

This chapter will examine the frameworks of principles and corresponding design elements recommended in three books: *With People in Mind* by Rachel Kaplan, Stephen Kaplan, and Robert L. Ryan (1998), *Therapeutic Landscapes* by Clare Cooper Marcus and Naomi Sachs (2014), and *Schools that Heal* (2021) by Claire Latané. Much of the literature on the design of restorative landscapes goes back to Rachel and Stephen Kaplan. The Kaplans were cited in nearly all the literature reviewed for Chapter 2. Their Attention Restoration Theory and *With People in Mind* have been hugely influential in design recommendations for restorative and therapeutic landscapes. Two books about such recommendations are *Therapeutic Landscapes* and *Schools that Heal*. Elements from all three existing frameworks will be evaluated for their

appropriateness on a college campus and combined into a new set of guidelines specific to the college experience.

Each text has a unique point of view and varying goals, although there is overlap in recommendations. By examining these three sets of guidelines against one another, a comprehensive framework can be built on these foundations: places for people (Kaplans and Ryan), places for k-12 students (Latané), and places for healing (Cooper Marcus and Sachs). College students are people in the world, but many are still teenagers, requiring the kinds of considerations necessary for developing brains. College students, like the population at large, experience hardships, illnesses, and struggles that can benefit from healing spaces.

The college experience has changed in recent years. Gone are the days of Animal House and dayslong parties. According to the American College Health Association (ACHA) National College Health Assessment Fall 2023 report (UGA was a member of ACHA as of December 31, 2024), over 90 percent of undergraduate students spend sixteen to twenty-five hours per week attending classes, discussion sections, and labs. About 80 percent of students spend at least six hours studying on top of that. Nearly 60 percent of students spend under five hours a week attending non-academic events with friends, and 20 percent responded that they spend zero hours a week attending the same. They do, however, still hang out—66 percent reported spending 1-10 hours a week "socializing with friends," and another 27 percent says they spend more than 10 hours hanging out every week. Over half of students reported spending zero hours per week volunteering, participating in religious or spiritual activities, or partying. Most students reported feeling nervous "some of the time" if not more often. According to the data, students are spending a lot of time on their academic pursuits, on campus, and choosing informal socializing

over scheduled events. College life is now mostly class and studying, as the job market becomes ever more competitive, and students are going to need places to mentally recover.

3.1 *With People in Mind*, Rachel and Stephen Kaplan

With People in Mind seeks to condense years of research into a concise summary of findings and design recommendations based on those findings. In the introduction, the authors write, "It is about the way the natural environment can foster well-being and can enhance people's ability to function effectively. The purpose of the book is to explore the design and management of nearby natural areas in ways that are beneficial for people and appreciated by them" (1998, 1). This focus on ordinary, accessible, undramatic outdoor spaces is important, especially in a part of the country where there is little spectacular wilderness of the kind often associated with transformative nature experiences. The Kaplans acknowledge that "nature" often means places that have been heavily altered by humans, and that those places are still important for our well-being.

The book is organized around common themes that may come up for any landscape designer, and sorted into patterns that might be used for resolving an issue or approaching a design. By using the findings gathered from their psychological studies, the Kaplans create an evidence-based argument for design elements that many of us would recognize as aesthetically pleasing. By breaking down the psychological process and reason that a curving path encourages exploration, designers can understand how to deploy that feature more effectively.

Of course, Rachel and Stephen Kaplan also coined the term "attention fatigue" and have done extensive research on what can help people recover. Attention fatigue, as mentioned earlier in this work, is defined by the Kaplans as what happens when we try to manage all the

information coming at us in our daily lives. We become irritable, impulsive, impatient, and have trouble focusing or learning new information (Kaplan and Kaplan 1998). In order to recover our ability to focus, we must give our brains a break. The Kaplans outline four criteria for a restorative setting: being away, extent, fascination, and compatibility.

Being away means that one must either physically or mentally remove themselves from whatever is causing the mental fatigue. Going on a walk around the building or eating lunch outside can be enough to experience "being away." Simply looking out a window can create the feeling of being away as it engages our imagination.

Extent refers to the feeling that an environment extends beyond what is immediately visible. A wooded park with winding trails may feel larger than another park of the same size with a grass lawn. The sense that there is more to explore helps create extent in the mind, something that the Kaplans emphasize as just as important as spatial extent.

Fascination, while slightly different from awe or wonder, creates a similar effect of absorption– we are drawn to something rather than actively trying to pay attention to it. People can be fascinated by things like watching Jeopardy or reading a mystery novel. Nature is also full of fascinating things like flowing water, plant structures, and animal behavior.

Finally, compatibility is perhaps the most difficult to define. The Kaplans write that in order to be restorative, an environment must be compatible with the desires of the individual wishing to use it. Trying to spend your lunch break in an otherwise restorative courtyard, but being interrupted by someone having a loud phone call, would be an incompatible environment. Natural environments are likely to be highly compatible for individuals seeking restoration.

The above descriptions serve as a background for the Kaplans' work on attention restoration. Chapter 5 of *With People in Mind* further explores the elements of restorative

environments, and organizes them into five patterns: quiet fascination; wandering in small spaces; separation from distraction; wood, stone, and old; and the view from the window. In table 1, these principles are shown with Kaplan-recommended design elements to achieve each.

Principle	**Design Element**
Quiet Fascination	Garden Bench near water Footbridge Tree framed in window
Wandering in Small Spaces	Sense that there is more than what meets the eye Stepping stone path Screening to divide space Circuitous paths Viewing points Can't see the whole space at once
Separation from Distraction	Enclosure Ground texture Limiting overhead space with tree canopy Vista and views
Wood, Stone, and Old	Natural materials that blend with setting Weathered stone and wood Show signs of age/use
View from the Window	Trees, natural processes Bird feeder Tree tops Can be ordinary, but should be more natural than urban.

Table 1: Kaplan, Kaplan, and Ryan Framework

3.2 *Therapeutic Landscapes*, Clare Cooper Marcus and Naomi A. Sachs

Cooper Marcus and Sachs' book focuses on restorative gardens in healthcare settings, but that doesn't mean the same principles don't apply on a college campus. The book is meant to be a guide for both the designers of restorative environments as well as the people and groups funding them. There are detailed instructions for selection of plants, materials, and dimensions for designers, as well as more general guidelines for funders and the interested public. Chapter 15 explores restorative gardens in public spaces, many of which are affiliated with or in close proximity to hospitals or other healthcare facilities. It also contains a short but comprehensive history of hospital and healing gardens, as well as an overview of the relevant research, making the case for evidence-based design. Cooper Marcus and Sachs also emphasize the importance of consulting research instead of relying on a designer's personal taste.

Cooper Marcus wrote a previous book with Marni Barnes, *Healing Gardens: Therapeutic Benefits and Design Recommendations* (1999). She has been studying the psychological effects of the built environment for over 50 years and has published four books and over 30 articles (Design 2023). Sachs is an assistant professor at the University of Maryland and Founding Director of the Therapeutic Landscapes network, as well as co-editor of the journal Health Environments Research & Design (Maryland 2023). The Therapeutic Landscapes Network is a nonprofit organization that aims to create a hub for information about therapeutic landscapes for designers, horticulturalists, and the general public (Network 2024).

Cooper Marcus and Sachs focus on healthcare environments, and as such, include many recommendations that would not be necessary in a college campus setting. Some guidelines meant to accommodate hospital patients may be omitted from the list. The more generalized guidelines below are pulled from Chapter 6 (2014, 56-58), where guidelines are listed that "apply

to *every* component of *all* outdoor spaces" (2014, 56) but are especially necessary in an environment meant to be restorative. See table 2.

Principles	**Design Elements**
Safety, Security, and Privacy	Sense of physical enclosure via fence or hedge Plantings near windows to avoid fishbowl effect
Accessibility	Adhere to at least minimum standards of the Americans with Disabilities Act Should go above and beyond requirements Adequate wayfinding Visual access
Physical and Emotional Comfort	Comfortable places to walk and sit Options of sun or shade Choice and a sense of control Interaction with plants Opportunities for social connection Clear entrance/ transition area
Positive Distraction	Bird feeders Opportunity to observe wildlife Garden should serve as a contrast to indoor setting
Engagement with Nature	Plantings Natural materials Nature sounds Presence of water
Maintenance and Aesthetics	Appears cared for Detailed maintenance plan
Sustainability	Low-impact development and maintenance Ecological storm water management

Table 2: Cooper Marcus and Sachs Framework

Cooper Marcus and Sachs go into minute detail, listing specific requirements and recommendations for various design elements depending on the intended user group. Due to their specificity and volume, these were not included.

3.3 *Schools That Heal*, Claire Latané

In this book, Latané aims to bring together designers and school administrators with research-backed strategies to support students "mentally, socially, physically, and academically" (2021, xvii). The stated audience for the book includes parents, students, teachers, administrators, and school designers. She is an assistant professor and chair of the Department of Landscape Architecture at California State Polytechnic University, Pomona, and the founder of the Collaborative for Healthy and Inclusive Learning Environments (Pomona 2024).

Latané's experience with her own children led her to research the effect of the built environment on students. After moving from a school in a green, walkable community in North Carolina to an underfunded, crowded school in Los Angeles, Latané noticed that her children, and their friends and classmates were experiencing emotional distress, bullying, and self-harm. Of course, these things can happen to anyone, anywhere, but the "hostile environments" of their schools and neighborhoods, devoid of parks, trees, and meaningful interactions with nature, did not help (2021, xvii).

Referencing the movement sparked by Roger Ulrich's 1984 study on hospital room views and patient outcomes to consider mental health when designing healthcare facilities, Latané notes, "There is no parallel initiative to design schools with mental health in mind" (2021, xviii). Elementary, middle, and high schools are struggling to support students with overburdened counselors and increasingly policed schools. The book makes her argument very clear, starting with a list of reasons why this topic is important, and explaining how a child's environment affects their mental health. The following chapters cover site design, communication strategies, and funding, creating a comprehensive guide that is as persuasive as it is informative.

While many parts of the book focus on elements and issues specific to primary and secondary schools, much of Latané's argument applies to a college campus. Both places are a part of the community and are used by more than just the students and staff. Especially at UGA, a huge school and campus set within a small city. Like primary and secondary students, college students spend most of their time at school. Although they have significantly more freedom, demanding schedules mean that some students barely leave campus. Many college students are also still teenagers– especially those who lost significant social development years to COVID (Breaux et al. 2023). The next few years will see entire undergraduate populations who spent most of middle or high school in remote learning.

The principles and design elements in table 3 were pulled from Chapter 3: Site Design Strategies to Support Mental Health, Safety, and Well-being (2021, 27-83). The chapter identifies three principles as essential to create a healing school environment: "Sense of Belonging," "Nature-filled Environments," and "Inspire Awe". Within each of those headings, the strategies (called design elements in table 3) are identified and explained. These strategies are organized in order of level of change needed to achieve them– shift in thinking, small-scale physical changes, and large-scale physical changes. Shifts in thinking include things like programming and administrative changes that don't require building or removing any part of the environment. Small-scale physical changes include putting up signs or maintenance changes. Large-scale physical changes usually involve renovation or construction of new areas.

Principles	Design Elements
Sense of Belonging	Welcoming entry and edges Clear wayfinding and logical space organization Accessible to all Calming, quiet, cozy spaces Places to sit, rest, swing, walk
Nature-Filled Environments	Design for health of all species Use natural materials Reveal natural processes Increase access to trees and nature Serve students, employees, and community Space for playing freely in nature Plan for the future
Inspire Awe	Attract wildlife Interactive space: allow for student involvement Music or windchimes Living mazes, framed views, ponds Ask students what inspires awe for them

Table 3: Latané's framework

3.4 Campus-Specific Framework

Many of the ideas and design elements were shared between the three frameworks. By combining duplicates, grouping similar elements, and removing items that were not appropriate for a college campus, the new framework (table 4) was formed. Four clear themes emerged, categorized as 1. Awe and Fascination, 2. Welcoming to All, 3. Aesthetics, and 4. Separation and Privacy.Taking a cue from Latané, the categories were divided into principles, the guiding values or concepts that a restorative environment requires. Of each category's principles, a few key principles were identified. These higher-priority principles are shown in bold in table 4. Each principle is then illustrated by the design elements column—these are examples of ways that the principles could be deployed in a design.

Figure 5: The framework-combining process.

The process employed to combine the frameworks was highly tactile. Each existing framework was printed out and assigned a color, cut up, and recombined with the others into groups of similar ideas or elements (figure 5). This process made clear what each framework prioritized and what each framework left out. Through combining, the new framework seeks to even out those differences and produce a more streamlined tool. Figure 6 shows how each framework fits into the new.

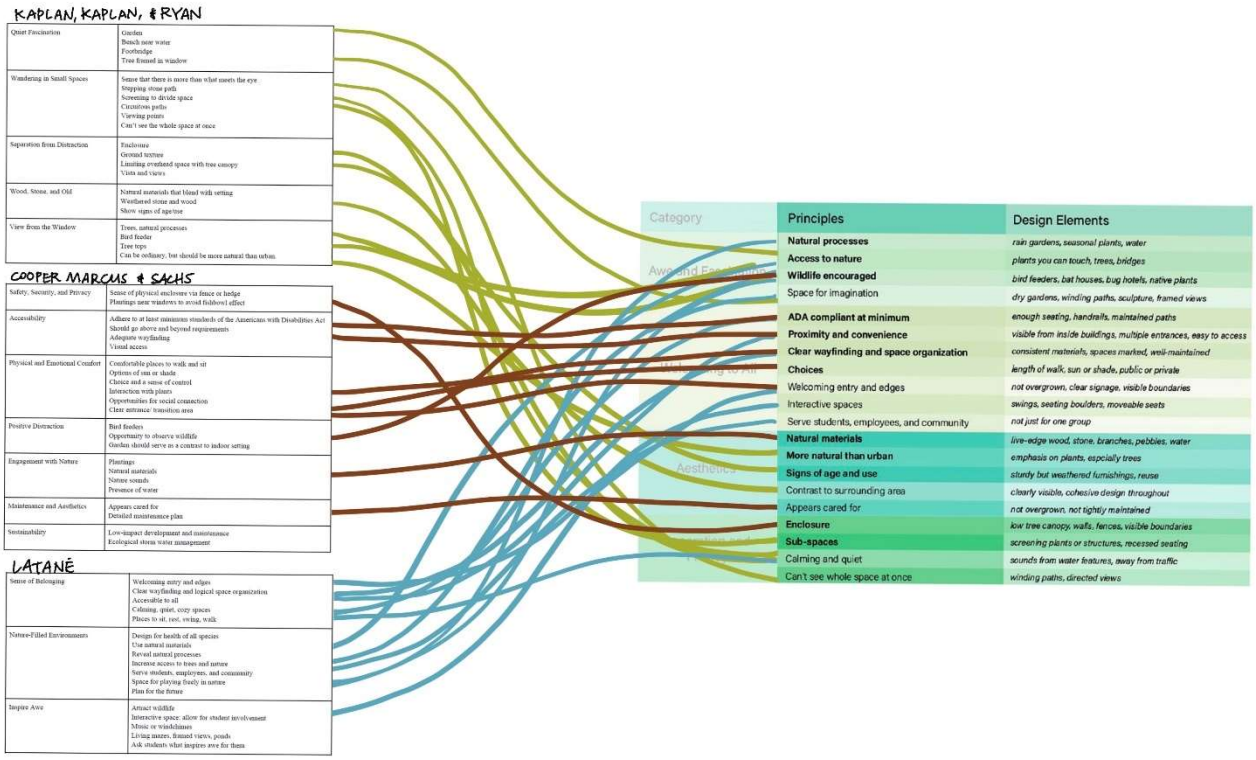


Figure 6: Making the Framework.

