GARDEN RAILROADS TO TRAINSCAPES: A BACKYARD HOBBY GROWS UP

by

KRISTA ANNE GRIDLEY

(Under the Direction of R. Alfred Vick)

ABSTRACT

Generally perceived as a private hobby, garden railroads are emerging as popular attractions in public botanical gardens. An examination of this trend begins with an historical perspective on railroads and the pivotal role they played in the economic and cultural transformation of our nation. Botanical gardens have capitalized on this collective fascination with trains, using model railroads as tools to increase and diversify their visitor base. This thesis recognizes garden railroads as valuable assets to public gardens and offers a design process specific to their installation. Utilizing this design process, a conceptual plan is presented for a garden railroad at the Atlanta History Center.

INDEX WORDS: Garden railroads, trainscapes, garden design, Atlanta History Center, botanical garden, public gardens, model railroads, model trains.

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DEDICATION

This thesis is dedicated to my parents, Beverly and Gordon Gridley, for giving me a lifelong love of learning and for teaching me to play.

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CHAPTER ONE INTRODUCTION

Close your eyes. Take a slow, deep breath and imagine yourself strolling in a botanical garden. Conjure up a brilliant day with a summer breeze floating lazily in the air. Your favorite perennial beds are bursting with a kaleidoscopic display. Bees drone in the background, taking advantage of the myriad offerings. Ahead, the railroad tracks sweep into a curve as they approach the koi pond. Spanning the water, the intricate trestle extends beyond the other side, disappearing into the sculpted terrain of rock and vegetation. Stopping, you wait with eager anticipation. Rewarding your patience, the miniature steam engine finally emerges, loaded with freight and trailed by a rusty red caboose. Chugging across the trestle under full steam, it heads for the roses. All is right with the world.

"Wait a minute," you say, interrupting our shared vision. "This is a botanical garden. A public botanical garden. No steam engines. No freight cars or cabooses, either. The koi can stay, but scratch the trestle. Droning bees and bursting perennials, yes. Chugging, no. There are no railroads in the roses!"

You wouldn't be alone in your assertions. The popular perception is that garden railroads are merely backyard hobbies, empires constructed by a few railroad enthusiasts that haven't grown up. Eyed with suspicion and teased about their arrested development, these backyard magnates rule their industrial conglomerate as owner, president, CEO, financier, engineer, fireman, citizen, and child. Their realm is a private one, firmly rooted in the imagination. Garden railroads are a viable and thriving backyard hobby. Four days at the 20th Annual Garden Railway Convention in Denver, Colorado was enough to convince even the most skeptical. Not only was the enthusiasm contagious, it was exhausting. Over a thousand people converged on Denver from as far away as Europe to attend how-to clinics, prowl the vendor tables, tour local layouts and talk railroads. Supported by a national organization, innumerable clubs, an informative magazine, and plenty of suppliers, it is a hobby that nearly anyone could enjoy.

Despite the enduring perception of garden railroads as backyard enterprises, the tracks are beginning to lead elsewhere. In searching for ways to increase visitor attendance, public botanical gardens have discovered that people love trains. Is this a brilliant collaboration or garden heresy? Either way, this backyard hobby is steadily going public.

Is there a place for trains in public gardens? Should tracks snake their way through the rock garden and leap the koi pond? Do they really belong in the roses? If the reply is yes, then do they benefit from an intentional design process? This thesis offers answers to those questions and poses one other. Is a garden railroad appropriate for the Atlanta History Center?

Promoting the idea of a model railroad to corporate boards, botanists, and thesis committees is not for the faint of heart. Perceptions are enduring. They also change. Longwood Gardens built a railroad because one person's urging resonated with the staff.¹ Adam Sposato, manager of Visitor Services at the New York Botanical Gardens, delighted in relaying the story of the garden's president wandering through the exhibit making choo-choo-chooing sounds out loud.² Perhaps a garden railroad champion just needs to be young at heart and have a certain kind of vision.

So, close your eyes. Take a slow, deep breath and imagine yourself strolling in a botanical garden, perhaps at the Atlanta History Center. Wander along making choo-choo-chooing sounds. Then, turn the page.



Figure 1.1 The Colorado and Sparktown Garden Railway Lakewood, Colorado Photo credit: Author



Figure 1.2 The Hard Rock and Dynamite Garden Railway Littleton, Colorado Photo credit: Author



Figure 1.3 The Ogden Botanical Garden Railway Denver, Colorado Photo credit: Author



Figure 1.4 The Shadow Mountain Garden Railroad Evergreen, Colorado Photo credit: Author



Figure 1.5 The Laketown and Shire Garden Railroad Athens, Georgia Photo credit: Author



Figure 1.6 Tom's Train World Garden Railroad Greenwood Village, Colorado Photo credit: Author



Figure 1.7 The Shadow Mountain Garden Railroad Evergreen, Colorado Photo credit: Author



Figure 1.8 Swissminature Garden Railroad Lugano, Switzerland Photo credit: Don Nute

Notes

¹ Pam Carter, telephone interview, 14 January 2005. ² Adam Sposato, telephone interview, 11 January 2005.

CHAPTER TWO HISTORICAL PERSPECTIVE

Scarcely 175 years have passed since trains were first set to motion on track in this country. It has been a breathtaking ride. Along the way, railroads indelibly marked our collective history, playing a pivotal role in the economic and cultural transformation of our nation. The "romance of the rails" was bigger than life, blurring the boundaries of reality and fantasy. Trains were everywhere: in our landscape, literature, art, toys, language, and music. They have stolen our hearts, making it inevitable that we would recreate them as models.

Innovative as Americans can be, they didn't invent the railroad. The Germans were using rudimentary railways in ore mines as early as the sixteenth century. Everything was made from wood: the cars, the flanged wheels, and the rails. Typically built on a gradient, the cars utilized the force of gravity as motive power. When an adequate slope was not available to encourage movement, horses, mules or men were made to push them.¹

The British miners were not far behind, adopting such railways by the seventeenth century as a means of carrying coal to nearby water transportation centers. By the next century, iron rails had replaced the wooden ones, and two hundred miles of these horse-drawn tramways were dispersed across England.²

Inspired by the proliferation of these railways, a resourceful British mine owner began building the first railway locomotive in 1800. Richard Trevithick's early steam locomotives attracted crowds, but were treated as curiosities that enlisted little widespread support. Public interest increased dramatically in 1804 when his steam engine demonstrated that it could pull seventy passengers and ten tons of iron along a ten mile stretch of track.³

It was another Englishman, George Stephenson, who refined the steam locomotive enough to put it into regular carrier service. Opening in 1825, the Stockton and Darlington railway covered twelve miles and gave England its first public railroad.⁴

Meanwhile, back in America, steamboats were all the rage. Making its debut on the Hudson River in 1807, Robert Fulton's steamboat, <u>Clermont</u>, set the stage for a new era of transportation. Within four years steamboats had successfully navigated between Pittsburgh and New Orleans. Quickly accepted by the public, they were soon a common sight on the Great Lakes and along many rivers. Although steamboats had vastly improved transportation in this country, a fierce competitor was just around the corner.⁵

The Delaware and Hudson Canal Company started it all when their first locomotive, the <u>Lion</u>, was delivered to New York on May 13, 1829. Shortly after its arrival, the <u>Lion</u> steamed into history as the first locomotive to run on tracks in this country.⁶ The race was on.

Anxious to compete with the fledgling trade to the west, businessmen in Charleston and Baltimore were quick to capitalize on the Delaware and Hudson success. By 1830 the Baltimore and Ohio had thirteen miles of track and the South Carolina Canal and Railroad was offering passenger service from Charleston behind its new locomotive, the <u>Best Friend of Charleston</u>. The Mohawk and Hudson Railroad followed, and Boston's short lines were in operation by 1835.⁷

America quickly outpaced Europe in its efforts to lay track and run trains. By the year 1840, sixty railroad companies were operating on over 2,800 miles of track compared with the 1,500 miles that existed in all of Europe. The next ten years more than tripled that number with

track existing in every state east of the Mississippi River. Still, these companies operated independently and the network that would later cover this country like a spider's web did not exist.⁸

In his book <u>All Aboard! The Railroad in American Life</u>, railroad historian George Douglas offers a description of this irrepressible frontier enthusiasm:

The British had invented the railroad, had figured out how to make it work. But they were aghast at what Americans did with their invention. Mostly using the same gauge as the British railroads, Americans were more generous with the loading gauge, making it possible to build enormous locomotives (too big to be safe, they said in England). Furthermore, these crazy Americans built lines to everywhere – even to nowhere at all. Nobody in Europe would have dreamed of building a railroad into uninhabited territory. You had to have two great metropolises – Birmingham and Manchester, let's say. But Americans believed in this agency of growth, saw it as a way of creating their civilization from nothing, and laid tracks into the wide open spaces. And then, where the railroad went, settlers immediately followed.⁹

The innovations of the 1850s were reflected in the rapid rate of expansion to 30,000 miles of rail. The telegraph now controlled train traffic and the economic influence of many eastern cities had swept westward. Served by eleven railroad companies, Chicago had grown into one of the leading centers for the increasingly complex railroad industry. By mid-decade, with only five percent of the world's population, the United States had managed to lay almost as much track as the rest of the world combined.¹⁰

Still, east and west did not meet. That historic event finally happened on May 10, 1869 at Promontory Point, Utah when the Central Pacific arrived from the west coast to meet the Union Pacific from the east. The Golden Spike ceremony celebrated not only the accomplishment at hand, but also the future it predicted. By the end of the century, the ubiquitous railroad was the connecting link between almost every town and its neighbors.¹¹

Not even four years of civil war could slow the industry's growth, and mileage continued to increase until the depression that followed the Panic of 1893. Seven of the largest lines were in financial straits along with numerous smaller ones. In the scramble to escape receivership, many railroads were forced to reorganize, resulting in the formation of new lines such as the Southern Railway.¹²

First appearing in the 1920s, diesel engines were initially used only in the switchyards. However, with the advent of streamline passenger service, their use became more widespread and eventually they replaced the steam locomotives for hauling both passengers and freight. These engines were cleaner, more reliable, cheaper to run and easier to maintain. Forty years later, the old iron horse could only be found on abandoned track sidings, "stuffed" as museum pieces, or renovated for service on the occasional tourist line.¹³

Just as the locomotive had edged out the steamboat a century before, the Model T Ford presented the railroads with unexpected competition. By 1927 there were over 15 million of them, and their popularity continued to grow at the expense of the railroad.¹⁴ The railroads saw an appreciable decline in both passenger and freight service between 1940 and 1960. With three million miles of road at their disposal, automobiles and trucks had become too convenient.¹⁵

Understanding the historical significance of the railroad is essential to unraveling the mystery of our fascination with trains in general, and model trains in particular. Author William Withuhn sums up the far-reaching effects of railroads on our culture in his book, <u>The Spirit of Steam: The Golden Age of North American Steam</u>:

From any perspective, however, railroads were pivotal to our history for more than one hundred years. They were one of the most important change agents by which our lives have been shaped. Railroads spread immigration throughout most of North America, became the first 'big business,' became also the unique business that physically interconnected every other economic and social activity in the land, and created some of the greatest wealth - and some of the greatest economic and human abuses - North America has ever seen.¹⁶

As railroads swept across the country, they inevitably altered the physical landscape. In John Stilgoe's book on this subject, <u>Metropolitan Corridor</u>, he describes these unique linear environments:

Metropolitan corridor designates the portion of the American built environment that evolved along railroad rights-of-way in the years between 1880 and 1935. No traditional spatial term, not <u>urban</u>, <u>suburban</u>, or <u>rural</u>, not <u>cityscape</u> or <u>landscape</u>, adequately identifies the space that perplexed so many turn-of-the-century observers. Reaching from the very hearts of great cities across industrial zones, suburbs, small towns, and into mountain wilderness, the metropolitan corridor objectified in its unprecedented arrangement of space and structure a wholly new lifestyle. Along it flowed the forces of modernization, announcing the character of the twentieth century, and abutting it sprouted new clusters of building. Its peculiar juxtaposition of elements attracted the scrutiny of photographers and advertising illustrators; its romance inveigled poets and novelists; its energy challenged architects, landscape architects, and urban designers.¹⁷ In another Stilgoe book, Outside Lies Magic: Regaining History and Awareness in

Everyday Places, the metropolitan corridor is described from the viewpoint of an explorer.