Many of the elements assigned to a certain group would also fit into others, as everything works in concert. One aspect that would be specific to college campus restorative gardens that was only briefly mentioned in the preceding frameworks (by Cooper Marcus and Sachs, in reference to hospital gardens) is proximity and convenience. Ibes and Forestell (2022) mention in their study that "given college students' busy schedules, they are in need of approaches for improving mental health that are accessible and convenient; that is, nearby and inexpensive opportunities that do not interfere with their more pressing academic responsibilities as well as social and extracurricular activities." Students need to be able to access the restorative qualities of nature in a way that is integrated with their schedule and doesn't require going out of their way. Part of this is people's inability to forecast, or predict, what a certain environment or situation will make them feel. In a study by Elizabeth Nisbet at Carleton College, this forecasting error led students to underestimate how much an outdoor walk would elevate their mood, and

overestimate how much an indoor walk would (Nisbet and Zelenski 2011). If students don't realize that a walk outside will help them feel better, they aren't going to seek it out. If an interesting garden, or stand of trees, or walking path just happens to be right outside their building, they might use it without even realizing that it also helps them focus, study, and feel better overall.

Category	Principles	Design Elements
Awe and Fascination	**Natural processes**	*rain gardens, seasonal plants, water*
	Access to nature	*plants you can touch, trees, bridges*
	Wildlife encouraged	*bird feeders, bat houses, bug hotels, native plants*
	Space for imagination	*dry gardens, winding paths, sculpture, framed views*
Welcoming to All	**ADA compliant at minimum**	*enough seating, handrails, maintained paths*
	Proximity and convenience	*visible from inside buildings, multiple entrances, easy to access*
	Clear wayfinding and space organization	*consistent materials, spaces marked, well-maintained*
	Choices	*length of walk, sun or shade, public or private*
	Welcoming entry and edges	*not overgrown, clear signage, visible boundaries*
	Interactive spaces	*swings, seating boulders, moveable seats*
	Serve students, employees, and community	*not just for one group*
Aesthetics	**Natural materials**	*live-edge wood, stone, branches, pebbles, water*
	More natural than urban	*emphasis on plants, espcially trees*
	Signs of age and use	*sturdy but weathered furnishings, reuse*
	Contrast to surrounding area	*clearly visible, cohesive design throughout*
	Appears cared for	*not overgrown, not tightly maintained*
Separation and Privacy	**Enclosure**	*low tree canopy, walls, fences, visible boundaries*
	Sub-spaces	*screening plants or structures, recessed seating*
	Calming and quiet	*sounds from water features, away from traffic*
	Can't see whole space at once	*winding paths, directed views*

Table 4: Campus-Specific Framework

This framework is meant to be a tool that is easy to use, and accessible to many groups of people, not just designers. As will be evident in the case studies, it is not difficult to achieve all the framework's principles in a single landscape. This framework, and this thesis, intends to demonstrate that restorative environments are not that difficult to create, and that small changes can make a big difference in the overall effect of a landscape.

To perform well on the framework evaluation, a campus landscape should include elements pertaining to as many as possible of the bolded principles from each category. These

principles appeared in all three existing frameworks and could be considered the minimum effort needed for a successful restorative landscape. Proximity and choice also cater to the needs of college students—convenience and socializing. However, merely checking off boxes does not necessarily make a landscape restorative. The framework should be used as a tool to inform a holistic approach, rather than a list of requirements. Because of this, there is no "magic number" of checked-off elements that would qualify a restorative landscape.

Category	Principles	Design Elements
Awe and Fascination	**Natural processes**	*rain gardens, seasonal plants, water*
	Access to nature	*plants you can touch, trees, bridges*
	Wildlife encouraged	*bird feeders, bat houses, bug hotels, native plants*
	Space for imagination	*dry gardens, winding paths, sculpture, framed views*

Table 5: Awe and Fascination

1. Awe and Fascination

The space should provide opportunities for fascination and the materials for an everyday awe experience. All three previous frameworks emphasized the importance of fascination and awe in a restorative environment. The Kaplans and Ryan refer to this phenomenon as "soft fascination" and recommend it for its ability to promote reflection and introspective thinking (1998, 69). Cooper Marcus and Sachs talk about "positive distraction," a similar mental state in which reduces rumination and lowers blood pressure, and which is reliably elicited by nature (2014, 27). Latané also recommends fascination through nature, but also adds another layer: environmental literacy. Latané argues that people (especially young people) need to get to know the outdoors and develop some knowledge of local plants and natural processes (2021). Aside from the immediate effects of awe and fascination, like reduced blood pressure and cortisol

(Keltner 2023), spending more time in and around nature helps people develop an ongoing relationship with the natural world, which has been found to improve overall wellbeing (Delbert et al. 2023).

Although awe and fascination may seem elusive and subjective, it is relatively simple to create the right conditions. The Kaplans and Ryan recommend including a bench near water, a footbridge over a stream, or even a view of a particularly nice tree from a window (1998, 69-70). Cooper Marcus and Sachs, in the context of healthcare facilities, recommend creating a space that contrasts with the hard, smooth interiors: at least 70 percent vegetation to 30 percent hardscape (2014, 27-28), as well as features like fountains and bird feeders (2014, 57). Latané's book encourages interaction with nature by planting trees that flower at different times of year, making stormwater management visible, and allowing the landscape to change over time instead of prioritizing sameness (2021, 57).

Category	Principles	Design Elements
Welcoming to All	**ADA compliant at minimum**	*enough seating, handrails, maintained paths*
	Proximity and convenience	*visible from inside buildings, multiple entrances, easy to access*
	Clear wayfinding and space organization	*consistent materials, spaces marked, well-maintained*
	Choices	*length of walk, sun or shade, public or private*
	Welcoming entry and edges	*not overgrown, clear signage, visible boundaries*
	Interactive spaces	*swings, seating boulders, moveable seats*
	Serve students, employees, and community	*not just for one group*

Table 6: Welcoming to All

2. Welcoming to All

The restorative environment should truly be a community space, that anyone who comes across it feels that they can enter and use. The physical barriers that create a sense of enclosure should not also create a sense of exclusion. Use should not be limited to a certain social group or

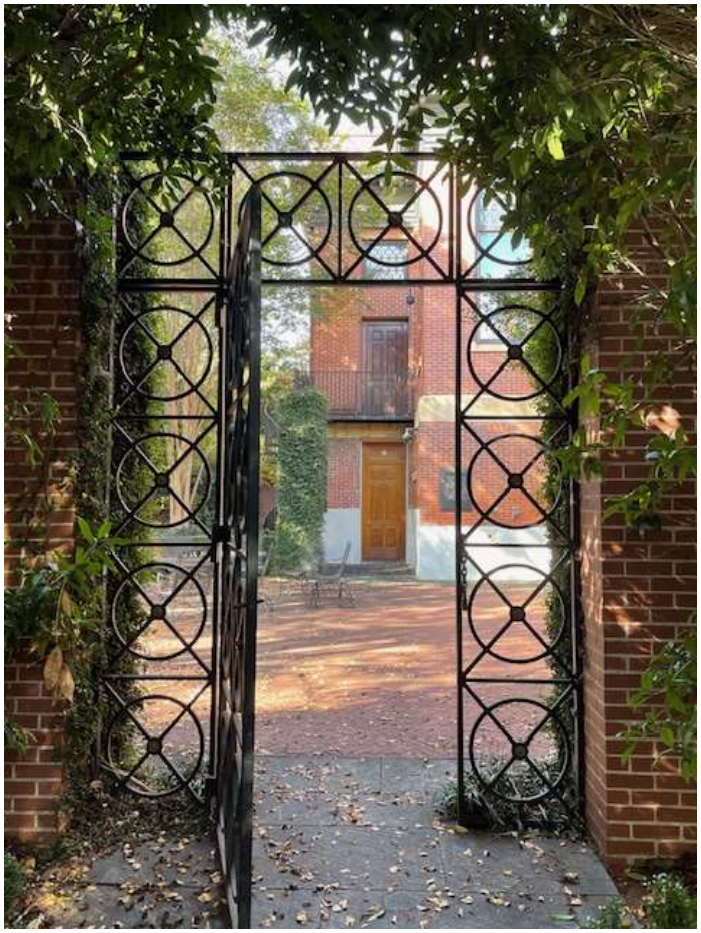


Figure 7: Entrance to the president's office courtyard. The gate at the entrance to this courtyard may be inviting to some but imposing to others. Photo by author.

activity. Creating a sense of belonging in a space does not end with physical access via ramps and level ground. Emotional belonging is also increasingly visible in public space—examples include signs demonstrating gender inclusivity or solidarity with refugees, which are a common sight at the entrance to many businesses. Airports and stadiums (including Sanford Stadium at UGA) are starting to offer "sensory rooms" for people with autism, but that can be used by anyone that needs a break from an overstimulating environment (University of Georgia 2023). Outdoor spaces, and especially restorative landscapes, need to signal to the user that they are welcome to enter and use the space as they see fit. Students (and people generally) are not going to use an environment that seems like it doesn't want visitors. Many existing spaces, on campus and otherwise, could be excellent restorative spaces but are not welcoming to all users. The small courtyard behind the president's office is a great place to study or relax, but the imposing entrance gate may lead some students to feel they aren't supposed to enter (figure 7).

The Kaplans and Ryan emphasized visual accessibility—beyond their restorative environment framework, Rachel and Stephen Kaplan also studied people's environmental

preferences. People prefer a degree of legibility—that is, people feel more comfortable when they can understand an environment quickly and feel confident in their ability to find their way (R. Kaplan, Kaplan, and Ryan 1998). An environment that is confusing and busy is not conducive to restorative activities and may actually increase feelings of stress.

Cooper Marcus and Sachs discuss the importance of choice—that users should be able to make choices within the space and choose how and where to use it. Choices of whether to sit alone or with friends, in the sun or the shade are important for people to feel comfortable. Research shows that feeling a sense of control reduces feelings of stress (Cooper Marcus and Sachs 2014). Especially for students with diminished mobility—those without their own transportation, like students who live on campus or international students new to the US—having choices and some control over their environment on campus can help increase the effect of restoration.

Latané focused more on physical accessibility and an emotional sense of belonging. The first step is an interactive design process—she argues that the users of the space should be involved in the design, fostering a sense of ownership (2021, 28-30). Latané's recommendations for inclusive, interactive spaces also take into consideration the varying ways that different people may want to use a restorative environment: walking, pacing, meditating, reading, dancing, playing--- alone or with a friend or small group (Latané 2021). She also discusses the importance of a welcoming entry in the context of schools—as a community resource, schools should be welcoming to the community, but are often fenced and landscaped in ways that discourage entry. On a college campus, the same is true of a restorative space: it should be a resource for the entire community, not just students.

Ways to create this welcoming atmosphere can range from the explicitly stated (signage, programming) to the subtle (inviting benches or a well-maintained path). Latané recommends starting at the very beginning by including the users in the design process—which might mean putting the user needs ahead of style or polish. She also emphasizes the importance of ongoing interaction through volunteer opportunities and public programming. When people are involved, they feel a sense of ownership and belonging that you can't get anywhere else (Latané 2021). On a college campus, this might look like offering class credit for attending a community work day in the garden or letting a student-run club manage the space.

Providing ample signage is also an important way to help people feel welcome. A sign at the entrance, along with a map if the space is large enough, lets people get a sense of the space before they enter. An attractive view at the entrance is also helpful to draw people in and make them feel welcomed into the space. The materials within the space should be consistent, well-maintained, and attractive (Cooper Marcus and Sachs 2014). Something not mentioned much in the existing frameworks is proximity, which is necessary for college students to use a space. The restorative environment should ideally be visible from classroom space and be easy to access for short periods of time between classes.

Category	Principles	Design Elements
Aesthetics	**Natural materials**	*live-edge wood, stone, branches, pebbles, water*
	More natural than urban	*emphasis on plants, espcially trees*
	Signs of age and use	*sturdy but weathered furnishings, reuse*
	Contrast to surrounding area	*clearly visible, cohesive design throughout*
	Appears cared for	*not overgrown, not tightly maintained*

Table 7: Aesthetics

3. Aesthetics

A field of study all its own, the aesthetics of a landscape can communicate the intended use, user group, and level of investment by the caretakers. The overall appearance and materials should support the restorative goal. The space should appear cared for, and the materials should be selected for their ability to age gracefully. Corten steel with a rusty patina is a part of an established aesthetic, but rusted-through benches would not be appropriate. The aesthetic of the space should welcome students but still prioritize naturalness.

The Kaplans and Ryan discuss aesthetics in terms of material choice: wood, stone, and old. They argue that the use of weathered wood and stone helps to mark a place as distinct while not detracting from the natural setting (1998, 75). Latané applauds schools using "warm, homey details" like brick, wood, and unexpected windows that let in natural light and infuse a hopefulness into an institutional environment (2021, 42). Salvaged materials like paving chunks, boulders, tree stumps, and bricks are low-cost and pre-worn to create a natural feel. She also recommends using color in the plants of a landscape as well as in murals and outdoor art (2021, 49). Cooper Marcus and Sachs discuss aesthetics in terms of maintenance, but also in terms of feeling and behavior. An attractive, well-maintained garden in a healthcare setting sets an expectation for a high level of care and correlates with high patient satisfaction (2014, 31). On a college campus, it may lead to increased student satisfaction and the perception that the school is invested in the students.

Category	Principles	Design Elements
Separation and Privacy	**Enclosure**	*low tree canopy, walls, fences, visible boundaries*
	Sub-spaces	*screening plants or structures, recessed seating*
	Calming and quiet spaces	*sounds from water features, away from traffic*
	Can't see whole space at once	*winding paths, directed views*

Table 8: Separation and Privacy

4. Separation and Privacy

Privacy is mentioned throughout all three frameworks as a necessary ingredient for creating a restorative space. An outdoor, public area may not be private enough for teletherapy, but it is important to provide a space where people do not feel observed. Although there is a significant amount of outdoor space on campus, there are few places where one can be outside and feel a degree of privacy. Separation, as a related sensation, is also important to creating a restorative environment. The restorative place should feel separate and distinctly different from the surrounding areas—this is proven through the Kaplans' earlier research on attention restoration theory, as well as others' work on the therapeutic effects of landscape (Kaplan 1995, Edwards, 2022).

In *With People in Mind*, the Kaplans and Ryan discuss separation more than privacy—the restorative environment should be separated from distractions. This can mean a mental separation through positive distractions, or a more physical separation such as an enclosing feature or change in material (Kaplan, Kaplan and Ryan 1998).

Cooper Marcus and Sachs also recommend both mental and physical separation from the surrounding environment. They emphasize safety, while at the same time creating space for more private activities (2014). In the healthcare context, these spaces would be for exercise or physical therapy, but on campus they could be used for meditating, stretching, or reading. They also note that while the garden should be visible from inside nearby buildings, the garden should not be surrounded by windows in such a way that creates a "fishbowl effect" and makes a spectacle of any activity within the garden (2014, 40, 73). Latané notes that primary and secondary school students often seek out secluded, cozy spots "out of the ever-present gaze of other humans," and recommends creating spaces where this is safe and comfortable (2021, 48). She also references

the Kaplans' work, discussing separation and the "sense of being far away" as being important for students to feel restored (2021, 18).

Design elements that support separation and privacy may be physical, like including plants or breeze-block walls to screen different areas of the garden. Cooper Marcus and Sachs recommend recessed seating and a physical enclosure like a hedge or even a low fence (2014, 67). The sound of a water feature can also screen some sound to provide privacy for quiet conversations while also masking any noises from nearby traffic, making the space feel more removed from everyday life.

CHAPTER 4

CASE STUDIES

Despite the growing popularity of restorative gardens in healthcare settings and beyond, colleges and universities appear to be behind in providing this amenity for students. Although research shows that the aesthetics of campus outdoor space influence students' college choice (Okerson, 2016), many schools do not seem to be prioritizing green space beyond trees and lawn quads. Many schools have outdoor spaces that are used for restorative activity but were not necessarily designed as such. North Campus at UGA is a good example of this—many students go there to relax outside, but it was not originally designed to be a restorative landscape and it does not include key restorative features like privacy and subspaces.

This chapter examines eight existing restorative landscapes: four on college campuses and four in other contexts. The case studies were examined via photographs and Google Earth and Street View, where possible. Press releases, articles, and reviews were also considered when they were available. Each case study will be evaluated using the framework created in the previous chapter. The framework should be used as a tool to inform a holistic approach, rather than a list of requirements. A landscape that includes every principle may still ultimately be found wanting by the user—there is no perfect restorative landscape.

4.1 Existing Restorative Landscapes on College Campuses

The following four case studies comprise purpose-built restorative gardens located on college campuses that can be researched online. An initial list of 18 purpose-built restorative landscapes on college campuses in the United States were found. Of those, several were found to be on the grounds of university-affiliated hospitals or other healthcare facilities, and were created for patient, rather than student, use. Some were designed for children with sensory needs or for horticulture therapy or other guided activities. There were also two that were in the fundraising stage and had yet to be built.

Four gardens were ultimately chosen that represent a range of garden types that all performed well on the framework evaluation. San Diego State University created a Native and Indigenous Healing Garden in 2020, which uses the desert landscape to create a unique restorative space. The University of Kansas created a sensory garden for the blind which has become a treasured resource for students and community members. Students at Cornell University created a Healing and Honoring Garden for Indigenous students to connect with Native heritage and culture. Southern Connecticut State University has completed one section of a larger planned Social Justice Garden, which is a healing garden memorial to alumni killed in the Sandy Hook Elementary shooting in 2012. These four landscapes represent varied methods of student and community engagement, but all are excellent examples of campus restorative space.

Figure 8: The Native and Indigenous Healing Garden at San Diego State University. Image: San Diego State University.

Native and Indigenous Healing Garden, San Diego State University

The webpage for this garden on San Diego State's website says that "the garden was reconceived by the Aztec Culture and Education Committee in 2018 as a place that embodies the symbols and plants of life and of healing – physically, mentally, and emotionally – and that honors our Native American and Mesoamerican Indigenous and California Native American communities' knowledge of holistic health through the reintegration of humans with nature"

(SDSU 2020). For such a small space (.15 acres), this garden includes almost all of the priority principles in each category. The fountain at the center creates a moment of fascination, the spiral path allows wandering and wondering, the materials are mostly natural stone and earth. Buildings on two sides create a sense of enclosure and also mean the garden is in close proximity to classrooms.

Category	Principles	
Awe and Fascination	**Natural processes**	✓
	Access to nature	✓
	Wildlife encouraged	✓
	Space for imagination	✓
Welcoming to All	**ADA compliant at minimum**	✓
	Proximity and convenience	✓
	Clear wayfinding and space organization	✓
	Choices	✗
	Welcoming entry and edges	✓
	Interactive spaces	✓
	Serve students, employees, and community	✓
Aesthetics	**Natural materials**	✓
	More natural than urban	✓
	Signs of age and use	✓
	Contrast to surrounding area	✓
	Appears cared for	✓
Separation and Privacy	**Enclosure**	✓
	Sub-spaces	✗
	Calming and quiet	✓
	Can't see whole space at once	✗

Table 9: Native and Indigenous Healing Garden Evaluation

The places where this garden could improve—no sub-spaces, few choices, and high visibility—are due to the small size, which should not mean that it "fails." Any genuine effort towards creating restorative landscapes should count as a win for the students.

Figure 9: Audio-Reader Sensory Garden at the University of Kansas. Image: University of Kansas.

Audio-Reader Sensory Garden, University of Kansas

Originally designed for use by people with vision impairment, this on-campus garden is beloved by students and community members alike. It is operated by the Audio-Reader Network, an organization that provides audio versions of reading materials. At 0.4 acres, this site is also quite small but packs a serious restorative punch. This garden features lush vegetation, mature trees, and views of attractive buildings. The only mark against it is the location—while it is on campus, it is too far to walk from most buildings except for the

Category	Principles	
Awe and Fascination	**Natural processes**	✓
	Access to nature	✓
	Wildlife encouraged	✓
	Space for imagination	✓
Welcoming to All	**ADA compliant at minimum**	✓
	Proximity and convenience	✗
	Clear wayfinding and space organization	✓
	Choices	✓
	Welcoming entry and edges	✓
	Interactive spaces	✓
	Serve students, employees, and community	✓
Aesthetics	**Natural materials**	✓
	More natural than urban	✓
	Signs of age and use	✓
	Contrast to surrounding area	✓
	Appears cared for	✓
Separation and Privacy	**Enclosure**	✓
	Sub-spaces	✓
	Calming and quiet	✓
	Can't see whole space at once	✓

Table 10: Audio-Reader Sensory Garden Evaluation

College of Education. However, it is very close to student housing, which is a different kind of proximity.

Figure 10: Healing and Honoring Garden at Akwe:kon at Cornell University. Image: Cornell.

Healing and Honoring Garden, Cornell University

Planned and built by students from the American Indian and Indigenous Studies Program, this garden honors "Indigenous students and their connection to the land" (Hayes 2023). It is on campus outside of Akwe:kon, a residential hall dedicated to Native heritage and culture. The form is based on the medicine wheel, the circle representing wholeness and restoration. The

plants include native plants with ceremonial uses, as well as daffodils to honor a student who died in 2022. This garden differs from others it its interactivity. The students came up with the idea for this garden and built it themselves. However, because of this, and the fact that it is outside of a residential hall on an Ivy League campus, members of the community or even employees may not feel that it is appropriate to enter.

Category	Principles	
Awe and Fascination	**Natural processes**	✓
	Access to nature	✓
	Wildlife encouraged	✓
	Space for imagination	✓
Welcoming to All	**ADA compliant at minimum**	✓
	Proximity and convenience	✓
	Clear wayfinding and space organization	✓
	Choices	✗
	Welcoming entry and edges	✓
	Interactive spaces	✓
	Serve students, employees, and community	✗
Aesthetics	**Natural materials**	✓
	More natural than urban	✓
	Signs of age and use	✓
	Contrast to surrounding area	✓
	Appears cared for	✓
Separation and Privacy	**Enclosure**	✗
	Sub-spaces	✗
	Calming and quiet	✓
	Can't see whole space at once	✗

Table 11: Healing and Honoring Garden Evaluation

Figure 11: Remembrance Garden at Southern Connecticut State University. Image: Julie Moir Messervy Design Studio.

Remembrance Garden, Southern Connecticut State University

This small (.06 acres) garden centers on a circular wooden sculpture that frames a view of a lake. Four of the six educators killed at Sandy Hook Elementary in 2012 were alumni of SCSU, and this garden was built as a place of safety and compassion in their honor (Missakian 2018). It is part of a larger planned Social Justice garden on campus (Messervy 2024). This garden is truly a space for contemplation. What it

Category	Principles	
Awe and Fascination	**Natural processes**	✓
	Access to nature	✓
	Wildlife encouraged	✓
	Space for imagination	✓
Welcoming to All	**ADA compliant at minimum**	✓
	Proximity and convenience	✓
	Clear wayfinding and space organization	✓
	Choices	✗
	Welcoming entry and edges	✓
	Interactive spaces	✓
	Serve students, employees, and community	✓
Aesthetics	**Natural materials**	✓
	More natural than urban	✓
	Signs of age and use	✓
	Contrast to surrounding area	✓
	Appears cared for	✓
Separation and Privacy	**Enclosure**	✓
	Sub-spaces	✗
	Calming and quiet	✓
	Can't see whole space at once	✗

Table 12: Remembrance Garden Evaluation

lacks in size, choices, and options, it makes up for in sweeping views. Situated on the rise of a hill facing a larger park, the circular sculpture frames the view perfectly, an excellent way to observe the changing seasons or let your mind wander.

While not an exhaustive examination of every restorative space on American college campuses, these four gardens are representative of small, effective spaces. They are generally smaller than an acre, with recessed seating, winding paths, and space for contemplation. Gathering spaces are not usually prioritized, and the garden often doubles as some kind of memorial—as seen at Cornell and Southern Connecticut State University. Most are close to where students live or study, making it convenient to visit when needed. It may also be noted that none of the campus case studies included significant turf lawns.

4.2 Existing Restorative Landscapes on Non-Campus Sites

Most purpose-built restorative landscapes exist outside of higher education. Many are part of healthcare facilities, religious institutions, cemeteries, or private residences. Some of the best examples of restorative landscapes are located in places other than college campuses, and should be considered as precedents when designing for a campus.

The following case studies were chosen for their stated purpose, scale, quality, appropriateness, and overall aesthetic. There are many places that were created (or not) for purposes other than healing, contemplation, and restoration, but do the job just as well. There are also just as many so-called healing gardens that are unpleasant to use and not restorative in the least. The chosen sites were designed and built for a healing, restorative experience –without the need for a programmed activity –as stated by the designers. They are at an appropriate scale for a

college campus or have small enough constituent parts that they could be effectively broken up. The sites are high-quality spaces, beloved by those who use them. The selections also prioritize adolescents and adults, and are generally aesthetically pleasing, using natural materials.

The sites range from prisons to parks and show a variety of uses for restorative landscapes. Oregon State Penitentiary's Memorial Healing Garden manages to create an effective garden that also meets the high security standards of a prison. The garden at Rosecrance, a treatment center for adolescents, uses symbolism and screening to create a series of smaller spaces within a larger landscape. The labyrinth in the Whitman-Walker AIDS Clinic healing garden was so beloved that community members had it re-installed in a park when the clinic closed, and the Brooklyn Naval Cemetery makes a beautiful space for reflection that also honors the history of the site.