"Rusted and toppled, broken windowed and half burned, always dilapidated but somehow enduring in its nineteenth-century built-forever corporate capitalist way, the abandoned railroad corridor rewards any explorer at all intrigued by industrial archaeology, linear ecology, historical geography, and it rewards any explorer anxious to shortcut well-used highways, to probe the gently graded routes around which the contemporary built environment still nestles."¹⁸

These ubiquitous corridors of rusted rails extend to everywhere, and nowhere, leading some to point out that the destination is only part of the story. A landscape architect known for his insights on vernacular landscapes, John Brinckerhoff Jackson said, "I suspect no landscape, vernacular or otherwise, can be comprehended unless we perceive it as an organization of space; unless we ask ourselves who owns or uses the spaces, how they were created and how they change."¹⁹

Americans have woven this complex story into a colorful tapestry of railroad folklore. Life on and around the railroad has been celebrated by authors, photographers, musicians, storytellers, and toy manufacturers. Folklorist B. A. Botkin asserts:

The impact of the railroad on the American imagination has been greater than that of any other industry, and for good reason. ...like seafaring, it preserves a tradition of individual courage, high emprise, and wanderlust. Like a ship, an engine is called she, and not merely because she wears apron, collar, yoke, binder, muffler, jacket, cap, bonnet, petticoat, shoes, pumps, hose, sleeve, wrapper, hood, and sash, according to the old wheeze. An engine is a thing of beauty, with a whim of iron, for a man to master or be mastered by. And "her" romance is inseparable from "her" reality.²⁰

Musically, this romance has been celebrated across a variety of traditions, but especially by blues, bluegrass and country music performers. After all, nothing does justice to the lonesome <u>wah-wah</u> of a train whistle like the harmonica. In the hands of a skilled musician, banjos, dobros, fiddles and slide guitars perfectly imitate the tempo of a train barreling down the track or easing into the station. The heart quickens and the feet move when Doc and Merle Watson, Roy Acuff, Johnny Cash, Grandpa Jones, Bill Monroe, Vassar Clements, Woody Guthrie, Lester Flatt or Earl Scruggs perform such pieces as the "Cannonball Rag," "The Orange Blossom Special," "Train 45," or the "Wabash Cannonball." Musician Mike Cross laments the "Last of the Freight Train Hoboes" and his slide guitar brings you down the rails to the station platform with the "Panama Limited." The lyrics can be sad and lonesome, too, like in "Waiting for a Train," "Southbound," "The Hobo," "The Wreck of Old 97," and "That Train That Carried My Girl From Town."

Literature also profited from the vast subject matter presented by the railroad and its lore. A whole genre developed as novels, newspapers, and magazines spun their tales of truth and fiction. Glorifying life on the railroad, these stories transported the reader into a world of adventure and mystery. Daring engineers saved their trains from peril and loyal railroad employees sacrificed personal comfort in the service of the public good. Romantic liaisons and broken hearts were often the reward for being a railroading man. While the popularity of train literature as a genre has decreased since the 1950s, trains still find their way into literature as an enduring subject matter.

Outside this genre, novelists, biographers, travel writers, poets, playwrights, historians and social philosophers often employed references to the railroad. Writing about life meant writing about railroads. Thomas Wolfe wrote, "The rails go westward in the dark. / Brother, have you seen starlight on the rails? / Have you heard the thunder of the fast express?"²¹ In his book <u>Walden</u>, Henry Thoreau complains, "That devilish Iron Horse, whose ear-rending neigh is

heard throughout the town, has muddied the Boiling Spring with his foot." Accusingly he goes on, "and he it is that has browsed off all the woods on Walden shore." ²² In her short story, "The Train," Flannery O'Connor describes traveling in a passenger car, "Now the train was greyflying past instants of trees and quick spaces of field and a motionless sky that sped darkening away in the opposite direction."²³

Children's literature eagerly embraced trains. Time-honored stories such as Wally Piper's <u>The Little Engine that Could</u> and Marian Potter's <u>The Little Red Caboose</u> teach valuable lessons about optimism, perseverance and self-esteem. Chris Van Allsburg puts you on board for a magical Christmas ride in <u>The Polar Express</u>. Thomas the Tank stories, a popular children's series by W. Rev Awdry, engages the imagination of younger children, recounting the many adventures of this steam engine personified. With a title like <u>Chugga-Chugga Choo-Choo</u>, what child could resist the rhyming work of Kevin Lewis?

Often sponsored by the railroad companies themselves, train art reinforced the American love affair with railroads. Leafing through a Walthers, Schrader's or Historic Rail catalog is like taking a step back in time, back to the heyday of trains. Although many of the lines featured no longer exist, the buyer can choose from a vast array of memorabilia from such lines as the Lackawanna, the Santa Fe, the Southern, the B&O, the Soo Line, or the Milwaukee Road. Herald signs, calendars, paintings, puzzles, reproductions of Lionel ads, maps, replicas of depot signs, and Christmas cards are but a sampling of the merchandise offered. Railroad emblems adorn everything from shot glasses and lapel pins to T-shirts and blankets. The sale of nostalgia is big business and railroads are no exception.

Nostalgia is clearly an element in the photographic documentation of railroads. Amateur and professional railfans alike have chased locomotives across the country, looking for the

perfect shot, chronicling a company's triumphs, or satisfying a personal quest. Photographers such as O. Winston Link, Ted Benson, Jim Shaughnessy, Gerald W. Best, Lucius Beebe, John Gruber and Don Ball, Jr. have left us an amazing visual legacy. This legacy is more than coffee table browsing material. Anne Lyden explores this in her book, <u>Railroad Vision: Photography, Travel, and Perception:</u> "Over the years the railroad has been a vehicle for social and political change in modern society, and photography, as a visual medium that defines the physical world, has had an important bearing on how we see ourselves in this society and how our perceptions continue to evolve. In short, this mutually beneficial relationship has shaped our experience of the modern world."²⁴

The movie industry took still photography one step further in the 1920s, creating a potpourri of train films over the ensuing years. John Stilgoe describes the fascination that directors had with trains: "As the titles of so many films make clear, directors gloried in the mystery of the railroad at night, and cinematographers filmed the uncanny illumination of the headlight flashing from one structure to another, the eerie beam of the signal light, the gyrations of the hand-held kerosene lantern."²⁵

The themes of these railroad films varied. Early films like <u>The Black Diamond Express</u>, <u>The Great Train Robbery</u>, and <u>The Midnight Flyer</u> featured drama and romance. Others documented the growth of the industry, described technological advances, warned teens of the dangers inherent in riding the rails illegally, or recounted historical events. Mystery and suspense are reflected in the names of features such as <u>The Lady Vanishes</u>, <u>Terror by Night</u>, <u>Murder on the Orient Express</u>, <u>Secret Agent</u>, <u>Night Train to Milan</u>, <u>Rome Express</u>, <u>North by</u> <u>Northwest</u>, <u>Sabotage</u>, and <u>From Russia with Love</u>. Familiar titles of westerns include <u>How the</u>

West Was Won, High Noon, The Horse Soldiers, 3:10 to Yuma, Bad Day at Black Rock, Last Train from Gun Hill, and Once upon a Time in the West.

Comedies got plenty of laughs from railroad material. Railroad historian George Douglas wrote of these slapstick films:

Train-car chases and other slapstick sequences were vivid in the imagination of nearly all the silent directors and producers. There were Mack Sennett and Hal Roach, who led many a locomotive a merry chase during the 1920s. There was Buster Keaton's comic masterpiece, <u>The General</u>, and his <u>Our Hospitality</u>. There was Harry Langdon attempting to shave in a swaying Pullman car in <u>The Luck of the Foolish</u>. There was W. C. Fields stepping on and appropriating another man's ticket for a Pullman berth in <u>Poppy</u>. There were Laurel and Hardy trying to go to sleep in the same Pullman berth in <u>The Big Noise</u>. There were the Marx Brothers chopping up railway cars for fuel in <u>Go West</u>.²⁶

Americans were intrigued by the adventurous and seemingly carefree life of the hobo, quickly incorporating them into railroad folklore. Some were certainly quenching a thirst for carefree travel, but most were forced to a life on the rails by financial woes. Thousands of men, women and teenagers rode the rails in search of jobs and fortunes that often never materialized. Despite the charm of coded symbols, trackside campfires, and colorful "monikers" or nicknames, it was a dangerous life.

Certain trains acquired reputations of their own, especially the fast and sleek ones. Stilgoe recalls, "So magnificent was the Illinois Central crack express – <u>The Panama Limited</u> – that every day for twelve years the Sixth Mississippi District court at Vaiden recessed so that everyone could watch it come through the station."²⁷

Ultimately, this fascination with the railroad is a reflection of the human experience which gives it its context. Railroad scholar William Withuhn explains this context, "The problem today, in trying to recapture the spirit of railroading from a half-century ago, is that the machines – the big and often spectacular locomotive and trains from those days – are not enough. The context is missing. In fact, I would argue, the interest one might have in trains, either then or today, is not really intrinsic at all but entirely dependent on context." He goes on to say, "The missing context is people. The appeal of trains in the steam age was based not on the big machines but on the human beings - the people who ran the trains, the people who used the trains, and their human purposes in doing so. People were the 'spirit,' not the machines."²⁸

John Stilgoe, in his study of the metropolitan corridor, considers the importance of this human context:

All the wonders of the metropolitan corridor, the elegance, the speed, the precision, and, above all, the energy sapped the traditional strength of small-town America, making Main Street into an extension of Depot Street or Railroad Avenue. In the years after 1880, railroad depots became the hubs of small-town life; around them developed businesses dependent on train transportation, and in them converged people anxious to learn the latest telegraphic news, to greet travelers from the corridor, and to depart from traditional life to the mysteries of Pullman sleepers and underground terminals. No longer did the general store, barber shop, and post office focus small-town life; instead the depot, the gateway to the corridor, attracted everyone interested in metropolitan excitement.²⁹

Dolores Hayden is another author that deals with contextual issues. In her book <u>The</u> <u>Power of Place: Urban Landscapes as Public History</u>, she writes, "Like the dwelling, which may

be typical of the way millions were sheltered, something as basic as a railroad or streetcar system changes the quality of everyday life in the urban landscape, while marking the terrain. For some it provides jobs in design, or construction, or operation, or maintenance; for others, it makes a journey to work through the city possible; for a few, it may bring profits as an investment."³⁰ Hayden refers to it again, "People invest places with social and cultural meaning, and urban landscape history can provide a framework for connecting those meanings into contemporary urban life."³¹

William Withuhn seems to grasp the nuance of our enduring fascination with trains. He writes, "It is the people associated with the machine that must give it meaning. To the railroad fan, the contextual human meaning seems unimportant to him, but it is there nonetheless, hidden in the recesses of memory. The machine's true meaning, for him, is hidden in the human associations that went along on his first train ride long before, or in the human associations he made for himself. A machine, by and of itself, has no meaning."³² District courts may no longer recess to watch the local express come through the station, but there are few who can resist at least a glance for a passing line of freight. We model what we love, and we still love trains.

Just as the real locomotives were invented by the English, so too were the models. Historian Guy Williams states:

There is a strong possibility that Matthew Murray, who built the geared-for-safety rack engines for John Blenkinsop's coal mine near Leeds, in England, was actually the first man ever to make a model locomotive. Certainly, it is known that in 1812 he made two replicas of the engine that was already running successfully – each replica being onetwelfth the size of the original. Murray gave one of the models to his sponsor, John Blenkinsop, who used it for showing other mine managers the advantages of steam locomotion. The other, Murray packed off to the Czar of Russia, hoping to interest that powerful man in the value of railways.³³

Additionally, Williams asserts that "It is safe to say that scale models, produced individually by fine craftsmen purely for their creators' pleasure, began to appear in reasonably large numbers in almost every country almost as soon as railways were an established feature of the landscape. Fine specimens dating from the late 1830s and the 1840s can be found in many different parts of the world."³⁴

Author Gil Paust points out, "Strange as it may seem, the most ardent modelers of the early days of the train era were inventors, engineers, and locomotive salesmen. Traveling salesmen carry sample cases when they peddle their wares, but a locomotive salesman couldn't tuck a giant steam engine under his arm. He needed a model, perfectly detailed and capable of operating. The company engineer supplied him with one."³⁵

Of course, these detailed models were not built to be played with, at least not by children on the kitchen floor. The growing popularity of trains made it only a matter of time before someone began making them to sell as toys. Williams describes these emerging toy companies:

... during the 1830s and 1840s astute manufacturers in several different parts of the world were producing crude and inexpensively made toys that distantly resembled trains. Birmingham, England, became an important centre for the production of cheap tinplate models. Wooden locomotives and freight cars intended for the nurseries of very young children were exported in large numbers from Germany and other northern European countries. By 1850 there were several American firms busily engaged in the production of trackless locomotives and cars that were designed to be pulled across playroom floors on lengths of string. Among the earliest manufacturers of these toys were the Merriam Manufacturing Company, of Durham, Connecticut; Hull and Stafford, of Clinton, Connecticut; and Francis, Field and Francis, of Philadelphia. A little later came James Fallows and Company, of Philadelphia, which brand marked its toys IXL (I Excel).³⁶

Williams goes on to recount an amusing episode early in the movement toward self-propelled models:

... in the summer of 1838 the members of the Mechanics' Institution at Leeds, Great Britain, set up an exhibition to which scholars, students and apprentices were admitted by season ticket. One of the exhibits attracted an unusual amount of attention. In the centre of a miniature lake, the men who had organized the exhibition had made, with rocks and ferns, a miniature island. Around the outer edge of the island they arranged a miniature railway line, and on this line ran, with a bravura that was entirely appropriate to an occasion that may have been historic, a small model locomotive. Concealed in the rocks and ferns, the mechanic who had been appointed to operate the little engine had to work with furious abandon just to make it go. With a pair of household bellows he puffed energetically at the glowing charcoal in the tiny firebox in a frantic attempt to raise sufficient steam. At first, the engine sulked, and refused to do anything more exciting than letting out an occasional spurt of hot, oily water in the faces of the eager spectators. Then, to the sound of loud cheers, it started to move, and make a slow, majestic circuit of the island. After the man in charge had done some more puffing, it set off again – this time, having hot, dry cylinders, at a greater speed. Around and around the island it went, at an ever-increasing pace, until at last, unable to sustain the burden of its sudden blaze of glory, it screamed off the lines and plunged with a dramatic hiss into the lake.³⁷