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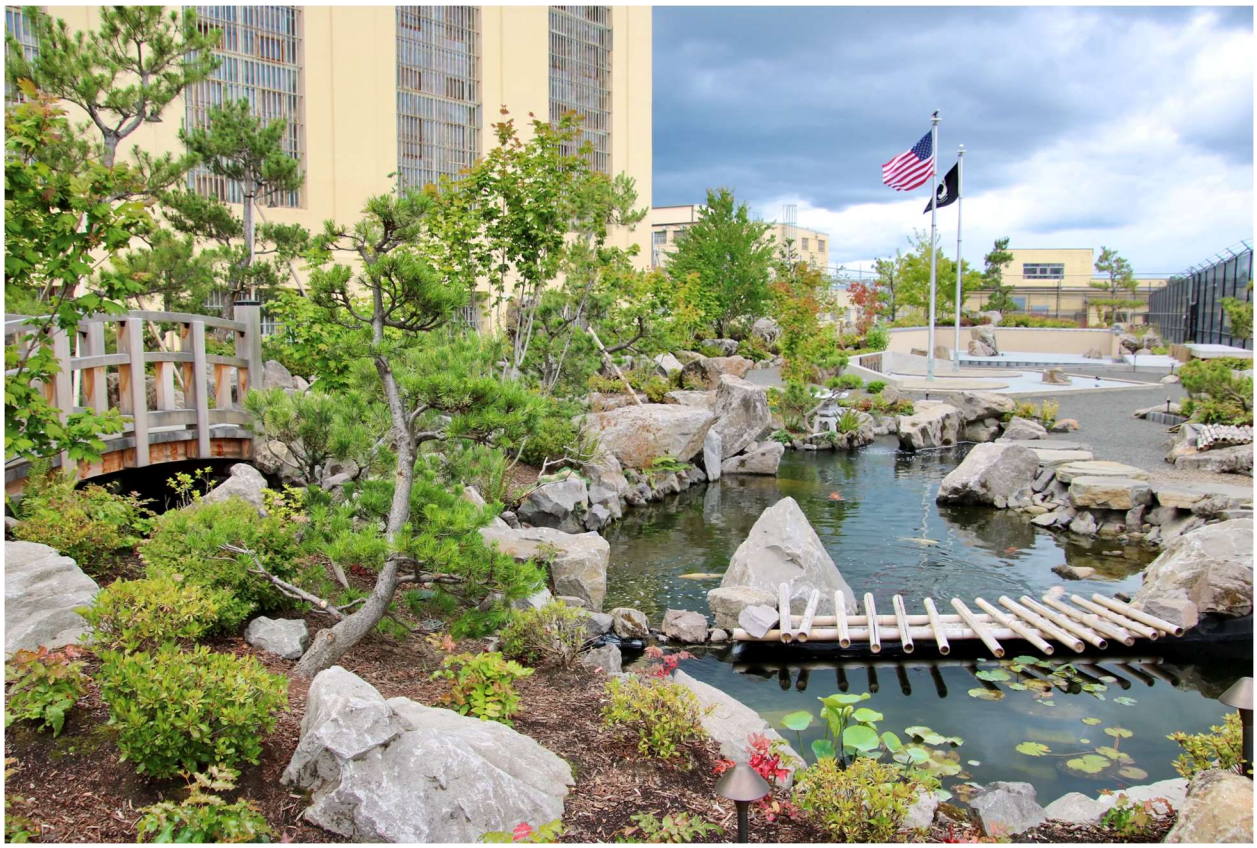

Figure 12: Memorial Healing Garden at Oregon State Penitentiary. Image: Kurisu.

Memorial Healing Garden, Oregon State Penitentiary

This healing garden was initiated and funded by the Asian Pacific Family Club (APFC) at Oregon State Penitentiary. Working with the Oregon Department of Corrections and Kurisu, a landscape architecture firm specializing in Japanese-style healing gardens, the APFC created this garden in 2019 as a place for reflection, contemplation, and connection with nature. About this project, Kurisu writes on their website, this garden "offers unique opportunities for self-realization, tranquility, and peace. For inmates experiencing depression, anger, stress, and total disconnection from natural elements, recovering a sense of awe and appreciation for nature's beauty can inspire transformation at the deepest levels." The garden features a koi pond,

naturalistic and diverse plantings, gravel and stone walkways, trees, seating, a raked gravel dry garden, and a footbridge. Over 200 people incarcerated at OSP volunteered their time to help Kurisu's team with construction. The continued maintenance is entirely handled by incarcerated individuals at OSP (Kurisu 2024).

Category	Principles	
Awe and Fascination	**Natural processes**	✓
	Access to nature	✓
	Wildlife encouraged	✓
	Space for imagination	✓
Welcoming to All	**ADA compliant at minimum**	✓
	Proximity and convenience	✓
	Clear wayfinding and space organization	✓
	Choices	✓
	Welcoming entry and edges	✗
	Interactive spaces	✓
	Serve students, employees, and community	
Aesthetics	**Natural materials**	✓
	More natural than urban	✓
	Signs of age and use	✓
	Contrast to surrounding area	✓
	Appears cared for	✓
Separation and Privacy	**Enclosure**	✓
	Sub-spaces	✓
	Calming and quiet	✓
	Can't see whole space at once	✗

Table 13: Memorial Healing Garden Evaluation

Despite its location within a maximum security prison, this landscape still fulfills the key principles of every category of the framework, and then some. One principle, serving the community, was left blank due to its location in a highly secure facility. Awe and fascination is, maybe surprisingly, abundant here—there is even a decorative bamboo bridge (figure 12) over the pond to activate imagination and guide eyelines.

Figure 13: The Healing Garden at Rosecrance Griffin Williamson Adolescent Treatment Center. Image: Kurisu.

Rosecrance Healing Garden, Rosecrance Griffin Williamson Adolescent Treatment Center

Another garden designed by Kurisu, this healing garden is located on the campus of a treatment center for young adults with substance abuse and mental health disorders in Rockford, IL. The Japanese-style garden incorporates pathways, boulders, varied plantings, ponds and streams, bridges, and viewing points to create an immersive, reflective experience. There are no straight lines used in the design to encourage discovery and exploration as the garden is revealed. Many elements of the garden have a symbolic meaning, such as the "guardian stone" in the pond, meant to convey strength and protection as it stands under the deluge of the waterfall. There are several "serenity circles" throughout the garden, used for small gatherings or individual contemplation. The winding walkways have a sense of enclosure from the small trees that form a ceiling overhead. The garden provides abundant shade, seating, and room to walk (Rosecrance 2024).

At roughly three acres, this restorative landscape has the space to include more than one of everything. All principles from all categories are represented at least once, but Awe and Fascination are on full display. Multiple water features, stone bridges, and naturalistic plantings help draw the user into the natural world. The symbolic structures, too, can help to elicit awe in one's own journey.

Category	Principles	
Awe and Fascination	**Natural processes**	✓
	Access to nature	✓
	Wildlife encouraged	✓
	Space for imagination	✓
Welcoming to All	**ADA compliant at minimum**	✓
	Proximity and convenience	✓
	Clear wayfinding and space organization	✓
	Choices	✓
	Welcoming entry and edges	✓
	Interactive spaces	✓
	Serve students, employees, and community	✓
Aesthetics	**Natural materials**	✓
	More natural than urban	✓
	Signs of age and use	✓
	Contrast to surrounding area	✓
	Appears cared for	✓
Separation and Privacy	**Enclosure**	✓
	Sub-spaces	✓
	Calming and quiet	✓
	Can't see whole space at once	✓

Table 14: Rosecrance Healing Garden Evaluation

Figure 14: Healing Garden Labyrinth at Whitman-Walker Clinic of Northern Virginia. Image: Nature Sacred

Whiman-Walker Healing Garden, Whitman-Walker Clinic of Northern Virginia

This healing was created to be a place of comfort and safe exercise for the people with HIV/AIDS that came to the clinic. It was funded by a grant and built in the 1990s by volunteers from the community, along with the nonprofit Nature Sacred, an organization that builds and advocates for healing gardens. The garden was open to the public and became a beloved neighborhood feature that helped destigmatize the disease and those suffering from it. Local churches, schools, and civic groups visited often. The garden featured a pond, shaded walking

paths, specimen trees, seating, large sculpture, and lots of lush vegetation. When the clinic closed in 2009, community members organized for the labyrinth to be carefully removed, stored, and then re-installed in 2013 at nearby Barton Park (Nature Sacred 2024).

Category	Principles	
Awe and Fascination	**Natural processes**	✓
	Access to nature	✓
	Wildlife encouraged	✓
	Space for imagination	✓
Welcoming to All	**ADA compliant at minimum**	✓
	Proximity and convenience	✓
	Clear wayfinding and space organization	✓
	Choices	✓
	Welcoming entry and edges	✓
	Interactive spaces	✓
	Serve students, employees, and community	✓
Aesthetics	**Natural materials**	✓
	More natural than urban	✓
	Signs of age and use	✓
	Contrast to surrounding area	✓
	Appears cared for	✓
Separation and Privacy	**Enclosure**	✓
	Sub-spaces	✓
	Calming and quiet	✓
	Can't see whole space at once	✓

Table 15: Whitman-Walker Healing Garden Evaluation

Although this site is no longer extant in the exact same form, there is sufficient documentation to determine that it fulfilled every principle of every category in the framework. Nature Sacred (2024) thoroughly documented the site prior to its closure, even collecting journal entries about the garden's impact written by frequent visitors. Visitors felt welcome, safe, and restored after spending time in this landscape.

Figure 15: Brooklyn Naval Cemetery Landscape in New York City. Image: Nelson Byrd Woltz.

Brooklyn Naval Cemetery Landscape, New York City

This park, built on an unmarked burial ground, is an example of contemplative park space. Used for burials as part of the Brooklyn Navy Yard during the late 1800s and early 1900s, the ground could not be disturbed for construction. A boardwalk and large stepping-stone boulders (figure 15) let visitors access the space without encroaching on the burial ground. Native wildflowers and meadow plants form a memorial meadow that attracts pollinators and sways softly in the breeze. The self-seeding plants and visible life cycles of insects bring life to a place that holds so much death, encouraging contemplation and engagement with natural processes. People in the neighborhood use the park for yoga, meditating, drawing, and reading (Nelson Byrd Woltz 2024).

Although the entire 1.5-acre site can be seen at once, the whole space is enclosed by trees and a low berm surrounding the perimeter, creating shade, screening, and a sense of separation from the outside world. There are choices of circulation between a boardwalk and stepping stones, but only the boardwalk is ADA accessible—an example of the box being checked in principle, but not necessarily in practice. There are, however, several different types of seating options, for groups or individuals, in several locations throughout the site. Overall, this landscape provides a respite from the surrounding city and creates a restorative space both psychologically and historically.

Category	Principles	
Awe and Fascination	**Natural processes**	✓
	Access to nature	✓
	Wildlife encouraged	✓
	Space for imagination	✓
Welcoming to All	**ADA compliant at minimum**	✓
	Proximity and convenience	✓
	Clear wayfinding and space organization	✓
	Choices	✓
	Welcoming entry and edges	✓
	Interactive spaces	✓
	Serve students, employees, and community	✓
Aesthetics	**Natural materials**	✓
	More natural than urban	✓
	Signs of age and use	✓
	Contrast to surrounding area	✓
	Appears cared for	✓
Separation and Privacy	**Enclosure**	✓
	Sub-spaces	✓
	Calming and quiet	✓
	Can't see whole space at once	✗

Table 16: Brooklyn Naval Cemetery Landscape Evaluation

All of the non-campus sites included every key principle from every category, but one in particular checked every box. Rosecrance Healing Garden at Griffin Williamson Adolescent Treatment Center included every design element recommended. It's no wonder—it was designed by Kurisu, a firm specializing in healing gardens. It is also much larger than most of the case studies, and as such has more room to include elements that might be deemed nonessential on a

smaller site. The fact that it is geared towards young people struggling with mental health and addiction also makes it an excellent case study for a college campus landscape. As mentioned earlier, “nearly all indicators of poor mental health” in college-age people increased from 2011 to 2021 (Prevention 2023) and anything that might help is welcome. Rosecrance also includes more gathering spaces than the on-campus case study sites, which would make the space more welcoming to groups of friends or people having meetings outside.

Oregon State Penitentiary shows that a calming and private space can also be fully surveilled—something that seems to be a priority recently as UGA plans to install more cameras (UGA Today 2024). As campus security and safety are top of mind, this case study should reassure campus officials that a restorative space can also be secure. This site has as many constraints as a site could and still creates a calming, restorative space that gives relief to to the many incarcerated people who use and maintain it. While not incarcerated, many students live in assigned dorms, have limited mobility, and rarely leave campus; they have limited control over their lives and surroundings. These circumstances are stressful, and anyone experiencing something similar could benefit from a restorative outdoor space.

Similar to the campus case studies, several of these sites (Oregon State Penitentiary, Rosecrance, and Walker-Whitman) also include memorials and symbolic structures that help people process difficult emotions. The non-campus sites were generally larger than the campus sites, but used many of the same materials and plantings—including the lack of turf lawns. The climate, user group, and size varies, showing that there is no one correct way to make a restorative landscape. This framework can be applied to evaluate existing sites and show that a site can be restorative with few changes. It may seem too “easy” for a site to perform well, but

that is part of the framework's intention. The framework attempts to make restorative site design more accessible: the more accessible and "easy" it is, the more restorative spaces will be built.

CHAPTER 5

SITE AND CONTEXT

5.1 Site Background

The site that would become the University of Georgia was chosen in 1801, “a pristine forest with clear streams,” on a hill near the river (Dendy 2013, 2). For the first hundred years, the area that is now North camps formed the entire grounds. The buildings were placed far apart within the landscape to emphasize that each building was “a temple unto itself” and further drive home the connection to Classical Athens, which was in style at the time (Turner 1984, 93).

Colleges and universities across the country experienced massive growth through the mid twentieth century as the GI Bill brought new students after World War II. Students of all ages began enrolling, and many of them were commuters who brought their cars to campus, leading to traffic and more space being used for parking. As the share of the population going to college went up, (24-37% from 1951 to 1961), campuses changed radically to accommodate more students. The campus became “a collection of widely divergent components, with varying aims and often conflicting interests” (Turner 1984, 250). Eventually, campuses became so large that planners began creating smaller campuses for individual colleges within the university, which we can see at UGA in East Campus or Health Sciences.

Through the 1980s, the university continued to invest in research, and UGA became number one in the nation for research spending among non-medical and non-engineering schools. During this time, a new building was erected every year (table 17). During the 90's and early 2000s, what is now East campus was transformed from woodlands into a full blown student complex with eight gigantic new buildings. Between 1941 and 2009, student enrollment went from nearly four thousand to 34,800 students (Dendy 2013, 10-17). Today, there are 40,118 students at UGA, according to the university's admissions webpage. As the city developed around the school, and the school continued to grow, the campus only got denser, losing many of the more natural spaces. The remaining wooded areas on campus are mostly on the fringes, further than an easy walk from most academic buildings.

BUILDING SUMMARY BY YEAR OF COMPLETION
ATHENS CAMPUS
FALL 2022

Year	*Number of Buildings*	*Total Gross Square Feet*	*Percent of Total Square Footage*
Pre-1921	54	1,026,696	5.5
1922-1946	35	1,889,455	10.0
1947-1974	121	5,175,694	27.5
1972-1996	108	3,882,095	20.6
1997-2011	113	4,847,154	25.7
2012-2022	59	2,015,120	10.7
Total	490	18,836,214	100.0 %

** Does not include Poultry Science Complex scheduled for completion in 2023.*

Table 17:Building Summary by Year of Completion as of Fall 2022. This table from UGA's 2022 Factbook shows that between 1947 and 2011, UGA underwent massive growth, adding 342 buildings in 64 years. 73.8% of campus was built during this period.