In 1840, a model enthusiast from Vermont had privately experimented with a locomotive fitted with an electric motor,³⁸ but the manufacture of electrically powered trains was still about a decade away. A Boston, Massachusetts company, Palmer and Hall, was offering one for sale in their 1850 catalog. The Novelty Electric Company of Philadelphia was turning out electric trains by 1884, but they were still beyond the budget of most hobbyists.³⁹

Märklin Brothers, a German firm established in 1888, was the first toy company to manufacture affordable electric trains. Initially producing "tinplates," simple models stamped from sheets of tin, the company expanded rapidly. By 1900 they were building electric and live steam models for commercial sale in Europe.⁴⁰

The Bing brothers were early competitors for Märklin, briefly able to claim the title of largest toymaker in the world. In an effort to capture the toy train market, they simultaneously fabricated more than 250 car designs based on actual rail lines operating in Europe, the United States, Great Britain and Canada.⁴¹

In the early years, the firm of Ives led the way in model train production in America. Known for their trackless trains in the late 1800s, they launched a line of clockwork track locomotives in 1901. Clockwork required the user to wind the train up, but it was an improvement over the earlier friction drive mechanisms that employed a flywheel. Ives continued to improve their models and remained a popular company until their bankruptcy during the Great Depression.⁴²

Wenman Bassett-Lowke played a major role in the toy industry's development of prototypical, or true-to-scale models. Influenced by the precision German engines showcased at the 1900 Paris Exhibition, he introduced his <u>Lady of the Lake</u> in 1901, a true-to-scale 1 ³/₄ inch gauge clockwork engine. It was an instant success.⁴³

Model railroading as a hobby gradually evolved during the 1930s and 1940s. In Britain, Edward Beal pressed for a higher level of realism in layout development⁴⁴ while, according to Robert Schleicher, others:

... like the late Watson House, John Page, Minton Cronkite, Al Kalmbach, Harry Bondurant, and Linn Westcott ran trains over their three-rail layouts with switching and timetable operations that were almost identical to the real thing. It was the late Frank Ellison, however, who was one of the first model railroaders to combine the "art" of running a model railroad as though it were real and the "art" of true scale miniatures into one system. Mr. Ellison was also the first to describe it in the model railroad books and magazines published just before and after World War II.⁴⁵

For some, at least, modeling trains had become a sophisticated pursuit.

Sluggish during World War II, the model train industry soon made up for lost time. Popular American companies like Lionel, American Flyer, Walthers, and A. C. Gilbert had an increasing number of competitors in the European market, companies such as Rivarossi, Märklin, Rovex Industries, LIMA, and Fleishmann's.⁴⁶ The industry continued to grow until the early 1950s when sales began to decline. The 1960s brought a slump in the market and some expressed fears that model trains would soon be relegated to the shelves of collectors.⁴⁷ Fortunately, they didn't gather dust for long.

Sam Posey, in his recent book <u>Playing With Trains: A Passion Beyond Scale</u>, refers to model railroading today as a \$400 million business. Posey goes on to discuss two Milwaukee, Wisconsin companies, Kalmbach Publishing and W. K. Walthers, describing them as "the twin pillars upon which the hobby of HO model railroading rests." Walthers, the largest wholesale supplier in the United States, offers a vast array of railroad modeling products from over 3,500

companies. The other pillar, Kalmbach, publishes the magazines <u>Trains</u>, <u>Model Railroader</u>, <u>Classic Trains</u>, <u>Garden Railways</u>, and <u>Classic Toy Trains</u>, as well as an impressive selection of books, videos, DVDs, and other products for the hobby.⁴⁸ For the model railroad enthusiast, product availability is a safe bet.

Are we chugging across the trestle yet? Exactly what are garden railroads? How did they jump the backyard fence? What sent them steaming into the roses? Should we put them back? Leaving the general overview of the hobby, these questions are next.
Notes

⁵ Stover 10.

⁶ Williams 37.

⁷ Stover 13.

⁸ Stover 16.

⁹ Douglas xv.

¹⁰ Stover 20.

¹¹ Gil Paust, <u>Model Railroading: How to Plan, Build, and Maintain Your Trains and Pikes</u>. (Garden City: Doubleday, 1981) 13-14.

¹² Stover 48.

¹³ Stover 116-118.

¹⁴ Stover 56.

¹⁵ Stover 116.

¹⁶ William L. Withuhn, The Spirit of Steam: The Golden Age of North American Steam. (New York: Smithmark, 1995) 10.

¹⁷ John R. Stilgoe, Metropolitan Corridor: Railroads and the American Scene. (New Haven, CT: Yale UP,

1983) 3. ¹⁸ John R. Stilgoe, <u>Outside Lies Magic: Regaining History and Awareness in Everyday Places</u>. (New York: Walker, 1998) 47-48.

¹⁹ Lippard 8.

²⁰ B. A. Botkin and Alvin F. Harlow, eds, <u>A Treasury of Railroad Folklore:</u> The Stories, Tall Tales,

Traditions, Ballads and Songs of the American Railroad Man. (New York: Bonanza, 1953) xi.

²¹ Botkin iii.

²² Stilgoe, <u>Metropolitan</u> 140.

²³ Flannery O'Connor, Flannery O'Connor: Collected Works, ed. Sally Fitzgerald (New York: Library of America, 1988) 753.

²⁴ Anne M Lyden, <u>Railroad Vision: Photography, Travel, and Perception</u> (Los Angeles, CA: J. Paul Getty Museum, 2003) 1.

²⁵ Stilgoe, <u>Metropolitan</u> 258.

²⁶ Douglas 365-366.

²⁷ Stilgoe, <u>Metropolitan</u> 70.

²⁸ Withuhn 7-8.

²⁹ Stilgoe, <u>Metropolitan</u> 193.

³⁰ Dolores Hayden. The Power of Place: Urban Landscapes as Public History (Cambridge, MA: MIT P.

1995) 22. ³¹ Hayden 78.

³² Withuhn 9.

³³ Williams 43.

³⁴ Williams 47.

³⁵ Paust 14.

³⁶ Williams 45. ³⁷ Williams 45-47.

³⁸ Paust 14.

³⁹ Williams 134.

⁴⁰ Williams 50.

⁴¹ Williams 50-52. ⁴² Williams 52.

⁴³ Williams 55.

¹ Guy Williams, The World of Model Trains (Secaucus, NJ: Chartwell, 1970) 25.

² George H. Douglas, All Aboard! The Railroad in American Life. (New York: Smithmark, 1996) 14. ³ Williams 28.

⁴ John F. Stover, The Routledge Historical Atlas of the American Railroads, ed. Mark C. Carnes (New York: Routledge, 1999) 12.

 ⁴⁴ Terry Allen, ed. <u>The Encyclopedia of Model Railroads</u> (1979; London: Peerage, 1985) 14.
⁴⁵ Robert Schleicher, <u>The HO Model Railroading Handbook</u> (1979; Radnor, PA: Chilton, 1983) 13.
⁴⁶ Williams 60-63.
⁴⁷ Douglas 371.
⁴⁸ Sam Posey, <u>Playing With Trains: A Passion Beyond Scale</u> (New York: Random, 2004) 117-118.

CHAPTER THREE GARDEN RAILROADS

Technically, it could be argued that any model railroad possessing at least one plant is a garden railroad. Try that definition on a garden railroader, even one whose layout is still a just a dream, and the response might be a horrified gasp. After all, this is serious stuff! Serious maybe, but definition proves elusive, and rules are few. Climb aboard and you could find yourself transported to the rural Midwest; Chama, New Mexico; a West Virginia coal mine; or J. R. R. Tolkien's Middle Earth. Be assured that wherever you go, no two trains arrive in the same place.

The United States and England experienced a surge of interest in garden railroads during the 1920s and 1930s. British author, C. J. Freezer, describes the 1930s as the "heyday of the outdoor railway."¹ The Fairplex Garden Railroad, located in Pomona, California, began during this time, first opening in 1922 as an exhibit for the Los Angeles County Fair.² Remaining popular in Europe, this heyday didn't last long in the United States, declining dramatically by the end of WWII. It took a German firm, Lehmann Gross Bahn (LGB), to reignite America's interest in large scale trains. At the 1967 Nuremburg Toy Fair, Lehmann unveiled its new line of G-scale trains constructed of weather resistant plastic. Originally German prototypes were used for their models, but in 1985 the company began modeling American lines. Hobbyists in the United States could now find models of their favorite railroads on store shelves, bringing the Americans back into the market.³ With enthusiasm for the hobby growing, botanical gardens began to consider garden railroads as potential attractions. Established in 1991, the railroad at the New York Botanical Garden was originally located in an outdoor area, but was later moved into the renovated Enid A. Haupt Conservatory.⁴ The Rio Grande Botanical Garden, in Albuquerque, New Mexico, laid down its first loop of track in 1998, adding another section three years ago.⁵ Just outside Denver, Colorado, the Hudson Gardens began their railroad construction in 1999,⁶ and the Chicago Botanic Garden followed suit in May 2000.⁷ Located in Palm Desert, California, the Living Desert Zoo and Gardens has featured a railroad for five years.⁸ In Pennsylvania, Longwood Gardens has been running a railroad for four years.⁹ The railroad at the New Orleans Botanical Garden is an example of a more recent installation, opening to the public in March 2004.¹⁰

Standardized scales and track gauges emerged early, allowing modelers to collect rolling stock from a variety of manufacturers. Although sometimes mistakenly used interchangeably, the terms scale and gauge describe two different dimensions. Scale expresses the size ratio between a model and the real thing, or prototype. The most popular garden railroad scale is G, denoted by the ratio of 1:22.5. This means that models in G-scale are 22¹/₂ times smaller than the real locomotives they imitate. To further clarify this image, picture a model engine and its tender as averaging two feet in length. Gauge, on the other hand, designates the distance between track rails, with G-scale trains running on 1 ³/₄" (45mm) gauge track.¹¹ Seven different scales run on this gauge track, allowing facilities like the Fairplex Garden Railroad to showcase an extensive and varied collection of rolling stock.¹²

Motive power was originally supplied by the small person moving quickly on the other end of a string. Lacking enough sophistication for adults, these soon evolved into locomotives with weighted flywheel arrangements or wind-up clockwork mechanisms. Wind-ups wound down until 1926 when Märklin made the electrical leap, ushering in the 20 volt power system.¹³ Today, motive power comes in three basic flavors besides a string: electricity, battery and live steam.

Electricity has long been the standard for railroad motive power in the garden. Properly installed, it is an inexpensive and reliable source of power. Still, there are some considerations to keep in mind. Since engines obtain their power from electrified rails, conductivity is a primary concern and dictates much of the required maintenance. Consistent delivery of electricity requires intact wiring, a clear track, and clean rails. Risk is minimal when properly installed and adequately supervised.

Advancements in battery design have led to an increased interest in battery operated units. While tracks must still be clear, electrical connections and frequent rail scrubbing is not necessary. Although today's smaller, rechargeable batteries hold their charge longer, lengthy operating sessions still require battery changes. None of the public gardens interviewed as case studies use batteries as a source of power.

As evidenced by the dramatic hissing plunge into the lake at the Mechanics Institution in Leeds, live steam has been around for a long time. Today it has a loyal following of very patient and resourceful engineers. Requiring more attention and maintenance during operating sessions, most public venues choose not to feature them. Two exceptions, New Orleans and the Colorado Railroad Museum, invite their volunteers to bring live steam engines to run on the layout.¹⁴

For a public garden railroad, careful consideration of motive power translates into reliable operation and customer satisfaction. When visitors come to see trains, they expect them to be running. Fairplex added power in 1923 because viewers from the previous year thought the stationary trolley should be designed to run.¹⁵ New Orleans offers a more recent illustration of

the way visitor demand drives operations. Originally advertised as a Thursday through Sunday event, a daily schedule was adopted in response to complaints from visitors who showed up on Tuesdays expecting to watch trains run.¹⁶

Judging from case study interviews, every garden's challenge is to keep the trains running. Maintenance of track, engines, rolling stock, and structures require a significant investment of time, energy and money. Fairplex volunteers contribute over 12,000 hours yearly toward railroad upkeep and improvements. Using volunteers to dispense with labor costs, they still spend \$5,000 annually for maintenance.¹⁷ Adam Sposato, manager of visitor services for the New York Botanical Garden, says he is lucky to have two trainmasters on his regular staff, allowing operations and maintenance to be handled in house during their annual Christmas train show.¹⁸ Even gardens with smaller layouts invest significantly in upkeep, relying heavily on dedicated and creative volunteers.