College students, especially those living on campus and international students, many of whom do not have cars, are a kind of captive population in a place like Athens. According to the Office of Institutional Research, there were 2,053 students with U.S. visas or other temporary status in 2022. Many students spend almost all their time on campus or downtown, both due to academic obligations and the difficulty of getting anywhere else. The UGA bus is fast and free, but only goes to campus locations. The outlying stops at Health Sciences and Vet Med are not particularly close to any enticing nature. The city bus, although free for the time being due to a COVID era grant, often takes over an hour between pickups. A time-pressed student is just going to stay on campus. Ibes and Forestell even mention in their study that, "given college students' busy schedules, they are in need of approaches for improving mental health that are accessible and convenient; that is, nearby and inexpensive opportunities that do not interfere with their more pressing academic responsibilities as well as social and extracurricular activities" (2022, 99-100).

5.2 Application Site

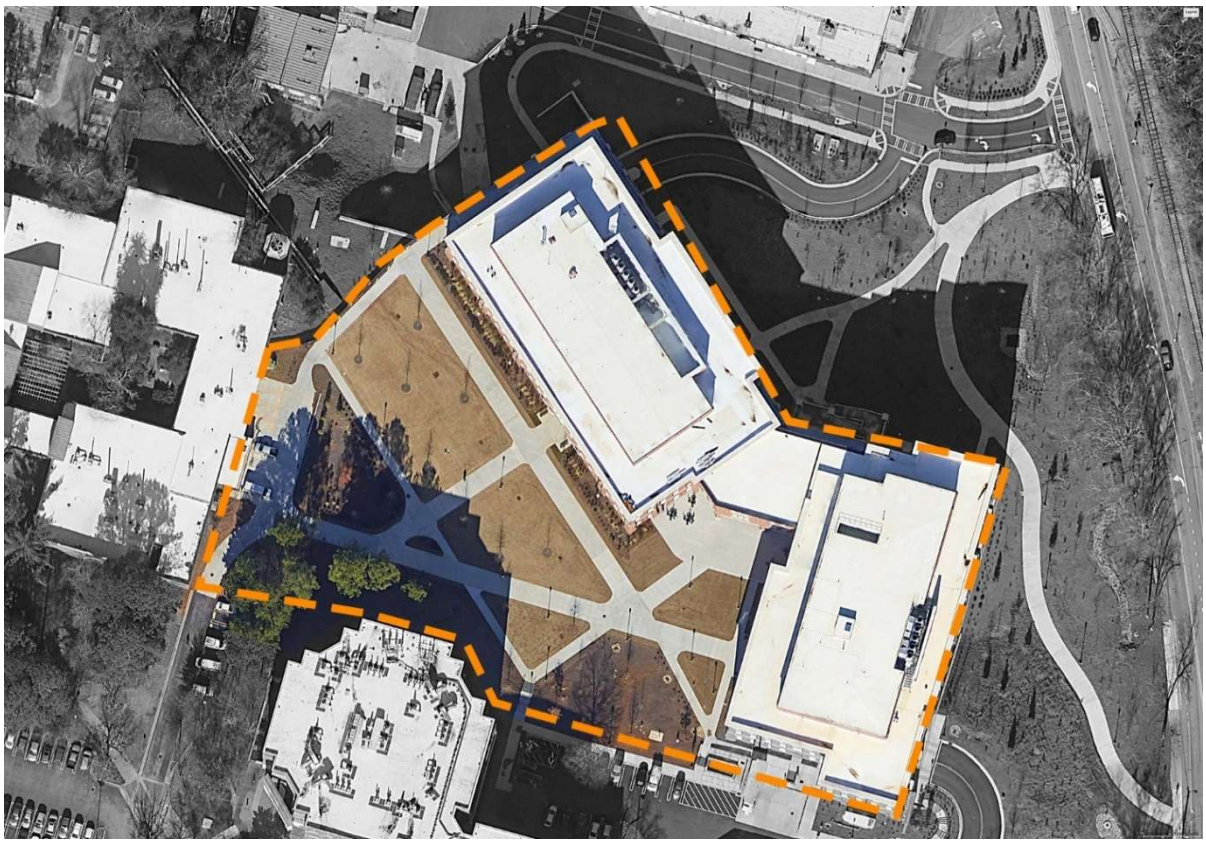

Figure 16: The application site and boundaries. Image: Google Earth with graphics by author

The specific site chosen for improvement on UGA campus is located on South Campus (figure 23), in front of the new I-STEM (Interdisciplinary Science, Technology, Engineering, and Math) complex, a two-building research facility with a combined 201,000 square feet of instruction and research space. It is home to over 30 faculty members and 100 graduate students working in agriculture, computer science, biomedicine, cell imaging, combustion chemistry, and medical robotics. Positioned as a recruiting advantage, the facility emphasizes collaborative research and state of the art equipment and labs (Hataway 2023).

Figure 17:The Science Learning Center. Image: HDR.

This site was chosen for several reasons. It is new construction, completed in 2022 (Hataway 2023), and advertised by the university as being state-of-the-art. Other new developments on campus like the Science Learning Center (figure 17) place much more importance on the landscape and ecological function of the space—so much so that the SLC was highlighted as a case study in the Landscape Architecture Foundation's Landscape Performance Series (Shields 2018). The vast expanse of lawn was a major consideration in choosing the site. In addition to requiring significant maintenance, watering, and

Figure 18: The rain garden area. Photo by author.

herbicide application, exposure to an environment that contained 30% or higher grass content was associated with 71% higher odds of prevalent psychological distress" in a recent study on the effects of different types of green space (Astell-Burt 2019). The proximity of a large building that houses many classes was also attractive, since the view the students have from the windows can also contribute to mental restoration. This complex sees hundreds of undergraduate students per day, plus about one hundred graduate students and faculty (Hataway 2023). These students are under huge amounts of pressure—research shows that students in "hard" majors like engineering or chemistry experienced "significantly more perceived stress" than their peers in "soft" majors like sociology or English (May and Casazza 2012). The same study recommends targeting interventions to student groups prone to elevated stress levels, like the students at the I-STEM complex.

Figure 19: View from North entrance. Photo by author.

Figure 20: View of I-STEM Building I

Figure 21: View from the south stair entrance.

However advanced the facilities inside the buildings are, the landscape surrounding them leaves much to be desired. Straight concrete paths cut through a flat expanse of dry lawn (figures

18-21). The small trees, which may one day rival those on North Campus, do very little today to create interest or shade. There is a rain garden and drainage area (figure 18) on the North end with some sparse plantings and hoses coiled in the bottom. Everything on the site perfectly adheres to ADA requirements. The entire site is visible at once, from any place in the site—it is one large space, with nothing to differentiate one area from another. The only seating available comes in the form of benches right outside the entrances to the buildings and a few metal tables placed on the concrete breezeway between the two buildings. The interiors of the buildings (figure 22) are sterile and white, fitting for a laboratory but not exactly pleasant.

Figure 22: Interior view of I-STEM Building I. Photo by author.

Figure 23: I-STEM Research Complex in relation to campus landmarks. Image: University of Georgia.

5.3 Evaluation

Measured against the framework created in this project, the existing site only meets five of the twenty design principles (and none of the key principles) recommended for a restorative landscape (see table 18). Four of the five fall under the "Welcoming to All" category, which

covers many of the minimum requirements for any public space: it is ADA compliant; it is a public place, so technically it can serve the community beyond UGA; the space organization is very clear because you can see the entire site from anywhere within or around it; and it is in very close proximity to classrooms. The site also appears cared for, but in a sterile, scheduled-mowing kind of way.

Category	Principles	
Awe and Fascination	**Natural processes**	✗
	Access to nature	✗
	Wildlife encouraged	✗
	Space for imagination	✗
Welcoming to All	**ADA compliant at minimum**	✓
	Proximity and convenience	✓
	Clear wayfinding and space organization	✓
	Choices	✗
	Welcoming entry and edges	✗
	Interactive spaces	✗
	Serve students, employees, and community	✓
Aesthetics	**Natural materials**	✗
	More natural than urban	✗
	Signs of age and use	✗
	Contrast to surrounding area	✗
	Appears cared for	✓
Separation and Privacy	**Enclosure**	✗
	Sub-spaces	✗
	Calming and quiet	✗
	Can't see whole space at once	✗

Table 18: Application Site Evaluation

This site as it stands has missed significant opportunities to provide for the students, faculty, staff, and community members that spend time in the area. We know that our outdoor surroundings impact our mental state and overall wellness (Ulrich 1979; Herzog et al. 1997; Anderson et al. 2018; Tillmann et al. 2018; Hunter et al. 2019; Foellmer, Kistemann, and Anthonj 2021; Souter-Brown et al. 2021), yet there was no effort to make this space inviting, engaging, or restorative. The site communicates its purpose as a place to be walked through on your way somewhere else, which perhaps was the intention. But when hundreds of students are spending hours on end somewhere, it would be nice to help them out. At a time when schools are overwhelmed by student demand for counseling and mental health resources (Abrams 2022), it should be a no-brainer to make an effort to alleviate that burden

using methods that are proven and inexpensive. Post pandemic, people across the board are spending more time outdoors (Grima et al 2020), so logic would hold that this applies to students as well. Our campus outdoor spaces should be a priority, especially if future pandemics are likely—and it seems like they are, since the CDC launched a pandemic forecasting center in 2022 (Johnson 2022). Students pay tuition and go into debt to attend college. According to UGA's undergraduate admissions office (2024), in-state students at UGA could expect tuition and fees to be $11,180 in the 2023-2024 academic year, and out-of-state students pay more than twice that. All this adds up to students who are overwhelmed and struggling, which then overwhelms the institution. One place colleges can make a difference is to simply make the outdoor areas of campus more pleasant, welcoming, and restorative.

CHAPTER 6

DESIGN

The existing application site is decidedly un-restorative, including only five of the twenty design principles. The fifteen missing principles also include all the key, bolded principles that

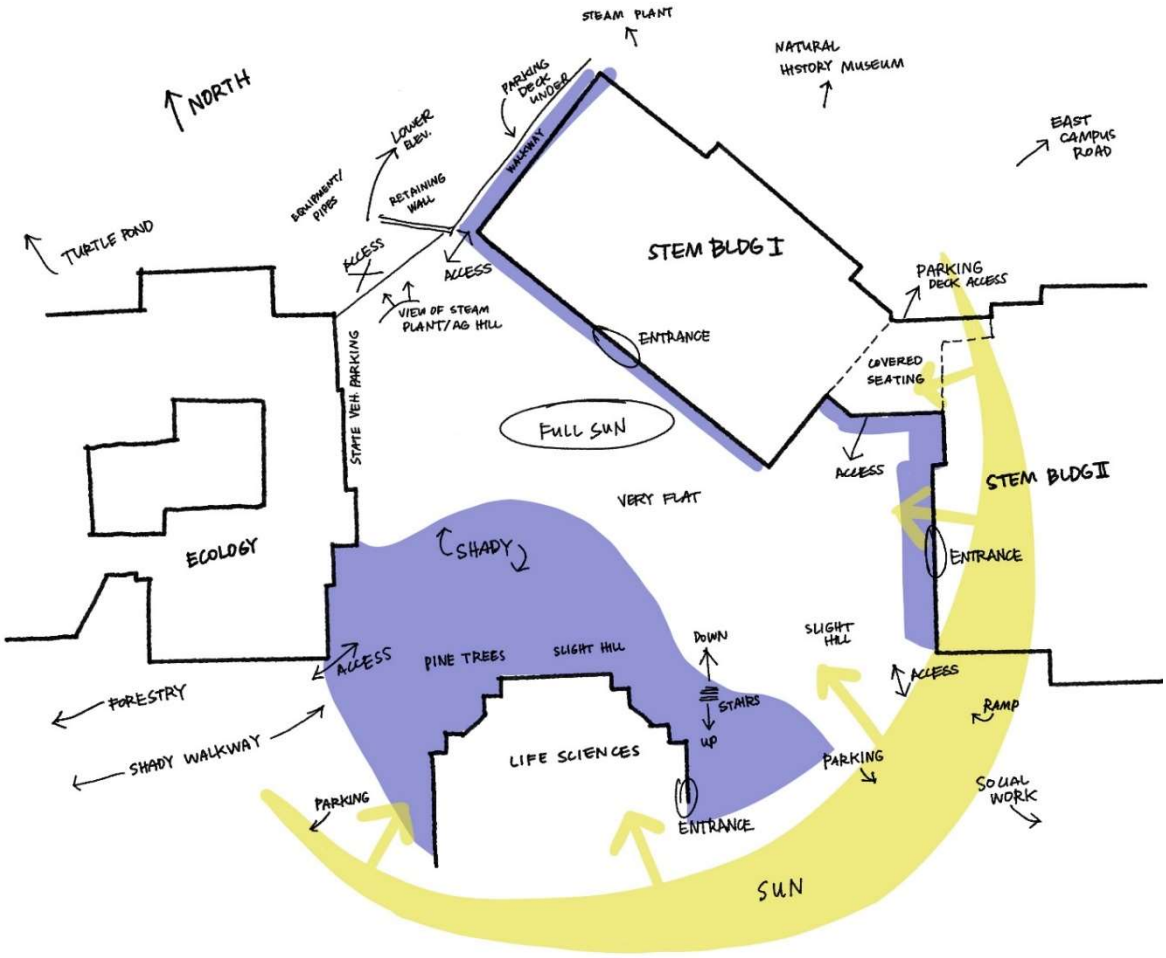

Figure 24: Inventory and analysis diagram of site

are necessary for creating a restorative landscape. The site would need significant changes to be considered restorative by the framework or any of the three it is based on.

Two designs were completed using the framework as a guiding tool, using two approaches that may be used by campus planners. The first concept is a renovation that focuses on changing only the "softscape" of the site—leaving the existing circulation. The second concept—the redesign-- is completely new, as the landscape around a brand-new building like this one would be. Both concepts were driven by the campus framework created here and the successful design elements of the case studies.

The inventory and analysis (figure 24) of the site revealed that most of the 1.4-acre site gets full sun. It is very flat, except for a slight rise on the south side to meet the Life Science Building. The views from the retaining wall to the north, while not traditionally beautiful, have an interesting view of the steam plant, some buildings, and pine trees. A maintenance parking area for the Ecology Building connects to the site on the west side. Access to all surrounding buildings is a priority, as is connection through the site for users parking in the I-STEM deck beneath the complex.

Both concepts are based on the same general organization of space (figure 25). The northwest end of the site emphasizes the categories Separation and Privacy and Awe and Fascination, while the southeast end focuses on Welcoming to All and gathering spaces. The south side of the site is closer to building entrances and access points, making it more public.