Generally located in outdoor settings, layout operation is directly affected by local weather conditions. Frigid winters force the closure of Chicago's railroad from November through Memorial Day.¹⁹ On the opposite end of the spectrum, extreme heat shuts down the Living Desert railroad from mid-June until the first of October. High winds send trains plunging off trestles, requiring preemptive temporary halts in operation.²⁰ The New Orleans Botanical Garden deals with tracks that buckle in the heat and sand that loves to sink. Paul Soniat, manager of their garden railroad, likens it to running a real railroad. "Things break and you fix them. It's very high maintenance, but worth it."²¹

Dave Rodelius, garden railroad manager for Chicago, laughed at the interview question about maintenance. Echoing the comments of other railroad managers, he reports keeping plenty of spare locomotives on hand. "The learning curve was steep the first year. We didn't plan ahead enough and needed more locomotives. We actually had to break a few things in order to learn how to run it." This resulted in the implementation of a structured daily service routine. Employing two model engines equipped with sweepers and a few cleaning cars, the first shift begins cleaning the entire track at 7:30 a.m. Debris is cleared from the layout, trains are placed on fourteen different tracks, and everything runs by ten. Evening crews retrieve trains, wipe them down, and store them away on shelves.²²

The need for routine care extends to buildings, structures and landscaping as well. Wind, snow, rain, sun, temperature extremes, human curiosity and gnawing herbivores all take their toll. Current renovation work at Living Desert is aimed at thwarting the chewing proclivities of resident squirrels and chipmunks. Wiring is being retrofitted into conduits, and other areas are receiving reinforcements of chicken wire and concrete.²³ Gardens with seasonal displays tend to bring their less durable items inside during the off-season, including some of the plants. While prolonging the life of these assets, it does require partial reassembly of the layout each year.

The size and complexity of a garden railroad is apparently limited only by space, budget, and personal or corporate preference. Dimensions vary widely, as does the length of track and the number of trains that can run on it. Garden Railroad Coordinator, Bob Toohey, is confident in his assertion that the Fairplex is the "oldest and largest outdoor public garden railroad in the United States."²⁴ At 30,000 square feet, or the size of a football field, the claim would be hard to dispute. He goes on to write, "There is over 8,800 feet of operating track consisting of three main lines, a mountain line, and various smaller lines. Up to 30 different trains can operate independently at any given time..."²⁵

Competing for superlatives, the Living Desert's claim to the largest G-scale free-standing trestle (201'8") is backed by the Guiness Book of World Records. Built of redwood with a 1%

grade, the trestle scribes a large circle in the layout. The design can support fourteen trains on 2,400 feet of track.²⁶

Impressive as those figures are, smaller layouts can still deliver plenty of value through creative utilization of space and materials. Similar to each other in size, the Chicago and New Orleans layouts cover 7,500 and 8,000 square feet respectively. Chicago has fourteen tracks that can run 15 trains simultaneously.²⁷ On the New Orleans layout, three trains and five streetcars can be run easily, with additional trains added when there are enough engineers to watch them closely.²⁸ When building the 5,000 square foot railroad at Hudson Gardens, volunteers took advantage of a steep hillside location, planning switchbacks that wind in and out of constructed rock formations.²⁹ The New York Botanical Garden took advantage of a newly-renovated conservatory to house its seasonal holiday train show. Thirteen different tracks snake their way through two glass conservatory houses, adding to the charm of the display.³⁰

When it comes to choosing a garden railroad theme, private backyard magnates are blessed with a lot of freedom. Each railroad is different, just like the real ones they represent – or don't. Running the gamut from serious to whimsical, simple to complex, prototypicallycorrect to free-lanced, the themes are varied and refreshingly unpredictable.

Theme selection for a botanical garden requires careful consideration. Public venues are garden railroad ambassadors, promoting modeling to a diverse audience. The opposite is also true. Garden railroads are botanical garden ambassadors as well, inviting a new kind of visitor to the garden. Inherent in this mutual relationship is the need to choose railroad themes that reflect the mission of the organization while still appealing broadly to guests. Public venues may be more circumspect in their choices of representation, but they aren't afraid to have fun.

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The following case studies illustrate the iterative nature of thematic development. Loosely woven themes have served some sites well, with staff and volunteers cooperatively guiding the effort. Other gardens have welcomed the opportunity to incorporate multiple disparate themes, taking full advantage of expansion opportunities. Clearly defined themes are beneficial when a significant fundraising effort is required, if the services of a designer are used, or if strict correlation with an agency mission statement is expected. Even for gardens with clearly stated objectives, the railroads have evolved over time, taking on a life of their own. Interestingly, railroad evolution seems to demand expansion rather than reduction in size.

Pat Hayward, horticultural editor for the Garden Railways magazine, describes the Hudson Gardens near Denver, Colorado, "as a 'classic regional display garden,' which means it's comprised entirely of plants, flowers, and trees that grow in the dry Colorado climate." She goes on to say, "In that same philosophy, the railroad is also filled with plants hardy to the region, and many Rocky Mountain natives are included." ³¹ Andrea Nyquist, coordinator for the railroad, described the layout as an opportunity to interpret both the local landscape and the region's history. With forty tons of skillfully arranged native rock, a replica of the Littleton depot, and narrow gauge Durango Silverton cars emerging from the tunnels, the scene is convincingly Colorado.³²

When asked about the Rio Grande's theme, Jon Stewart's reply was simple, "Just for fun." He went on to describe it as "western-looking" with turn of the century buildings and a pueblo-style depot. Despite the late-1800s look, diesel and steam run side by side on their two mainlines, the "North Track" and the "Butterfly Loop." Apparently "just for fun" is so much fun that three years ago the garden added another section of railroad. Taking playfulness one step

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further, Snoopy climbs aboard in a Santa suit during their Christmas "River of Lights" display. Running trains only at night during this time, luminaries decorate the cars.³³

New York has built their entire holiday season around its trains, with the theme maturing over time. Manager Adam Sposato credits trains with being a major part of its success, but is quick to point out that trains alone are not enough.³⁴ Landscape architect Paul Busse agrees. He describes his holiday extravaganza at the New York Botanical Garden as a display that features something for everyone. For older visitors, it sparks memories, while children love the color, texture, motion and sound. Gardeners appreciate the illusion of landscape to scale, and train enthusiasts get to see trains running everywhere.³⁵ To the miniaturists, it's about interpretation and details. The members of Busse's staff understand the importance of detail, spending 2,800 hours getting ready for this year's show in New York.³⁶

Festive holiday decorations adorn historic New York City landmarks such as the Statue of Liberty, the Guggenheim, Radio City Music Hall, Saks Fifth Avenue, Central Park's Cop Cot, Grand Central Terminal, the Plaza Hotel and the Empire State Building, to name only a few. Each year the garden purchases new buildings from Busse for their growing collection, surprising visitors returning from previous seasons.

A signature of Busse's work, the buildings, structures and landscapes are all crafted from natural materials, contributing to the magical scene. <u>All Aboard!</u>, one of the holiday train show books published annually by the garden, offers a description of the 1862 Music Pavilion that reads like an apothecary inventory. "Our bandstand base is made from cattails, canella berries, grapevine, pine cone scales, cut gourds, dried wild flax grass, and lotus seeds with columns of redbud and acorn caps."³⁷ The marble lions flanking the entrance to the New York Public

Library are reproduced "from pear-shaped pods with grapevine tendril tails, okra seed eyes, and wild meadow grass manes."³⁸

The New Orleans Botanical Garden had their historic city in mind as well when they hired Paul Busse to install their railroad. Paul Soniat, manager and instigator for the New Orleans layout, described it as a collaborative effort. The staff envisioned a display that was both entertaining and educational. Knowing that they wanted to represent the distinctive neighborhoods of New Orleans, Busse suggested a layout in the shape of the city. Showcasing historic districts such as the famed French Quarter allows an opportunity to highlight the city's unique architectural features. Reflecting New Orleans' long tradition of trains and streetcars, the rolling stock boasts recognizable names like "Smoky Mary" and "Desire." Soniat believes the railroad is "a good way to tell stories about history."³⁹

Longwood Gardens offers a seasonal railroad as a feature of their annual Fall Garden Fest. Pam Carter, railroad manager for Longwood, believes this "immensely popular" display is a perfect way to interpret the history of the site while incorporating plant materials at the same time. She considers it "an enhancement" that gives visitors multiple levels of experience as they have fun watching it, learn about the hobby, get exposure to the garden, participate in the festival, and learn some site history.⁴⁰

Formerly the estate of industrialist Pierre du Pont, the property has a rich agricultural history. Busse's creativity is right at home here, with his signature waterfalls, pools, tall bridges, and buildings. Historic buildings include the property's original farmhouse, the main conservatory, the dairy barn, Philadelphia's Baldwin House and the Mendenhall Railroad Station. Visitors instantly recognize the 1:24 scale version of Longwood's Conservatory. This

elaborate model of the Orangery and Exhibition Hall is glazed with panes of resin glass contained by mullions of reed grass.⁴¹

During its first two years, the Living Desert railroad existed only as an extra Christmas feature during the annual light display. Deciding to make it a year round offering, local volunteers got busy. Designed by a retired superior court judge, the theme is loosely built around a "Main Street USA" look from the 1940s and 1950s. The nearby town of Indio is represented by the railroad station, railyard, hospital, fire station and other city structures. The builders replicated a dozen historical "submarines," or small buildings that were covered with burlap and fitted with a drip system for early air conditioning.

An excellent example of a layout with multiple themes, new sections continue to be added. Cliff dwellings resembling those of Mesa Verde adorn the recently constructed Grand Canyon. A timber-harvesting operation dominates one area and a mine runs in another. The Colorado Rockies came in last summer with another 430 feet of track. The railroad also features a European alpine scene, complete with large peaks and characteristic buildings. Joe Schneider, manager of the railroad, laughed as he said, "I know it sounds a little out of place, but it works great."⁴²

Always looking for special exhibit ideas, Chicago envisioned their railroad as a one-time summer event and hired Paul Busse to do it. Instead of a short-lived display, its popularity guaranteed it a permanent slot. Beginning as a celebration of the National Parks, the theme has evolved into one based on American landmarks, with a recent emphasis on Chicago. The replica of Wrigley Field is full of "spectators" and actually plays Harry Caray's rendition of "Take Me Out to the Ballgame." Director of Interpretive Programs for the Chicago Botanic Garden, Kristie Webber, has another favorite. She never tires of watching the famous Yellowstone geyser, "Old Faithful" shoot water into the air every minute or so. The detailed Napa Valley scene uses small ivy to replicate the grapes growing in the vineyard. Other recognizable landmarks include the Hancock Building, the Seattle Space Needle, the Statue of Liberty, Galena, Grant's Home, and Casey Jones' house.⁴³

The Fairplex Garden Railroad began in 1922 as a high school shop class project designed to promote a reservoir and recreational area being proposed by the U. S. Corps of Engineers. Concurrently, the Pacific Electric Railway Company was studying the feasibility of running a weekend trolley over the 22-mile distance from Los Angeles to the recreational area and they requested a model trolley for display. From those early beginnings, the layout has continued to grow and change over the years.⁴⁴

In 1998, the Fairplex Exhibit Department invited its volunteers to participate in the development of a business plan that would determine the railroad's future direction. Desiring an educational component to the exhibit, they chose the theme "California Discovered – The Role of the Railroads." A mountainous section depicts mining and logging operations in the late 1800s along with a western town that may have supported such activities. Representing Los Angeles between the years 1920 and 1980, another area features rural agrarian scenes, business and civic centers, an airport and a circus. Topping off this visual display is the "fantasy corner," an opportunity to explore possibilities for the future.⁴⁵

As with every other aspect of garden railroading, there is more than one way to think about plants. Featuring native plants is a perfect way to convey a "sense of place" to a garden visitor. For a Christmas show, however, natives are less important than a festive look. Railroads in hot climates are blessed if they have shade. Dry, arid regions require a specialized plant palette dictated by their ability to survive. Gardens located in colder zones may depend on hardy permanent plantings that are supplemented generously with annuals. Aquatic plants provide additional interest when water features are present. Color, texture and size are other key considerations when designing a railroad planting scheme.

When it comes to plants, a division of labor is common for private garden railroads. Even when the whole family is involved, someone usually identifies as the "plant person" and someone claims the title of "train person." The same appears to be generally true in botanical garden settings. For instance, plants tend to be installed and maintained by the horticulture staff, water pumps are the domain of the physical plant employees, and trains are run by the railroad crew. Like everything else, though, it is not a hard and fast rule. Gardens that use volunteers have talented and dedicated crews that willingly take on all of these roles.

By now, dollar signs and question marks have probably entered your mind. Concrete numbers have proven elusive. When questioning convention attendees about the level of financial investment required for a backyard layout, they were quick to offer reassurance. Still, the only price tag given was the off-repeated spousal response, "It's cheaper than a bass boat."

Quotable cost figures were not available for the public sites interviewed, primarily because there are so many factors involved. The initial capital layout is significant, including expenses associated with planning, construction, equipment, structures, and plant materials. Ongoing costs add up quickly: maintenance, staffing, promotional literature, volunteer supervision, horticultural expenses, repairs, spare cars, and new structures. Adam Sposato pointed out that the actual trains themselves are a small proportion of the cost of New York's display. For instance, they added twelve new buildings this year, installed a sound system in the conservatory, and hired musicians to play for the show. The event also demands many hours of staff overtime for the horticulture, visitor services, and security departments.⁴⁶

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Jon Stewart described the cost for the Rio Grande garden railroad as "a lot of capital layout." He went on to say that \$1,000 is easily spent on a model steam engine, and having sound on every engine costs extra.⁴⁷ Chicago's layout was touted as "a considerable investment."⁴⁸ New Orleans manager, Paul Soniat, stated that it cost approximately \$250,000 for their first year of operation. Built entirely from funds donated specifically for the railroad, no debt was incurred because of it.⁴⁹ Writing of the Fairplex, Bob Toohey states, "We know the Howard family sold it to Mr. & Mrs. Templin for \$80,000 in 1958. Since 1996, over \$160,000 has been spent in the renovation. This does not take into account the value of product, which has been donated, or the rolling stock on loan."⁵⁰

It doesn't take a mathematician or a fisherman to guess that the cost of public garden railroads may exceed that of a bass boat, even a very nice bass boat. The question is, with price tags like that, are they worth it? That question will be addressed in the next chapter.

Garden railroads have definitely jumped the backyard fence and moved into the realm of public gardens. As the case studies illustrate, they are easily adapted to a variety of settings and offer abundant programmatic opportunities for the gardens they occupy. For garden visitors, they have proven to be an attractive and welcome addition.



Figure 3.1 Chicago Botanic Garden Photo credit: Bill Biderbost



Figure 3.2 Chicago Botanic Garden Photo credit: Paul Busse



Figure 3.3 Home of Abraham Lincoln Chicago Botanic Garden Photo credit: Bill Biderbost



Figure 3.4 The White House Chicago Botanic Garden Photo credit: Bill Biderbost



Figure 3.5 Waterfall Chicago Botanic Garden Photo credit: Paul Busse



Figure 3.6 Chicago Botanic Garden Photo credit: Paul Busse



Figure 3.7 Hudson Gardens and Event Center Photo credit: Author



Figure 3.8 Hudson Gardens and Event Center Photo credit: Author



Figure 3.9 Hudson Gardens and Event Center Photo credit: Author



Figure 3.10 Hudson Gardens and Event Center Photo credit: Author



Figure 3.11 Hudson Gardens and Event Center Photo credit: Author



Figure 3.12 Hudson Gardens and Event Center Photo credit: Author



Figure 3.13 Living Desert Zoo and Gardens Photo credit: Blair Barnette



Figure 3.14 Living Desert Zoo and Gardens Photo credit: Blair Barnette



Figure 3.15 Living Desert Zoo and Gardens Photo credit: Blair Barnette



Figure 3.16 Living Desert Zoo and Gardens Photo credit: Blair Barnette



Figure 3.17 Living Desert Zoo and Gardens Photo credit: Blair Barnette



Figure 3.18 Living Desert Zoo and Gardens Photo credit: Blair Barnette



Figure 3.19 The Conservatory Longwood Gardens Photo credit: Pam Carter



Figure 3.20 Longwood Gardens Photo credit: Pam Carter



Figure 3.21 Longwood Gardens Photo credit: Paul Busse



Figure 3.22 The Fountain Building Longwood Gardens Photo credit: Paul Busse



Figure 3.23 Longwood Gardens Photo credit: Paul Busse



Figure 3.24 New Orleans Botanical Garden Photo credit: Damian Montelaro



Figure 3.25 New Orleans Botanical Garden Photo credit: Damian Montelaro



Figure 3.26 New Orleans Botanical Garden Photo credit: Damian Montelaro



Figure 3.27 New Orleans Botanical Garden Photo credit: Damian Montelaro



Figure 3.28 New Orleans Botanical Garden Photo credit: Damian Montelaro



Figure 3.29 New Orleans Botanical Garden Photo credit: Damian Montelaro



Figure 3.30 Rio Grande Botanical Garden Photo credit: Jon Stewart



Figure 3.31 Rio Grande Botanical Garden Photo credit: Jon Stewart



Figure 3.32 Rio Grande Botanical Garden Photo credit: Jon Stewart



Figure 3.33 Rio Grande Botanical Garden Photo credit: Jon Stewart

Notes

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| ² Bob Toohey, e-mail to the author, 20 January 2005 |
| ³ Margaret Falk, and Anne Steinbrook, eds. <u>All Aboard! A Tour of the Holiday Train Show at the New</u> |
| York Botanical Garden (New York: Shop in the Garden, 2003) 10-11. |
| ⁴ Falk 7-8. |
| ⁵ Jon Stewart, telephone interview, 11 January 2005. |
| ⁶ Andrea Nyquist, personal interview, 13 August 2004. |
| ⁷ Dave Rodelius, telephone interview, 3 February 2005. |
| ⁸ Joe Schneider, telephone interview, 11 January 2005. |
| ⁹ Pam Carter telephone interview 14 January 2005 |
| ¹⁰ Paul Soniat, telephone interview, 20 January 2005. |
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| 12 Toohev |
| ¹³ Guy Williams. The World of Model Trains (Secaucus, NJ: Chartwell, 1970) 135. |
| ¹⁴ Soniat |
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| ²⁵ Toohey |
| ²⁶ Schneider |
| ²⁷ Rodelius |
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| ³¹ Pat Hayward "Garden Railroads at Public Gardens: Part 2." Garden Railways (Oct. 2001): 37-39 |
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| 37 Falk 26 |
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| ³⁹ Soniat |
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| ⁴⁷ Stewart |
| ⁴⁸ Webber |
| ⁴⁹ Soniat. |
| ⁵⁰ Toohey. |
| 50 |

CHAPTER FOUR

THE VALUE OF RAILROADS IN PUBLIC GARDENS

Webster defines <u>value</u> as "something (as a principle or quality) intrinsically valuable or desirable." ¹ What does that have to do with model railroads in public venues? The obvious answer is that we invest time, energy, and money into the things we value. Successful public garden railroads require all three. However, this answer is incomplete without considering a second question. What do we find intrinsically valuable or desirable about having model railroads in botanical gardens?

A cursory look at the topic immediately brings to mind the value of entertainment. The corollary to entertainment is increased visitor attendance. Taking it further, closer examination reveals surprisingly important, though less tangible, ways that railroads add value to a garden. For instance, they provide opportunities to stir memories, convey a "sense of place," celebrate community, and interpret history. In fact, these less obvious benefits may prove to be the most powerful, evoking a response from visitors that cannot be measured in terms of money and attendance.

No matter your age, model railroads are fun to watch. Play is an integral part of being human, and even the simplest of garden railroads are playful. Professor Robert Fagen, a wildlife biologist at the University of Alaska, points out that "as animals grow to full adulthood, they no longer need to learn as much from their play, but their play keeps them behaviorally flexible. Through play, adult animals can deal better with challenges and change. Through play, they can better relate to their young and their mates.²

Diane Ackerman, in her book <u>Deep Play</u>, sees value in play from another perspective. "For humans, play is a refuge from ordinary life, a sanctuary of the mind, where one is exempt from life's customs, methods, and decrees."³ She goes on to say that an adult "...<u>chooses</u> to wipe the mental slate clean, <u>chooses</u> to be naïve and wholly open to the world, as one once was as a child. If cynicism is inevitable as one ages, so is the yearning for innocence. To children heaven is being an adult, and to adults heaven is being children again."⁴ Adam Sposato captures that idea when he describes what people like about New York's Holiday Train Show. "People walk in as adults and walk out as children."⁵

Another author on the subject of play, Lenore Terr, writes, "Play makes people scintillate. It creates a kind of mental click that frees you to begin sorting things out. The lack of play dulls a person - and it may well be that an overall lack of play dulls a society."⁶ Furthermore, she believes that we have come to devalue our play. As our years increase, the time we spend playing falls off dramatically. In our effort to get ahead, we are a tired and stressed population. We have forgotten the value of play in our lives.⁷

Paul Busse hasn't forgotten how to play. Known for his elaborate railroad designs, he thrives on the enjoyment visitors get from his visually complicated displays. He makes it impossible to take it all in at once, enticing the viewer to discover the nuances of his work. They look for the arrival of a train, even if it has only been "gone" briefly. Once the train is out of sight, they start waiting for its arrival again. Expectancy and anticipation bring the element of time into it.⁸ Sposato echoes Busse's sentiments. "It's refreshing for us to show this side of
ourselves. For instance, it's unusual for the garden to throw lights on the trees."⁹ Imagination is vital to play.

In a recent telephone interview, Busse was asked why botanical gardens were increasingly interested in having model railroad displays. Without hesitation, he chalked it up to a desire for increased visitor attendance, which ultimately translates into economic gain. He believes that, for many people, a garden is basically a still life, and trains introduce motion and the element of time. Railroads provide an opportunity to spark an interest beyond plants and serve as an excuse for people to go to the garden.¹⁰ Botanical gardens that rely on admission fees for significant portions of their budgets are more than willing to give their visitors another reason to come.

Prior to the first Holiday Train Show in New York, the seasonal audience was, for all practical purposes, non-existent. In an effort to increase attendance, the garden worked collaboratively with Paul Busse to design their entire holiday season around trains. Completely underwritten by the garden, with corporate and individual sponsors as well, the organization is completely committed to funding this event. "We don't hold back anything on this display," said Sposato. Although this season's numbers were not yet tallied at the time of the interview, he was confident that the garden had exceeded all projected financial goals. Wildly successful, it has become their busiest six weeks of the year. Last year, for the first time, the garden began issuing timed entry tickets to assist with visitor traffic flow.¹¹

After seeing garden railroads in other places and reading extensively about them, Paul Soniat was certain that a garden railroad would increase attendance at the New Orleans Botanical Garden. From the beginning, there was an expectation that the railroad would make a positive contribution to the overall park mission. Translating into an approximate 20% increase in park membership, they haven't been disappointed. Soniat says, "There is definitely a place for these railroads in public gardens. It has added value to what people come to see."¹²

Managers from other gardens agree. Pam Carter says that even though Longwood's railroad doesn't have to pay for itself, it is definitely a revenue builder. A large number of people come to see the trains, increasing visitor diversity.¹³ As a major feature of the annual Los Angeles County Fair, the Fairplex Garden Railroad draws over 1.4 million guests during the eighteen-day show. Visitors also enjoy the opportunity to see the layout once a month and during special events.¹⁴

The Chicago Botanic Garden membership is up, partly because families like to return frequently to watch trains. Kristie Webber believes it gives children positive memories of visiting a garden, encouraging them to come again.¹⁵ Come again they do, with Chicago's railroad attendance last season totaling 188,000 for the five-month time period. Paying for itself with a nominal extra fee, Dave Rodelius says it definitely increases overall garden attendance. In fact, he has been told by administrators that the railroad is the best and largest attraction they've ever had. Rodelius doesn't need anyone to tell him that. Last year, a young boy sent him a letter with a check for \$16.43 to buy a new engine for the railroad. Apparently this young man is given money each month to save and donate to charities of his choice. He wanted to help support Chicago's railroad because it had "the coolest trains in the coolest garden."¹⁶ Clearly, Chicago's railroad pays for itself.

So far, the discussion has covered the most obvious values of entertainment, increased attendance and increased revenue, but what about the more subtle ones? As noted previously, many public garden railroads feature themes that are not only entertaining, but educational as well. Chris Brooks, Head of Historic Houses at the Atlanta History Center, believes that a

garden railroad would fit perfectly with the organization's mission statement: "The Atlanta History Center inspires people to connect with the past so they may better understand the present and prepare for the future."¹⁷ Mixing fun with fact is a great way to learn, but certain questions must be considered. How accurate is the historical representation meant to be? Is the level of accuracy clearly conveyed to the audience? How can bias around socioeconomic, ethnic, and environmental issues be avoided? Can omission be as biased as inclusion? What is the proper balance of fun and fact? Railroad historian William Withuhn sums up this difficult task: "To me, the challenge that matters for any historian, on any subject, is reaching the non-specialized, general public."¹⁸

Lucy Lippard, in her book <u>Luce of the Local: Senses of Place in a Multicentered Society</u> offers the following warning:

At some point, distinctions must be made between history and memory. Personal memory of course is less manageable and less factually reliable than recorded history, but history as collective memory can be manipulated from the outside - by the state, by teachers, by religious institutions. Within each person's life, histories vie with stories, teachers with elders, received information with lived experience. Memory replaces official history especially when a group of people is displaced geographically or culturally.¹⁹

Withuhn echoes that warning. "When it comes to railroads, to borrow a fine phrase from George Will, we usually are 'all nostalgia and no history."²⁰

Despite these difficulties, historical interpretation remains a valid use of garden railroads. In his book <u>What Time is this Place</u>, Kevin Lynch expresses the kind of opportunity that such designs offer: "Historical knowledge must be communicated to the public for its enjoyment and education. Words and pictures convey much, but real things make the deepest impression."²¹ Although these models are not "the real thing," they are certainly a visual representation of it.

Delores Hayden, an urban historian, points out the connection between history and memory. She writes, "Because the urban landscape stimulates visual memory, it is an important but underutilized resource for public history."²² Railroads are undeniably part of the urban landscape and our collective history. Everyone recognizes railroad tracks and the distant sound of a train. Even small children can mimic the "choo-choo" of the now, almost extinct, steam engine. Garden railroads have value because they evoke memories from our past.