The north side of the site is further from main entrances and busy routes. The entire site uses Aesthetics to create a cohesive sense of place throughout the subspaces.

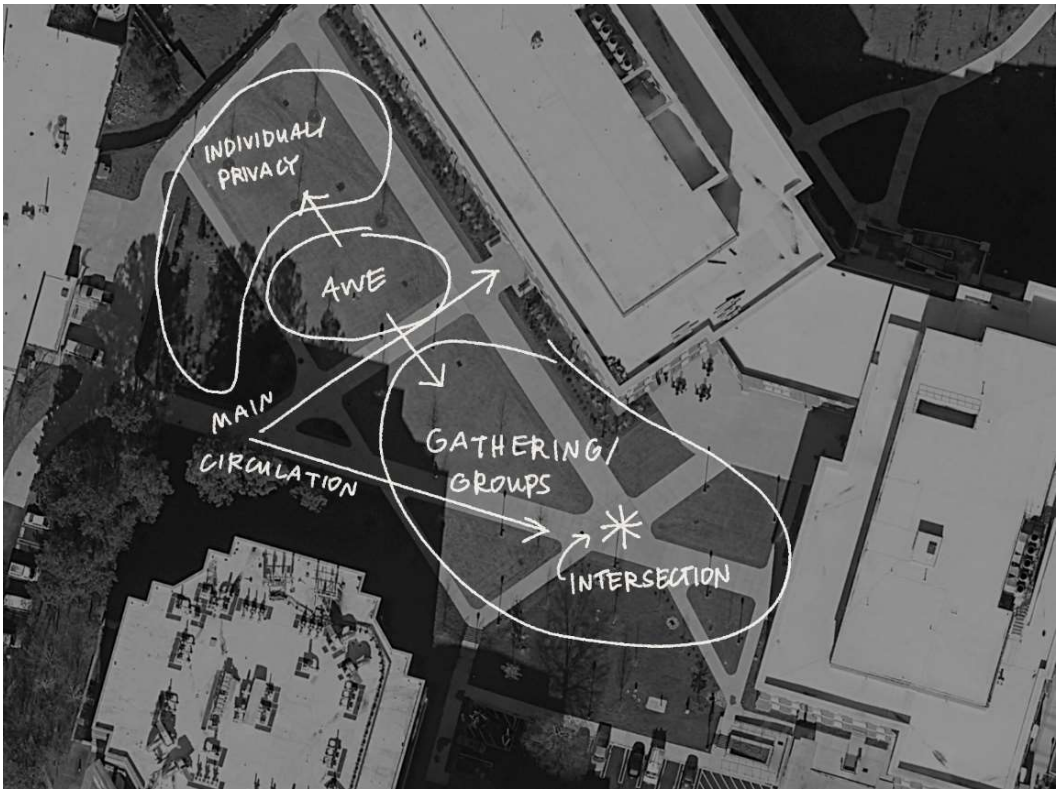

Figure 25: Concept diagram for design program

6.1 Renovation

The renovation concept design draws on previous projects undertaken on campus to improve functionality of existing sites. The Art Garden courtyard at Lamar Dodd School of Art underwent a renovation by Koons Environmental Design in 2018 (Lamar Dodd School of Art 2018). A stand of bamboo in the center of the courtyard was removed and the paving filled in to make way for tables and planters of trees, creating a plaza atmosphere. Herty Mall, a long promenade on North campus was also renovated in 2019 to improve accessibility (Steinbeck 2019). Renovations may be attractive to campus leadership because they can allow a space to be used during construction, unlike a complete overhaul, which can require closing an entire area until a project is finished. They may also be cheaper and faster to execute, depending on the site.

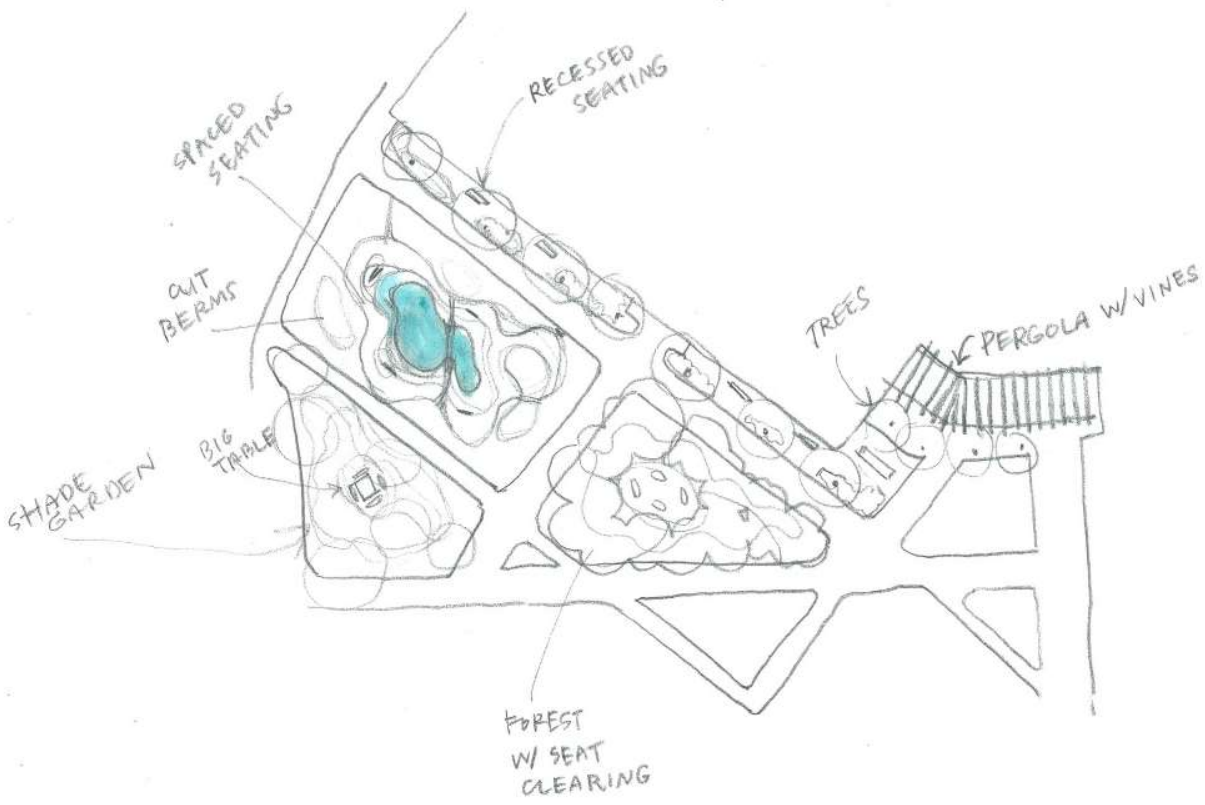

Figure 26: First iteration of renovation concept.

This renovation concept leaves the existing circulation and hardscape, only altering what is in the planting areas. This demonstrates a “light touch” approach, showing that a site doesn’t need to change much to drastically improve its restorative potential.

Figure 27: Second iteration of renovation concept.

Starting from the zones laid out in figure 25, the first iteration (figure 26) attempted to use the existing vegetation areas between the walkways as subspaces, each with a distinct feel. A pond with a path circling it forms the site’s center for Awe and Fascination. Spaced benches facing the pond provide a bit of privacy. Berms formed from the earth dug for the pond line the edges of the subspace, giving a feeling of separation from other parts of the site.

The next iteration (figure 27), further refines this concept, more clearly demonstrating the gradient of experience from individual and private to gathering and public. The private, “Awe

and Fascination" side of the site features more trees and smaller seating areas, while the more public "Welcoming to All" side uses lower vegetation for increased visibility and moveable seating that can accommodate larger groups. However, prioritizing gathering and inclusion does not mean Awe and Fascination cannot be found on that side—the soft swaying of the meadow plants, as well as their changing colors through the year, provide plenty of ways for users to be softly fascinated even as they socialize.

Category	Principles	
Awe and Fascination	**Natural processes**	✓
	Access to nature	✓
	Wildlife encouraged	✓
	Space for imagination	✓
Welcoming to All	**ADA compliant at minimum**	✓
	Proximity and convenience	✓
	Clear wayfinding and space organization	✓
	Choices	✓
	Welcoming entry and edges	✓
	Interactive spaces	✓
	Serve students, employees, and community	✓
Aesthetics	**Natural materials**	✓
	More natural than urban	✓
	Signs of age and use	✓
	Contrast to surrounding area	✓
	Appears cared for	✓
Separation and Privacy	**Enclosure**	✓
	Sub-spaces	✓
	Calming and quiet	✓
	Can't see whole space at once	✓

Table 19: Renovation design concept framework evaluation.

The final version of the renovation concept refines the choices in the first iterations and attempts to solidify the framework principles, including all twenty (table 19). Awe and Fascination is the dominant category on the north side of the site. The forested area and especially the pond provide ample opportunity for natural processes to take place, as well as encourage wildlife by creating habitat. The bridge over the pond gives users closer access to nature, allowing a look directly into the water from above. The berms and path that winds around the pond create space for imagination by allowing the users mind to wander. The berms especially, in their form of miniature hills, create a sort of mini-landscape within the larger

space, similar to the landforms at Rosecrance (figure 13) or in Japanese dry gardens (figure 3). Taking a cue from the Remembrance Garden at Southern Connecticut State University (figure 11), the benches face the water and allow for a moment of reflection.

The south side of the landscape focuses on Welcoming to All. The circulation on the site is already ADA compliant and does not change in the renovation concept. The location of the site is also already very convenient to multiple buildings, as well as visible from many classrooms and indoor spaces. The existing circulation is clear and easy to understand. The renovated portions are organized clearly in separate sub-spaces that each have their own character. Users have their choice of many places to sit: in groups or alone; in the sun or shade. There is even an interactive element of moveable seating, so users can move seats into any group size or configuration. There is also choice in walking path, albeit slightly fewer options than seating—the existing circulation is very wide and dominates the space. The paths around the pond and through the wooded area on the north side provide a secondary option.

The consideration of Aesthetics shows throughout the site shows in the use of natural materials. Seat boulders like those in the Healing Garden at San Diego State University (figure 8) form a small gathering space. Moveable furniture of wood and benches of stone or reclaimed wood add more naturalistic touches. The overall impression is more natural than urban, despite the proliferation of concrete. Signs of age and use can be achieved through the reclaimed materials and simply allowing the site to age naturally. The renovated site is in stark contrast to the sterile interiors of the surrounding buildings.

Finally, Separation and Privacy appears throughout the site, but especially on the north side. The berms around the pond create both enclosure, like the berm around Brooklyn Naval Cemetery Landscape (figure 14), and a slight noise-blocking effect for calm and quiet. The concept is built around sub-spaces between the existing circulation. The addition of more trees (especially the wooded area) and berms minimizes visibility just slightly to create a bit more mystery, so the entire site isn't visible at once.

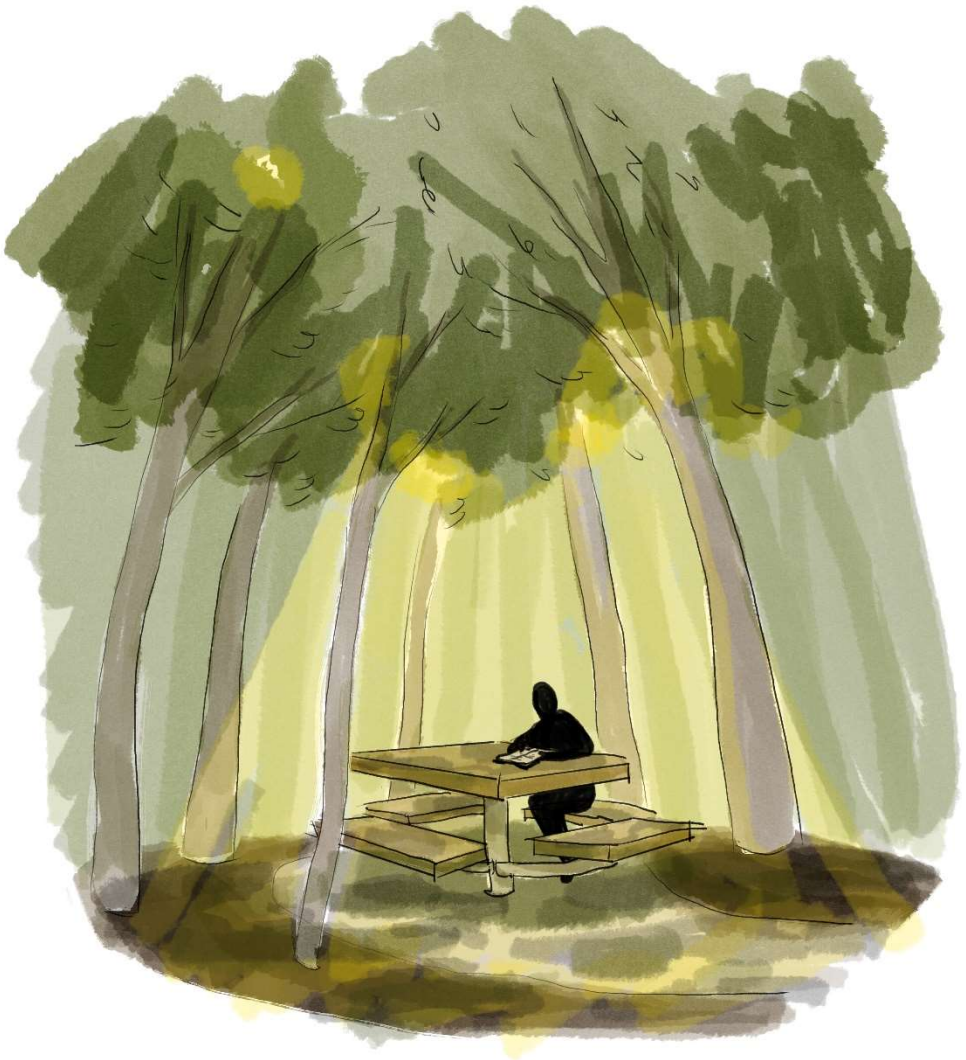

Figure 28: A view of a table in the wooded area.

Figure 29: A view of the meadow and benches looking west.

Figure 30: A view of the berms looking north.