Memories allow garden railroads to bridge the generation gap. This concept came up repeatedly in discussions with modelers from all over the country. A generation that grew up with real railroads is now introducing them to their grandchildren. Joe Schneider, at the Living Desert, said, "Grandparents will bring their grandkids for three days in a row and not know there is a zoo here."²³ Len Polinsky, a large scale railroader from Georgia, believes it is important to share his love of railroads with his grandchildren. Their names proudly adorn layout storefronts and he allows them to run trains as soon as they are old enough. More importantly for Len, garden railroads are not only about remembering railroads, but about remembering friends as well. "Werner's Hole in the Wall," a saloon on Polinsky's layout, is named after Werner Schuettke, a friend he modeled with for over twenty years before his death.²⁴ Obviously, memories and railroads go together.

After a thesis discussion with the author's father, Gordon Gridley, he sent two letters recounting his childhood memories of trains. In the first, he remembered his mother telling them "that in Denley, all one had to do to catch the train was to be out there and wave a red flag."²⁵ The second letter described being a child delivering milk with his father, a dairy farmer, and

having to wait at a railroad crossing. He wrote, "...they always seemed to be east-bound and freight trains, we would sit, wait and watch. In his deep serious voice, Dad would call out the names on the freight cars, "there's a Great Northern, and etc. Also, we would count the number of cars on the trains...Occasionally we would see a "hot box" a wheel bearing box, on a freight car, on fire. The train would have to stop and take the car out. Dad never liked to wait that long."²⁶

Jean Schermerhorn recalled a train ride when she was quite young. "The Utica train station was huge and awesome. The passenger cars were plain. I was impressed that the seat backs could be turned, to accommodate families. Mom laid Norris on the seat facing us. It was a pleasant trip, with the rhythm of the wheels on the tracks."²⁷

Standing in front of a rotary snowplow steam engine in the Colorado Transportation Museum, an older woman volunteered a memorable story. She recounted her experience as a small girl on a rural farm in the Midwest. Every day when the steam train went by, she would be standing in the farmhouse yard waving at the engineers. Smiling at the memory of herself, she explained that she knew the engineers were counting on her to be there waving at them. Her mother, on the other hand, would stand there shaking her fist in defiance of the big iron horse, angry that the sparks and cinders from the steam engine had soiled her clean, freshly-hung laundry. The woman's sparkling eyes and animated expression made this the best part of the story. She said, "My mother hated them, but oh, how I loved those beautiful trains!"

It is easy to see why memory and nostalgia are linked. According to Kevin Lynch, "There is a poignancy in evanescence, in something old about to disappear. Old toys, made for brief use, seemingly so fragile, associated with a passing and vulnerable phase of life, are much more emotive symbols than are permanent, serious memorials."²⁸ Asked if the trains introduce a nostalgia factor, New York's Sposato replied,

"Absolutely!" He frequently overhears people say that they are going home to dig out their old trains. "There is certainly an association with childhood and toys."²⁹ The same holds true for New Orleans, with Soniat mentioning how he likes hearing older visitors point out features remembered from their past, like the <u>Smoky Mary</u>, a historic line that ran in the city. He reports that a lot of older men come to see it, and they bring their children and grandchildren with them.³⁰

In a short story authored by Thomas Wolfe, "The Train and the City," nostalgia reigns supreme.

I brought it to the memory of the loaded box-cars slatting past at fifty miles an hour, of swift breaks like openings in a wall when coal cars came between, and the sudden feeling of release and freedom when the last caboose whipped past. I remembered the dull rusty red, like dried blood, of the freight cars, the lettering on them, and their huge gaping emptiness and joy as they curved in among raw piney land upon a rusty track, waiting for great destinies in the old red light of evening upon the lonely, savage, and indifferent earth; and I remembered the cindery look of road-beds, and the raw and barren spaces in the land that ended nowhere; the red clay of railway cuts, and the small hard lights of semaphores - green red and yellow - as in the heart of the enormous dark they shone for great trains smashing at their rails...³¹

Nostalgia is certainly linked to memory, with Delores Hayden making an additional connection. She believes that "Identity is intimately tied to memory: both our personal memories (where we have come from and where we have dwelt) and the collective or social

memories interconnected with the histories of our families, neighbors, fellow workers, and ethnic communities. Urban landscapes are storehouses for these social memories...³²

This context of memory, nostalgia, and identity inevitably lead to an exploration of "sense of place." Again, Hayden sums it up well: "'Place' is one of the trickiest words in the English language, a suitcase so overfilled one can never shut the lid."³³ Lucy Lippard takes the idea one step further when she quotes geographer Pierce Lewis: "Our human landscape is our unwitting autobiography... the culture of any nation is unintentionally reflected in its ordinary vernacular landscape."³⁴

John Stilgoe, in <u>Outside Lies Magic: Regaining History and Awareness in Everyday</u> <u>Places</u>, alludes to the influence of the railroad on our collective "sense of place." He writes: So magnetic did the railroad prove to be that soon whole cities, whole counties rearranged themselves, if indeed the railroad did not precede almost everything else homesteaders built, as it did across much of the Great West. The explorer weaving along the grown-up right-of-way discerns how roads and hamlets and factories focus still on the long-gone tracks, how suburbs orient themselves toward the ballast, how on clear winter days hilltop mansions look down now on the trainless, trackless ribbon of plant-studded ballast.³⁵

Conveying a "sense of place" often adds interest to a railroad and can be accomplished with both obvious and subtle techniques. A designer can ground his audience in a place by choosing plants native to the region, building with local materials, mimicking nearby landforms, and assigning familiar geographic names to features. Indicating a specific time period takes this one step further. This information is communicated through use of historic landmarks, rolling stock selection, signage within the layout, and architectural styles. Ultimately, communication of these complex values falls to the artist designing the railroad. There are many who would place garden railroads outside the realm of true art, and maybe this is a blessing. In Mary Jane Jacob's essay, "An Unfashionable Audience," she states, "An artist choosing to step outside the domain of the museum, intentionally or by virtue of his or her interest, gains a bittersweet freedom from the hierarchies and definitions imposed by traditional art institutions."³⁶

In her book <u>The Power of Place</u>: <u>Urban Landscapes as Public History</u>, Delores Hayden also emphasizes the opportunities open to the public artist:

...public installations in the city refresh the memories of citizens who are passing. A large and diverse audience for urban history exists today in American cities - people who will never go to history museums, attend public humanities programs, or read scholarly journals. Entrepreneurial public historians may be able to reach them occasionally in community centers, churches, or union halls. Successful installations in public places, in all parts of the city, may reach even more people, and, if these are permanent installations, may reach them on a continual basis.³⁷

Hayden goes on to say, "Today there are many new ways to be an artist: sculptors and painters, muralists and printmakers are joined by environmental artists, performance artists, book artists, and new media artists. For all of them, the key to acquiring an audience is making meaning for people in resonant and original ways."³⁸

Paul Busse confidently describes his work as "art." He strives for a strong threedimensional visual experience. In order to avoid tunnel vision, he focuses on having a "bigpicture sensibility." As with any art, spatial considerations come into play. He believes that when his work is balanced, it feels good in space. Referring to his work, he says, "I am lucky to do art that brings this kind of response."³⁹ Apparently his interviewed clients agree, unanimously describing his designs as being truly works of art.

Whether a fall festival or a Christmas holiday show, gardens love to host celebrations, and their railroads become perfect accents for the gala events. Gardens with seasonal displays report a large number of returning visitors eager to see the railroad. At the Rio Grande Botanical Garden, trains are a perfect way to celebrate Father's Day in the garden. In addition to playing on the outdoor layout, the local club sets up a huge track inside and the railroad even expands temporarily into the Rose Garden.⁴⁰

Chicago's local Miniatures Model Club helps them celebrate throughout the year. Instead of modeling trains, these hobbyists craft miniature scenery accessories. During autumn, for instance, they create market scenes complete with pumpkin stands. A national park campground area now has small tents and a camping public. Once they even provided Main Street with a Fourth of July parade.⁴¹

Fostering a sense of community has been an unexpected bonus for public gardens with railroads. It has also been one of the most appreciated benefits. With the exception of New York, every manager interviewed reported using volunteers for their railroads, relying heavily on their dedication, skills and ingenuity. <u>Garden Railways</u> horticultural editor Pat Hayward attests to this, describing the installation at the Rio Grande:

One of the exciting aspects of this particular railroad is the new sense of community the project has created between the botanic garden, the New Mexico Garden Railroaders, the local hobby shop, and the New Mexico Bonsai Club. The bonsai club helps with the plantings, the hobby shop helps with the trains and railroad supplies, the garden railroaders volunteer their time and talents for design and operations, and the botanic

garden supplies the setting. By working together, they've discovered ways to create a combined public interest that exceeds the abilities of the individual groups.⁴²

Paul Busse speaks enthusiastically about volunteering for what he calls "Garden Railroad Raisings." These events are similar to Amish barn raisings, with everyone showing up to help construct a railroad. His local club currently has 150 very active families.⁴³

Garden Railways editor Marc Horovitz told conference attendees that "garden railroads are social equalizers."⁴⁴ It must be true, since there appears to be no aspect of running a public garden railroad that volunteers aren't involved in. The community certainly pitched in for the New Orleans layout, raising all the necessary funds required to build it. Soniat says that people in New Orleans take pride in having such a beautiful layout. New Orleans does not have a Gscale club, so the garden railroad gives his train volunteers a place to work, socialize and play.⁴⁵

Joe Schneider asserts that Living Desert's railroad would not have happened without volunteers. One of the volunteers actually designed the railroad and the entire group pitched in to build it. A diverse group, there are currently about thirty active volunteers that garden, run trains, construct buildings, and do maintenance. He describes community response as being "tremendous." This year they are involving school children by inviting classes to build and contribute a small town to the Rocky Mountain section of the layout. The towns are then rotated out each month.⁴⁶

Chicago's railroad volunteers enjoy interacting with the public, providing tours and offering explanations to children as they do equipment repairs. Webber says she loves to "watch the kids talk to the train guys." Calling the railroad a "magnet for families," she views it as an attraction suitable for all ages.⁴⁷ The garden also permits local large scale modelers to run their own trains on it, an added benefit for everyone involved.⁴⁸

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Since 1996, the Fairplex Garden Railroad Volunteers have been responsible for railroad operation, tours, maintenance and construction. The community, however, became involved long before that. Between 1924 and 1980, local shop students built and donated all of the rolling stock for the railroad. For current volunteers, it is a chance to make friends with others involved in the hobby and to encourage family participation. Volunteer coordinator Bob Toohey reports generous support from local businesses, writing: "There is just something about trains that draw the good out of people."⁴⁹

An apt example of this personal generosity is the role that clubs play in public venues. For instance, a local club is responsible for maintenance and operation at the Colorado Railroad Museum.⁵⁰ The Rio Grande credits the community large scale club for its railroad design and most of the installation. Although they have hired staff to run it, volunteers help, allowing them to operate equipment they might not have at home. Once a year, the club comes out to level the track and replace rail joiners.⁵¹

Three large scale clubs converge on Longwood Gardens each year for Garden Fest: NorDel Model Railroad Club, Southeastern Pennsylvania Garden Railroad Society and South Jersey Garden Railroad Society. For them, running trains and answering questions is part business and all pleasure. Pam Carter believes the garden benefits from engaging the community in different disciplines and compares it to inviting local musical groups to perform. One of her favorite activities is watching the club members socializing under the tent provided for them. She says, "They are obviously doing it because of how much others enjoy it. It is sharing and a gift."⁵²

There are other ways that model railroads can be gifts to a community. Railroad author Guy Williams describes an historical example of the therapeutic effects of playing with trains: Physicians, surgeons and physiotherapists have been quick to see the value of the hobby as a healing aid. After the Second World War, model building was encouraged in many hospitals as an ancillary activity. By being taught to acquire the simplest skills, servicemen who had been badly wounded in the war could be helped to regain the use of their hands. The model railways produced by these handicapped veterans under expert supervision provided benefit and spiritual distraction for themselves.⁵³

Model railroad clubs all over the United States affirm this philosophy by sharing their expertise with children's hospitals, schools, nursing homes, senior centers, and other places where playful distraction is welcomed. The San Diego Garden Railway Society has built a G-scale layout for a nearby children's hospital.⁵⁴ The students of St. Rita's School for the Deaf in Cincinnati, Ohio, have acquired a layout of their own, thanks to the efforts of the Greater Cincinnati Garden Railway Society. According to Megan Gross, Director of the Outdoor Learning Lab at St. Rita's, the railroad was acquired as a literacy tool for hearing impaired students. The model railroad depicts real life objects and situations, giving teachers an opportunity to engage students in conversation, practice communication skills, and build vocabulary.⁵⁵

In an interview with Barbara Horovitz, she reflected on her experience during the years she worked for the magazine, <u>Garden Railways</u>. She derived value from her work because she believes there is a real need for promoting things that slow us down and let us relax. Horovitz went on to describe gardening and garden railroads as therapeutic tools for people dealing with stress. When asked what lesson she had learned from gardening and railroads, she laughingly said, "Giving up control!"⁵⁶

Garden railroads have a place in public botanical gardens, adding value in ways that go beyond dollars and cents. Our fascination with them bridges the traditional gaps of age, gender, ethnicity, and social standing. They have the power to stop us in our tracks, make us laugh or cry, and maybe even teach us a little something while we are at it. The only question at this point is, "Why wouldn't we want them in our gardens?"

Notes

³ Diane Ackerman, Deep Play (New York: Random, 1999) 6.

⁴ Ackerman 20.

⁵ Adam Sposato, telephone interview, 11 January 2005.

⁶ Terr 20.

⁷ Terr 25.

⁸ Paul Busse, telephone interview, 1 November 2004.

⁹ Sposato.

¹⁰ Busse, interview.

¹¹ Sposato.

¹² Paul Soniat, telephone interview, 20 January 2005.

¹³ Pam Carter, telephone interview, 14 January 2005.

¹⁴ Bob Toohey, e-mail to the author, 20 January 2005.

¹⁵ Kristie Webber, telephone interview, 18 January 2005.

¹⁶ Dave Rodelius, telephone interview, 3 February 2005.

¹⁷ Chris Brooks, personal interview, 22 July 2004.

¹⁸ William L. Withuhn, The Spirit of Steam: The Golden Age of North American Steam. (New

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¹⁹ Lucy R. Lippard, The Lure of the Local: Senses of Place in a Multicentered Society. (New York: New, 1997) 102.

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²¹ Kevin Lynch, <u>What Time Is This Place?</u> (Cambridge, MA: MIT P, 1972) 51-52.
 ²²Dolores Hayden, <u>The Power of Place</u>: Urban Landscapes as Public History (Cambridge, MA: MIT P,

1995) 47. ²³ Joe Schneider, telephone interview, 11 January 2005.

²⁴ Len Polinsky, personal interview, 12 October 2004.

²⁵ Gordon Gridley, letter to the author, December 2003.

²⁶ Gordon Gridley, letter to the author, 26 February 2004.

²⁷ Schermerhorn, letter to the author, January 2004.

²⁸ Lynch 44.

²⁹ Sposato.

³⁰ Soniat.

³¹ Francis E. Skipp, ed., <u>The Complete Short Stories of Thomas Wolfe</u> (New York: Scribner, 1987) 22.

³² Hayden 9.

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³⁴ Lippard 9.

³⁵ John R. Stilgoe, <u>Outside Lies Magic: Regaining History and Awareness in Everyday Places</u>. (New York: Walker, 1998) 44-45.

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³⁹ Busse, interview.

⁴⁰ Jon Stewart, telephone interview, 11 January 2005.

⁴¹ Rodelius.

⁴² Pat Hayward, "Garden Railroads at Public Gardens: Part 2." <u>Garden Railways</u> (Oct. 2001): 37-38.

⁴³ Busse, interview.

⁴⁴ Marc Horovitz, Keynote speech, 20th Annual Garden Railway Convention, Denver, Colorado, 14 August

2004.

⁴⁵ Soniat.

⁴⁶ Schneider.

⁴⁷ Webber.

¹ Webster's New Collegiate Dictionary (Springfield, MA: Merriam, 1975) 1292.

² Lenore Terr, <u>Beyond Love and Work: Why Adults Need to Play</u> (New York: Scribner's, 1999) 32.

⁵¹ Stewart.
⁵² Carter.
⁵³ Guy Williams, <u>The World of Model Trains</u> (Secaucus, NJ: Chartwell, 1970) 23.
⁵⁴ <u>San Diego Garden Railway Society</u>, ed. Bill Moore, 19 Jan. 2005 <<u>http://www.sdgrs.com/</u>>.
⁵⁵ Megan Gross, telephone interview, 1 Mar. 2005.
⁵⁶ Barbara Horovitz, personal interview, 12 Aug. 2004.

⁴⁸ Rodelius.
⁴⁹ Toohey.
⁵⁰ Alan Olson, personal interview, 13 Aug. 2004.
⁵¹ Stewart.
⁵² Contract

CHAPTER FIVE

THE DESIGN PROCESS

The introduction posed two questions as the focus of this thesis: "Is there a place for garden railroads in public botanical gardens?" and "If yes, do they benefit from an intentional design process?" The previous chapter addressed the first question, asserting that garden railroads are valuable assets to public venues. The second question is the topic of this chapter.

The design process is integral to the construction of every garden railroad, whether privately or publicly owned. James A. LaGro Jr., author of <u>Site Analysis: Linking Program and</u> <u>Concept in Land Planning and Design</u>, describes the design process as a "systematic, and often iterative, sequence of steps."¹ These ordered steps allow the builder to start with an idea, develop the concept, and follow it through to completion.

Often in garden railroad construction, this process is intuitive, without clearly stated goals, formal structure, or written documentation. For a privately owned layout, nothing more may be required. Project development can proceed at a leisurely pace, evolving as budget, time, personal interest, and space allow.

Public garden railroads, on the other hand, do not have the luxury of an extended timeframe for construction. Required to operate within the framework of an organization, they are dependent on calendars, annual budgets, corporate goals, and the interests of a diverse audience. A structured design process gives public venues a useful tool for dealing with these constraints.

Program Development

Program development is the initial step in garden railroad design and involves a thorough study of the intended plan. This is essential for public venues because, as stated earlier, we invest time, energy, and money into the things we value. Program development explores the many issues involved with creating a vision of the finished product. This stage evaluates the level of commitment and may determine whether or not construction proceeds.

John Simonds, in his book <u>Landscape Architecture</u>: <u>A Manual of Site Planning and</u> <u>Design</u> describes the importance of this first step:

Many a completed installation functions poorly or actually precludes the very uses for which it was planned. Perhaps it was doomed because it was forced upon an unsuitable site or because it was not well designed, not clearly expressive of its purpose. Or its operation may be hampered by the frictions it generates. Most often, however, the root of failure lies in the fact that a program was never fully considered; the complete project with all its essential relationships and impacts was never envisioned or thoughtfully conceived.²

The first step in program development requires a botanical garden to gain a clear sense of why it wants a railroad. An exploration of the perceived benefits makes it easier to state goals and objectives that will guide the project. For instance, managers at the New York³ and New Orleans Botanical gardens⁴ intended to increase visitor attendance by providing an attraction that would appeal to a diverse audience. Staff at Longwood,⁵ Living Desert,⁶ and Chicago⁷ were simply looking for a temporary exhibit idea. The Rio Grande administration envisioned their railroad as an opportunity for entertainment.⁸ Of course, additional merits are discovered during this process as thematic choices evolve.

Another consideration is the anticipated time frame for the exhibit. In terms of space and resource allocation, a permanent layout will have different requirements than a temporary one. Permanent layouts require a dedicated space, continuous staff involvement, and secure financial support. The long-term effects of weather, the impact on the garden, and the possibility of expansion are other issues of importance. For instance, the permanent railroad at the Rio Grande Botanical Garden required significant modification of the landscape and recently accommodated an expansion into an adjacent area.⁹ Temporary displays are easier to place, borrowing a lawn or conservatory.

Selection of a designer requires careful attention, and when done early, allows experience and expertise to inform the process. Some gardens choose a licensed professional trained in landscape architecture who is familiar with issues of construction codes and liability. However, railroad managers report satisfaction from using both professionals and volunteers to manage their projects. Required skills include the ability to work collaboratively with others, to operate within an established budget, to choose appropriate plants and materials, and to maintain a high standard of quality.

Successful public railroad designs have been implemented by people with a variety of backgrounds and experience. Paul Busse, a landscape architect, was hired to design and construct the railroads for New York, Longwood, Chicago and New Orleans. All of these gardens have maintained an ongoing relationship with his company, Applied Imagination.¹⁰ Since its inception, multiple owners have guided development of the Fairplex railroad. Beginning in 1998, volunteers took over this responsibility, following an approved business plan.¹¹ The layout at Living Desert was designed by a volunteer, a retired superior court judge.¹² A local club pooled its resources to design and build the Rio Grande railroad.¹³ When a botanical garden decides to install a railroad, individuals at all levels of the organization are affected. Project support is enhanced when staff members are included in the process, asked for their ideas, and rewarded for creative solutions to anticipated challenges. Depending on the size, complexity and longevity of the planned railroad, additional staff and volunteers may be required. Since these layouts constitute a significant financial investment, most gardens elect to hire staff for supervision of operations and use volunteers as their assistants. A division of labor must be decided for railroad repairs, water feature maintenance, planting, weeding, pruning, visitor services, promotional activities, and general upkeep. The Holiday Train Show imposes huge demands on the staff at the New York Botanical Garden. They deal with it successfully by planning carefully, keeping the staff warm, paying attention to morale, and anticipating guest needs.¹⁴

Anticipation of the target audience is essential to program development. Everyone knows that children love trains, but garden railroad managers have been surprised at how popular they are with adults of all ages. The Rio Grande Botanical Garden has capitalized on this, making Father's Day a big event.¹⁵ Damian Montelaro, a railroad staff member for New Orleans, describes the layout as a favorite of families, with many returning over and over to watch the trains. He claims to "know the kids by their first names, and their parents, too." He cautions that it is important to keep the display interesting for returning guests by varying the train configurations.¹⁶

Thematic choices are made with the target audience in mind. Railroad historian William Withuhn emphasizes the importance of reaching the audience: "If we as railfans ... bear an 'image' problem, it is in large measure due to our inability to get outside ourselves, to get beyond our specialized lore and to describe and portray our subject in broader, more universal

terms that will appeal to wider audiences."¹⁷ It is imperative that public botanical gardens consider cultural, regional, social, and historical issues as themes are developed.

A variety of methods can be used to determine the potential reception for a garden railroad. Offering exhibits as temporary features gives an opportunity for gauging public response, with permanent displays following later. Some gardens start with small layouts and expand them as visitors respond positively. Paul Soniat, in researching the feasibility of a garden railroad for New Orleans, read through published materials and visited other gardens that featured popular train layouts. The preparation left him confident that the railroad would prove to be successful.¹⁸

The latter phase of program development is the time to evaluate financial commitment to the project. Funding proposals depend on a clearly articulated vision of the finished product and an accurate assessment of the risk involved. In addition to the initial cost of construction, resources will be required for staff salaries, maintenance, equipment replacement, plants and improvements.

Gardens are creative in their approach to funding. Some, like New Orleans, raise funds through donations prior to construction.¹⁹ Chicago charges a nominal extra fee to view the trains.²⁰ Others utilize exhibit funds from the general garden budget. Living Desert developed an "Adopt a Train" program, placing donor business cards printed to scale on layout highway billboards. In addition to advertisement, top donors receive park passes and actually get to run the trains.²¹ Whatever approach is taken, garden railroad managers repeatedly asserted that their railroads paid for themselves and generated income.

Properly done, program development is a time-consuming process. It is an opportunity to involve others, to explore visionary ideas, and to seek valuable contributions from unexpected

sources. Ultimately, it will drive the construction, facilitating a smooth process. Landscape architect John Simonds drives home that point: "Since the completed work will be the physical manifestation of this program, the program itself must be designed thoroughly, imaginatively, and completely."²²

Site Inventory and Analysis

During the site inventory and analysis, physical conditions pertinent to planning are evaluated, giving the designer a comprehensive appreciation of the site. The actual data collected depends on the established program and site features. James LaGro sums this up: "A variety of physical, biological, and cultural attributes can influence the suitability of a site for the proposed uses.... The scope of the inventory and analysis is narrowed by considering the assets and liabilities – or opportunities and constraints – that the site poses for a specific development program."²³

Whether a designated exhibit space will be used or a permanent railroad location must be found, site selection will have a large impact on the conceptual design. When multiple sites are under consideration, an inventory and analysis provides a means to narrow the choice. Many factors affect the final decision, including proximity to buildings, pedestrian accessibility, security, parking, electrical sources, established plant collections, historic designations, and physical land features.

An inventory begins with acquisition of necessary background documents such as topographic maps, previous planting designs, and pertinent master plan documents. Site visits follow, with measurements taken, omissions added, and document inaccuracies corrected. A thorough assessment reduces the likelihood of costly surprises during the construction phase.

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Garden railroads, like the real ones they emulate, require a track with very little elevation change. While this requirement makes flat areas an obvious choice, such sites are not always available and viewers appreciate trains operating on varied terrain. There are, however limits to accommodating steepness. Excessively steep terrain increases susceptibility to erosion, impairs track stability, restricts planting options and limits maintenance access.

Site feature notations include both assets and liabilities to the railroad design. Potential assets, such as shade trees, attractive water features, borrowed scenery, viewing points, specimen plants, and sculptural rocks are accurately located on the map for eventual integration into the design. Liabilities include unsightly features, poorly drained areas, utility lines, invasive plants, and safety hazards. While not all of these may be removed, each will require accommodation during construction. A few features, such as existing sidewalks, might not fit either category, but should be listed for later consideration.

By definition, a garden railroad needs plants, and botanical gardens have plants they treasure. Since some plants on the site may fit well into the eventual design or may require protection, a complete inventory is required. Notes concerning their location, overall health, visual character, and soil quality will make later decisions easier. Size notations are relevant for both visual design applications and for protecting delicate root systems during construction.