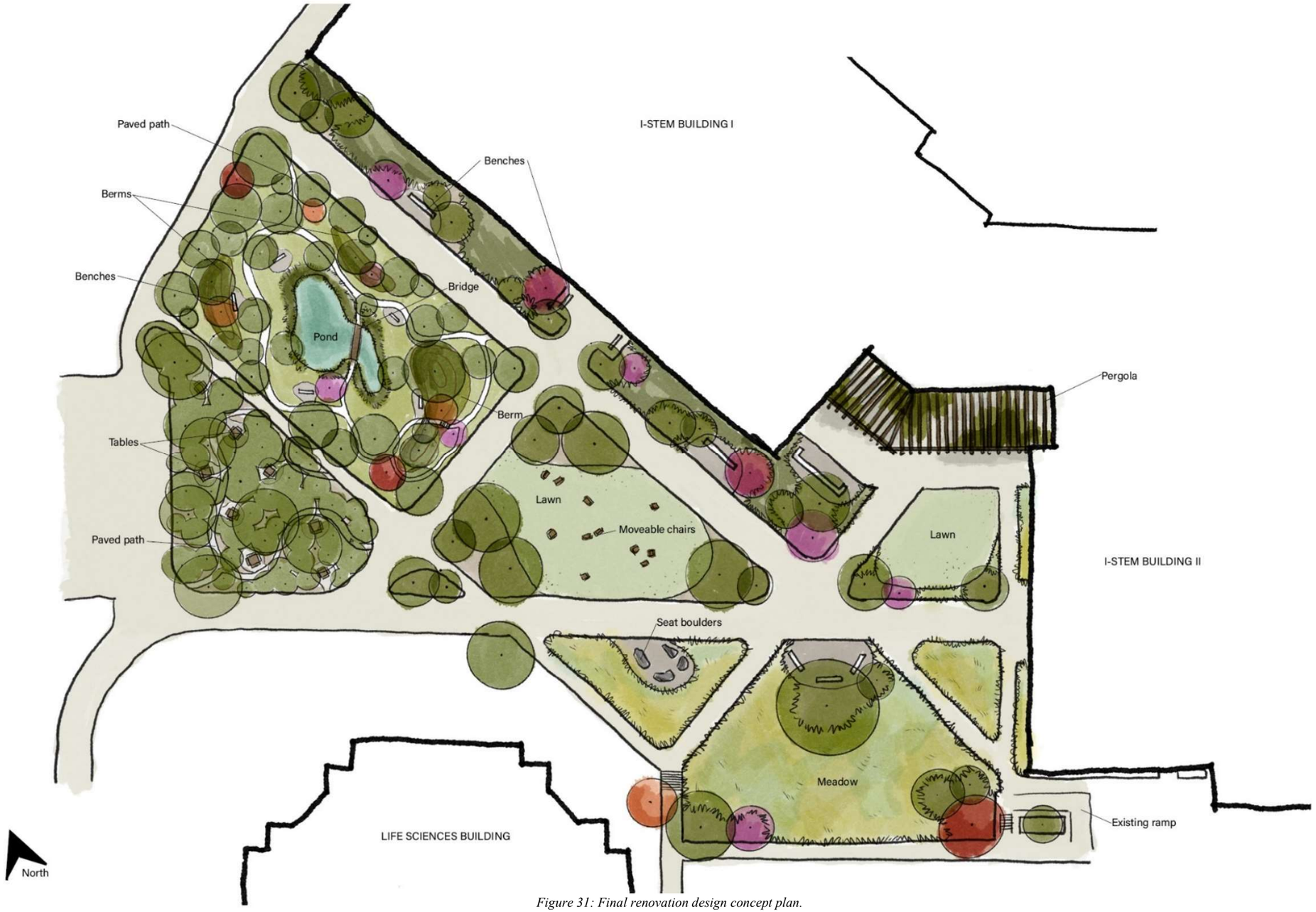

Figure 31: Final renovation design concept plan.

6.2 Redesign

Beginning from the same general design program (figure 25) as the renovation in Chapter 6.1, the redesign approaches by first considering circulation. How can it still function the way it needs to—getting students and employees to and from their classes and jobs—but in a less severe way than the existing design? Drawing on the shapes in Kurisu's gardens at Oregon State Penitentiary and Rosecrance, the first iteration (figure 32) places features in similar locations on the site to the renovation concept, but connects them with flowing, curving paths rather than straight lines. The idea of stairs as a place to sit is also introduced, as well as a curving ramp.

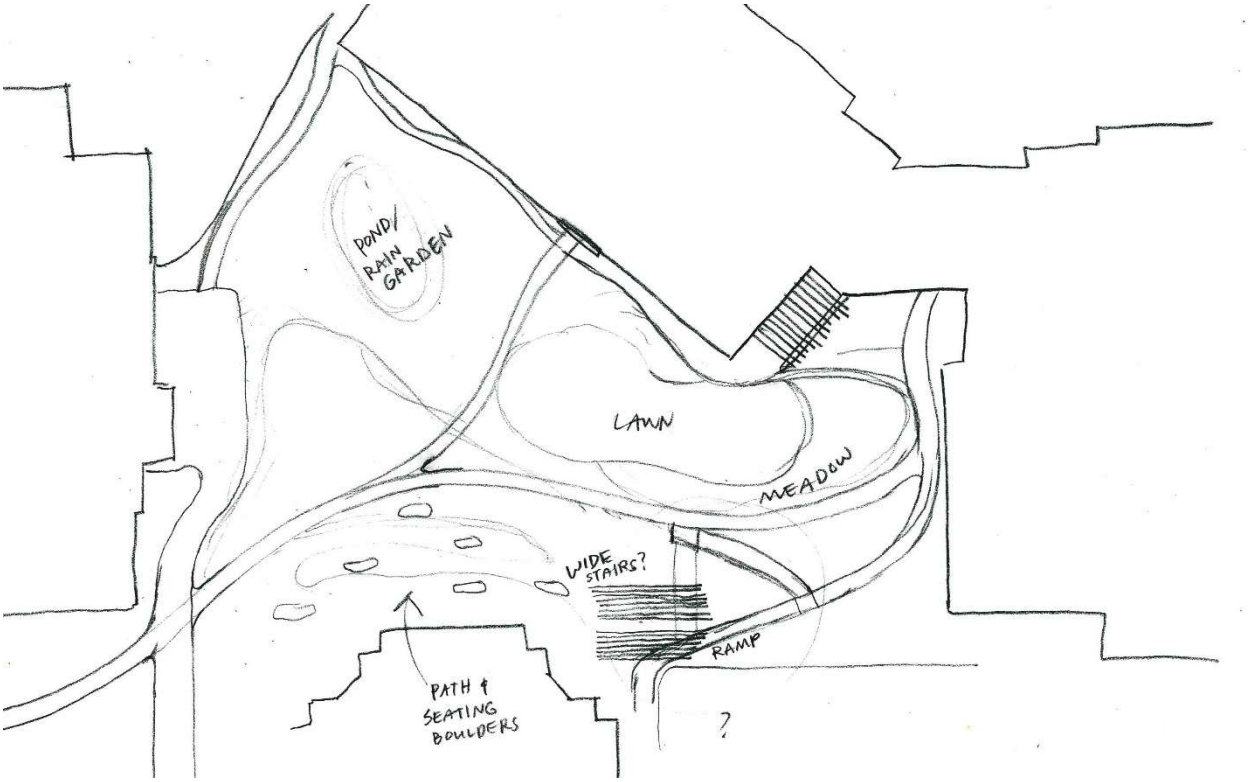

Figure 32: First iteration of redesign concept.

Figure 33: Second iteration of redesign concept.

The second iteration (figure 33) begins to fill in vegetation within the site—darker green on the left indicates trees and understory; light green on the right represents a lawn. A curving boardwalk inspired by Brooklyn Naval Cemetery Landscape (figure 15) connects to the main entrance of Building I, making access to nature part of the daily commute.

The third iteration (figure 34) introduces a curving landform that cradles the pond. This landform is a maximized version of the berms from the renovation concept—it creates enclosure on the interior for an even stronger sense of separation. A path along the spine of the landform creates a gently winding route to the highest point. The raised landform also allows for enhanced

views to the north, as well as views of the rest of the site. A wide walkway cuts through the landform (figure 37) to create a strong axis with the entrance to Building I. Instead of a boardwalk, this iteration explores a gravel and stone path (like those seen in traditional Japanese gardens), cutting through a gravel field dotted with boulders like those at the Whitman-Walker Healing Garden (figure 14) or the garden at Rosecrance (figure 13). A wooden platform over the water allows closer access to the pond via stairs from the landform. A convergence of paths in the south of the site seemed to be unavoidable, so they meet at a circular hub with a small grove of trees. This iteration also begins to play with seating alcoves cut into the landform, creating booth-like places to sit alone or in small groups (figure 36). These seating alcoves take shape of the landform and shrink it down, creating enclosure within enclosure.

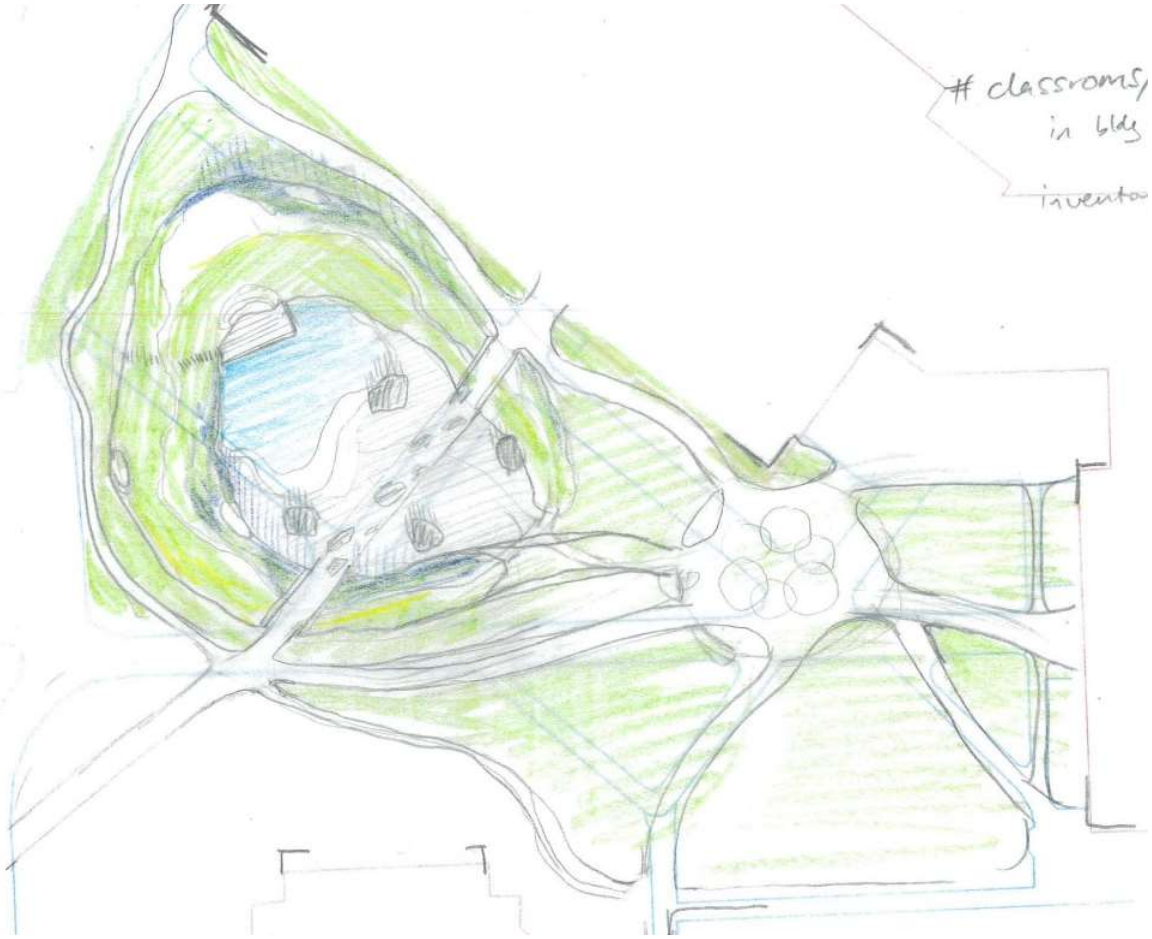

Figure 34: The third iteration of the redesign concept.

Figure 35: The fourth iteration of the redesign concept.

The fourth iteration (figure 35) replaces the gravel field around the pond and instead continues the meadow into the interior of the landform. In keeping with the principle of "more natural than urban," the gravel seemed too large an area to be devoid of plants. The boardwalk returns in this iteration, but with added access to the platform over the pond, making it accessible without stairs—an important aspect of the Welcoming to All category. A seat-height wall surrounds the hub at the confluence of paths, making it a gathering area as well as an intersection. A seat wall makes a welcoming entry because it is low enough to see over, but still signals enclosure and the start of a different subspace. Another subspace off that is also added in this iteration, cut into the gentle slope. A stone retaining wall on the high side paired with the canopy of the tree at the center would make this space very cozy—reminiscent of the Remembrance Garden (figure 11).

Figure 36: Detail sketches, including the seating alcove concept.

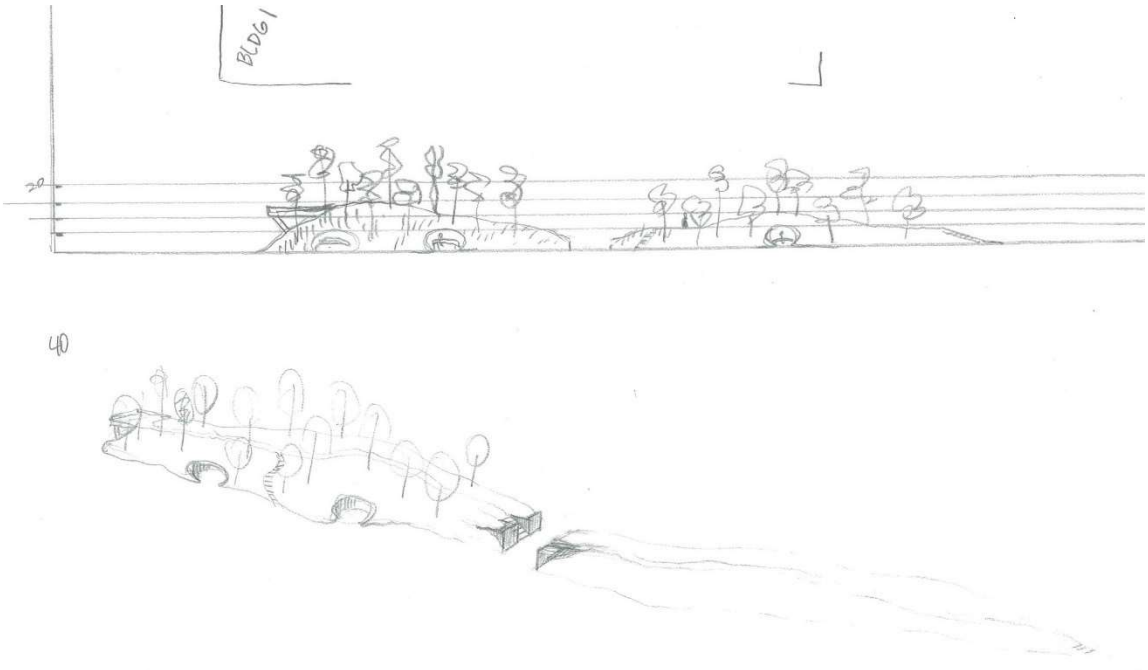

Figure 37: Process sketches of landform ideas.

The final redesign concept (figure 41) fulfilled all principles of the framework (table 20). As with the renovation concept, this concept is zoned to focus on the categories Awe and Fascination and Separation and Privacy on the north side of the site and Welcoming to All on the south side. On the north side, Separation and Privacy permeates as each of the subspaces has its own character while still part of a cohesive whole. The landform creates a strong sense of enclosure around the pond. It would block some sound, making the interior calming and quiet. It also directs views to an extent, so the entire site can't be seen at once.

Category	Principles	
Awe and Fascination	**Natural processes**	✓
	Access to nature	✓
	Wildlife encouraged	✓
	Space for imagination	✓
Welcoming to All	**ADA compliant at minimum**	✓
	Proximity and convenience	✓
	Clear wayfinding and space organization	✓
	Choices	✓
	Welcoming entry and edges	✓
	Interactive spaces	✓
	Serve students, employees, and community	✓
Aesthetics	**Natural materials**	✓
	More natural than urban	✓
	Signs of age and use	✓
	Contrast to surrounding area	✓
	Appears cared for	✓
Separation and Privacy	**Enclosure**	✓
	Sub-spaces	✓
	Calming and quiet	✓
	Can't see whole space at once	✓

Table 21: Evaluation of redesign concept.

Awe and Fascination are also well-represented. The water and the natural processes revealed through it are awe-eliciting, as is the wildlife that would be attracted to it. A small waterfall keeps the water moving and acts as a point of fascination, as would the meadow plants. The winding stairs set into the side of the landform are functional but also create space for imagination by guiding the eye of anyone enjoying the view. The boardwalk over the water and

the seating alcoves facing the pond also provide access to nature, allowing users to get close to the water and even touch it if they want.

As for the category Welcoming to All, the south side of the site is open and inviting at the entry and edges, allowing boundaries like the seat wall around the hub area to be visible. Space organization is evident, especially when entering from the south. The site remains ADA compliant with ample seating and level paths. Moveable seating near the path hub is interactive, letting users have a choice of where and with whom they would like to sit. There are also choices of path route, path material, and type of seating. The proximity of the site to highly populated buildings is already established. The site would serve the community of students, faculty and staff that work in the surrounding buildings.

The Aesthetics throughout the site adhere to the principle of natural materials—stone slab stairs, seat boulders, stone walls and pavers, wood chairs and benches. The overall feel of this concept is more natural than urban, as planted areas make up most of the site. The materials would certainly show signs of age and use over time, and the greenery would be a welcome contrast to the nearby buildings.

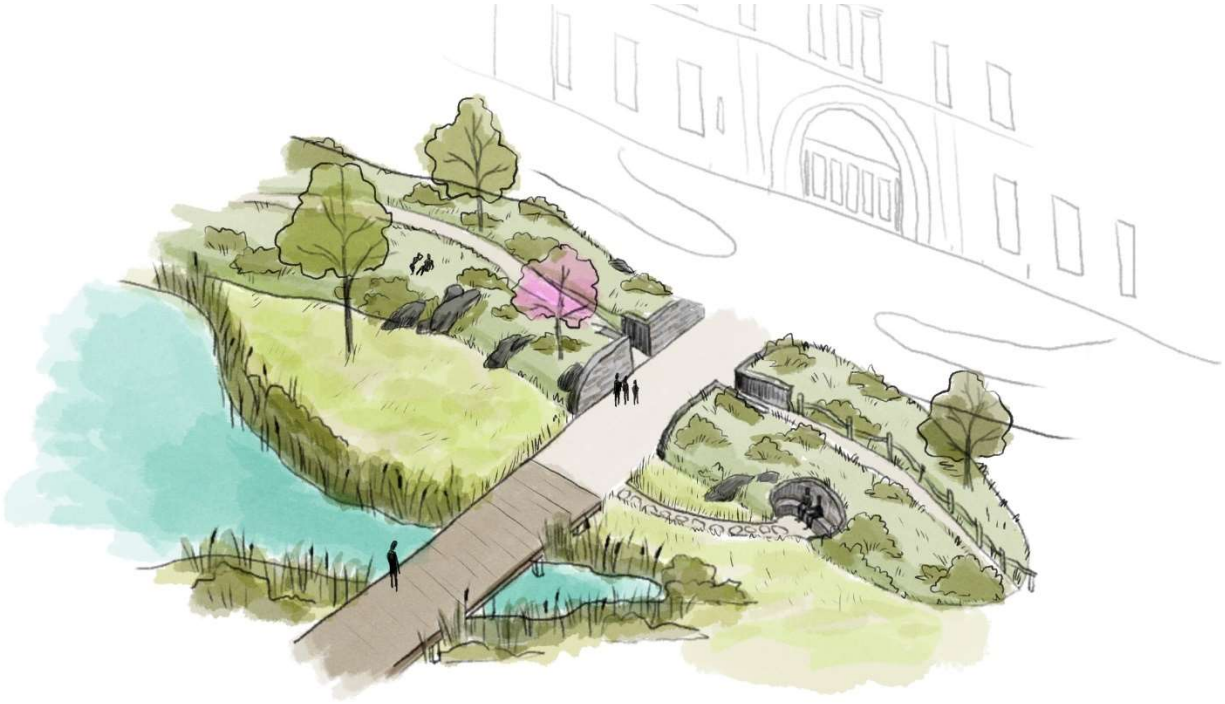

Figure 38: The landform and boardwalk at the entrance of Building I.

Figure 39: The hub where paths connect.

Figure 40: The seating alcove over the pond.

Figure 41: Final redesign concept plan.

CHAPTER 7

CONCLUSION

7.1 Discussion

In applying the framework to redesign an existing space on campus, this thesis aimed to evaluate the effectiveness and feasibility of the framework as a design tool for new developments on campus. This framework was not meant to guide a master plan level of campus design—it is meant to guide decisions in designing individual sites within a campus. The application site proved to be larger than most case study sites, creating a design challenge for the author. Reconciling the need for privacy with the need for gathering spaces, as well as the size of the site with the need for enclosure took a few tries.

Comparing the two designs and the process to create them, the renovation concept was significantly faster to design. The renovation process required only two iterations of designs to reach a final concept compared to the redesign's four. The renovation concept shows that a site doesn't need to start over to gain significant restorative qualities—in fact, a much less intensive renovation could probably still include every principle of the framework. This shows that unpleasant existing spaces can be updated to provide much better experiences for students and the entire campus community. The redesign process was more complex, as it should be. Many hours and sheets of trace paper contributed to the final concept. A totally new design is great for

tailoring every aspect of a landscape to restoration, but it may be more labor-intensive than time or budgets allow.

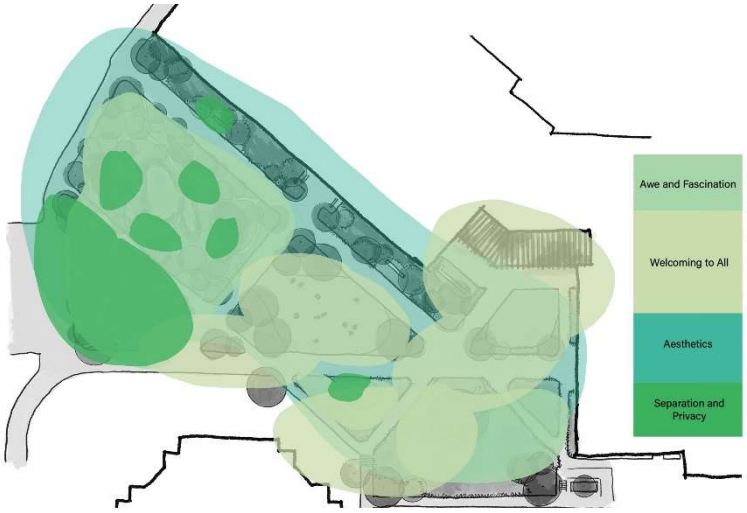

Figure 42: Placement of design elements by category in the renovation concept.

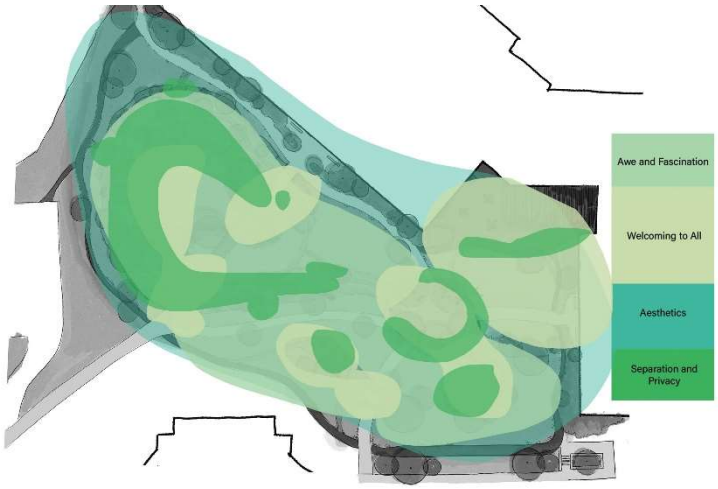

Figure 43: Placement of design elements by category in the redesign concept.

The format of the framework appeared to be appropriate for both designing and evaluating sites. The broader categories made it easier to consider the principles in relation to one another when designing. The design elements were helpful reminders of options but should not be prescriptive. As a design tool, the author found the framework to be useful in guiding choices that would otherwise be left entirely up to the designer's taste. Each choice had to be tied back to a principle, creating a streamlined and focused final design. Figures 42 and 43 show the

location of design elements from each category in each of the concepts. Although the two concepts were based on the same design program, it is evident that the redesign concept allowed for wider distribution of all categories, especially Separation and Privacy. A landscape renovation may not accommodate all categories in all areas of the site.

When used to evaluate a site, the organization of general to specific made it simple to identify design elements and the principles they represent. Using the principles as a check list also helped to visually communicate the ways that the case studies and designs were similar and different. One could evaluate the evaluations to find which principles had the most or least representation. The ease of fulfilling each principle of the framework may be noted, but it is not necessarily meant to be a rigorous critique of a site—instead, the framework is meant to inform a more holistic approach.

There are, however, limitations to the framework. Some of the case study sites that included most of the framework principles did not actually seem that restorative. The garden at San Diego State University has almost no shade or enclosure, and no sense of mystery or place to wander. However, because it includes elements like a water feature, natural materials, and a labyrinth-like path, it "passes" the framework evaluation. The framework could be amended to better account for the overall experience of a site. Instead of "can't see whole space at once," that principle could instead become "mystery," and include the experience of being drawn into a space and intrigued by it, which is more nuanced than just not being able to see the entire space at once.

The framework can also be applied to almost any landscape. The campus-specific elements could be made more explicit and more important. The idea of proximity and convenience is the main addition for college campuses. This should also mean that these

restorative landscapes are scattered throughout campus instead of having one or two central spaces. Each cluster of buildings should have their own restorative space. The principle of choice was meant to include a variety of options, including gathering spaces. However, due to the importance of gathering for college students, gathering may need to be its own principle within the framework. Other important restorative aspects that could benefit from more specific inclusion are seating and shade—two things that were missing from the less-restorative case studies and make a big difference in creating a place that people want to visit.

The use of the framework is also limited by the designer's influence and their individual and cultural preferences. The author was inspired by her own experience of the Georgia woods and the topography and atmosphere she finds familiar. People raised in different environments may find wooded areas threatening and prefer open space. Many people also have a lot of fear about wildlife, which is not addressed in the framework. The designs created here include many choices to allow for differing preferences, but the choices were largely decided by the designer, not the framework.

7.2 Future Research

Future research could build on this thesis by using the framework to evaluate existing spaces on campus to determine the most restorative areas. There are many spaces at UGA that students widely recognize as restorative. The turtle pond by the Ecology Building, the Founders' Garden, and the North Campus lawn are widely recognized by students to be the best places to relax on campus. Evidence of their value could convince the university to invest in more restorative landscapes. The framework could also be used as a design tool in a participatory process that invites students and community members to contribute to the design of campus

spaces. Claire Latané (2021) and Cooper Marcus and Sachs (2014) both mentioned the importance of user involvement in the design process. A built design made using the framework could be evaluated by users—the possibilities are endless. This framework was also created by the same person using it—further research involving other people may yield vastly different results. Another facet that could be explored is why these types of environments are not often employed on campus. A study of maintenance needs of restorative landscapes may be helpful in making more of them available. A design created with the grounds maintenance team might be very different than the designs produced here.

7.3 Reflections

This research was spurred by my own experiences being a young person in an uncertain world. My college years were riddled with panic attacks, intrusive thoughts, and constant worry. Back then, and even now, one of the only ways I found to feel better was through spending time outside. I could get lost watching birds build a nest or ants try to move a dried-up dead lizard. Being outside allowed my brain to get quiet enough that I could actually have thoughts rather than anxieties.

In researching this thesis, I have found more sources confirming my experiences than I could ever hope to include in a work this short. The process of researching and designing a framework to maximize the restorative potential of a campus landscape has been extremely gratifying. As our lives become more and more online and school becomes increasingly digital, it will be important for institutions to provide what Jenny Odell (2018) calls "contemplative space against the pressures of habit, familiarity, and distraction," and what most of us call restorative landscapes.

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