Regarding climate, there is not much that a designer can do about Chicago winters or Living Desert summers, short of moving the railroad indoors. Sun and wind are two microclimatic factors that can be advantageously manipulated during the railroad design process. Comfort is an important consideration since visitors of all ages come to view outdoor railroads, often staying for extended periods of time. A prevailing breeze is appreciated in hot climates, but a chilling wind is less welcome in cooler environments. The amount of sunlight available

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and the path it tracks across the sky influences decisions about viewing points, seating arrangements, shade recommendations, and placement of proposed water features. Excessive heat or moisture increases track maintenance and takes a toll on layout structures.

Site evaluation extends beyond the designated boundaries of the future layout. Guest concerns include walking distances from parking, the condition of pedestrian approaches, accessibility and restroom locations. Railroad staff will be affected by the proximity to buildings for security, space limitations, and convenience to maintenance facilities. Just as the program development considered the entire garden staff, the site inventory and analysis involves a comprehensive review of the entire garden property.

Conceptual Design

The conceptual design is inspired by the site and program, bringing them together in a meaningful way. According to Simonds, "A brilliant plan gives evidence of response to all site factors, a clear perception of needs and relationships, and a sensitive expression of all components working well together."²⁴

Physical site characteristics play a significant role in railroad design, with some factors easier to manipulate than others. Topography is the most obvious, with gradients ranging from flat to steep. Flat sites are neutral, with few restrictions, turning added design elements into strong visual focal points. Plan interest is enhanced when spatial relationships between these introduced elements are carefully investigated.²⁵ Additional advantages of a level site include ease of track installation and comfortable pedestrian access.

Whether varied slopes occur naturally or with the aid of earth-moving machinery, they offer both advantages and challenges to design. Viewers enjoy the mystery and drama provided by mountains, tunnels, bridges, canyons and trestles. An advocate of dramatic features, Paul

Busse advises railroad designers "to think like civil engineers." Assigned the task of getting trains from one point to another with the least expense, railroad engineers aimed for straight and level tracks. For the modeler, this translates into creating a surrounding landscape that supports the drama. A tunnel, for instance, demands a large section of rock, otherwise railroad workers would have blasted it away and kept moving. In other words, if the layout tunnel is to look right, it must appear to be the cheapest way of reaching the other side of the mountain. Likewise, curves in the track require obstacles, making it look like there was no other choice of placement.²⁶

Botanical gardens have invented creative approaches to gradient issues. The trains at Hudson Gardens wind their way up a significant slope, simulating the local Colorado terrain. Viewing platforms were installed above the layout, allowing unobstructed views of the upper sections. To represent flat coastal land, New Orleans constructed a raised display area with a level sandy surface.²⁷ Living Desert used its world record trestle to gain height one percent at a time.²⁸ New York took advantage of built structures, such as overhead bridges, to draw the eye upward and vary the visual topography. Chicago simply brought in a small bulldozer.²⁹

Specific drainage solutions are addressed in the design development phase, but many problems can be avoided with careful planning. Depressions that invite standing water can be effectively converted into railroad water features or functional rain gardens. Steep sites are susceptible to erosion, making these areas less suitable for track placement. New Orleans installed wooden decking for viewer access in a boggy section,³⁰ while the Colorado Railroad Museum chose to incorporate a wet area as a scenic part of their layout.³¹

Wind and sun are design variables that affect both railroad operation and visitor comfort. Rails expand in excessive heat, often causing tracks to buckle. High winds are capable of blowing trains off of bridges or trestles, resulting in expensive repairs. Visitor comfort can be increased by strategically placing landforms and structures to channel prevailing summer breezes or block cold gusty winds. Light and shadow are gifts, providing opportunities for dynamic visual displays as the sun tracks across the sky. Still, as temperatures rise, a blazing sun demands only shade.

Since real railroads often travel alongside waterways, interest can be added by incorporating natural or constructed water features into the scene. Water presents a perfect reason for visually appealing bridges, canyons, rock walls and piers. Garden railroads frequently depict rivers, lakes, and bays, since they were typical geographic elements in historic logging, mining, and maritime locales. Beyond its added scenery value, water provides soothing sounds, inviting motion, horticultural opportunities, and habitat for animals. The Fairplex uses water heavily, circulating 23,000 gallons of it through five large ponds and four streams.³²

Public botanical gardens require a conceptual design that integrates fluidly with existing site structures and permanent plant collections. Every property has a history associated with it, making it imperative to fully assess both stated and implied restrictions on development. When appropriate, a designer can take advantage of existing established plants, saving both time and expense.

Gardens approach this design integration in a variety of ways. For temporary displays, existing features are generally maintained and additional plant materials are filled in for added effect. Permanent layouts require long term planning, since once established, they are difficult to relocate. The Hudson Botanical Garden chose an underutilized hillside to carve out a permanent niche for their railroad.³³ The Colorado Railroad History Museum didn't have a garden, so they built their railroad in the middle of a parking lot.³⁴ Living Desert claimed an unused shrubby

area, retaining shade trees and some of the plants.³⁵ Like Living Desert, New Orleans needed relief from the sun, prompting them to select a shady spot near an administration building.³⁶

Whenever possible, a conceptual plan for a permanent layout should include a building to house train operations. Since visitors enjoy watching and interacting with railroad staff, the building should ideally feature generous viewing windows and be located adjacent to public walks. It is preferable for tracks to run directly into the shed, reducing inadvertent damage to trains from daily transport to and from the tracks. Trains, power supplies, maintenance tools, and gardening implements find secure storage here as well.

Conceptual planning is strengthened by the use of traditional landscape design elements. Two of these, illusion and perspective, draw viewers into a magical world and convince them of its reality. In fact, Busse describes himself as more of an illusionist than a realist.³⁷

Spatial or perspective illusions alter the apparent distance to an object by manipulating its surrounding space and vertical rhythms. Compression of foreground objects brings the focus forward, whereas compression of distant objects directs the eye to the rear of the scene.³⁸ Useful for planning views, incorporating borrowed scenery, and directing attention to specific areas, these techniques make a layout appear more expansive.

Obviously, garden railroads exist in a different scale than humans do, with much of their charm derived from this contrast. Scale and proportion are defined by landscape architect Grant Reid as a "relative comparison of heights, lengths, areas, masses, and volumes." He goes on to say that "Comparisons may be between one element and another or between an element and the space it occupies."³⁹

Model railroad author Terry Allen reminds us that "it is quite impossible to make a railway model which is totally perfect, in the sense that every single working part is reduced to a

constant scale. Certain things cannot be scaled down.⁴⁰ Busse agrees, asserting that a designer is creating a feeling rather than a perfect scale rendering. Emphasizing the importance of breaking the scale barrier, his visitors enter layouts by walking under a trestle, triggering memories of real trains overhead. The association made, guests accept the illusion as reality.⁴¹

In regards to scale, plant selection is treated similarly. Plants are chosen for garden railroads to provide color, texture, realistic scenery, and interest. Vegetation can effectively be used to simulate landforms, represent forests, and mimic familiar environments. Technically, however, even dwarf varieties, skillfully pruned and finely textured, are too large for representing actual scale.

Garden railroads capitalize on mystery. Feelings of expectancy, anticipation, and surprise are prompted by disappearing trains that suddenly arrive again. Restricted views, changes in elevation, and seemingly complicated track arrangements encourage curiosity, engaging the audience in visual exploration. As a landscape architect, Paul Busse understands this principle, designing layouts so that only one third of the track is seen from any particular viewing point.⁴²

Trains are synonymous with motion. Rudolph Arnheim, author of <u>Art and Visual</u> <u>Perception: A Psychology of the Creative Eye</u>, calls motion the "strongest visual appeal to attention." He goes on to say, "Happenings, then, attract us more spontaneously than things do, and the prime characteristic of a happening is motion."⁴³ Williams echoes this sentiment: "All most people want to see is trains in motion - the more trains there are in motion, the happier they become."⁴⁴

Botanical gardens are designed to be visually pleasing displays, and the railroads placed in them are no exception. Simonds emphasizes the importance of vision: "Eighty-five percent of perception is based on sight.⁴⁵ Arnheim examines vision from the perspective of an artist: Vision, then, differs from what the photographic camera does by being active exploration rather than passive recording. Vision is highly selective, not only in the sense of concentration on what attracts attention, but also in its way of dealing with any one object. The camera will register all detail with equal faithfulness, but vision will not. ... But commonly, seeing is not scrutinizing.⁴⁶

Railroad layouts should be visually complicated, but operationally simple.⁴⁷ Again, Arnheim reinforces the importance of this idea: "…in looking at an object, we reach out for it. With an invisible finger we move through the space around us, go out to the distant places where things are found, touch them, catch them, scan their surfaces, trace their borders, explore their texture. It is an eminently active occupation."⁴⁸

Viewing perspective contributes to the experience. Even slightly elevated layouts pull an audience into a scene more easily than one situated at ground level. New Orleans put their layout on a constructed bed raised three feet off the ground.⁴⁹ The trains at the New York Botanical Garden run on tracks set at different heights. Hudson Gardens effectively uses a sloping site to vary the perspective.

Reid contrasts two design principles valuable to garden railroads, unity and harmony. "Unity is the coalescing of the separate design elements to allow an easy overall grasp and perception of the whole composition as one. ...Unity is this quality of oneness and cohesion, achieved by arranging a variety of landscape elements within an overall organizational theme."⁵⁰ Harmony on the other hand, "... is a state of accord among elements and with their surroundings. In contrast to unity, harmony has to do with the relationship between elements as opposed to the overall picture. ...Authenticity and functional value improve harmony."⁵¹ The idea of authenticity is exemplified by the earlier example of a tunnel requiring a large section of rock. Balance is important to designer Paul Busse. He avoids tunnel vision by considering the total experience and by having a "big picture sensibility" about the design. Busse knows when it is balanced because "it feels good in space."⁵² Arnheim also talks about balance: "In a balanced composition all such factors as shape, direction, and location are mutually determined by each other in such a way that no change seems possible, and the whole assumes the character of "necessity" in all its parts. An unbalanced composition looks accidental, transitory, and therefore invalid."⁵³

Emphasis and rhythm are design principles that draw attention to specific objects or areas within a layout. Providing visual cues to the viewer, emphasis accentuates key features. Too much emphasis overwhelms the audience, creating a sense of chaos. Rhythm, on the other hand, is a regular repetition of emphasis. Commenting on rhythm, Grant Reid writes, "Breaks, variations, and pulses can bring an exciting sense of movement to the landscape."⁵⁴

Space modulation refers to the sequential experience visitors have as they move through a layout. It induces the pace to vary, the viewing points to change, patterns to take form, and the senses to become engaged. As a design element, Simonds refers to sequence as "... a succession of perceptions having continuity. Sequences have no meaning except as we experience them. Conversely, all experience is sequential."⁵⁵ He goes on, "The planned sequence is an extremely effective design device. It may induce motion, give direction, create cadence, instill a mood, reveal or "explain" an object or a series of objects in space, or even develop a philosophical concept."⁵⁶

Planned sequences have a starting point, followed by a series of linked experiences that eventually point to a conclusion or climax. Multiple sequences are allowed, with the conclusion often being an introduction to another sequence.⁵⁷

Garden railroads lend themselves to organic design forms, with tracks making curving sweeps through simulated landforms. Serpentine paths, irregular borders, and meandering streams contribute to a natural appearance. Symmetrical and axial elements may be effectively introduced with representations of streets, city blocks, trolley lines, and agricultural scenes.

Accessibility and pedestrian circulation are two related issues that deserve special attention. Garden railroads are meant to be attractive and inviting, but they also represent a significant financial investment that needs to be protected. This paradox makes it difficult to welcome visitors while at the same time discreetly curbing their enthusiasm.

Railroads are magnets for curious and impulsive children, requiring control devices that restrict their access, yet allow them to see the trains. Large crowds present a different set of access issues, with New York banning strollers and tripods because of narrow aisles and high traffic volume.⁵⁸ Two other reasons for controlling access are liability and security, concerns for all public venues.

Gardens have devised a variety of ways to unobtrusively limit access. Hudson utilizes a loosely stacked stone wall with the display receding away from the visitor as it climbs the hillside. Viewing areas above the layout have a decorative wooden picket fence. Other botanical gardens have metal perimeter fences, allowing visitors to peer over and through the vertical pieces. Split rail fences are popular solutions, and when used elsewhere in the garden, seem even less intrusive. Chicago secures outer borders of their railroad area with heavy plantings such as hedges.⁵⁹ Planted buffers between the fence and layout provide additional insurance against outstretched arms. Although Busse uses wooden rails and buffers, he has another philosophy that is just as effective. His solution is to immediately bring people right into

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the middle of the display. Surrounded by the railroad, guests feel invited in, rather than left out.⁶⁰ Ultimately, however, there is no substitution for adequate site supervision.

Individuals of all ages and abilities appreciate garden railroads, making it imperative that displays be fully accessible to wheelchairs, assistive devices, and strollers. Longwood moved their layout site from a wooded area to an open section of lawn to provide easier access for guests.⁶¹ Wide paths, gentle gradients, convenient locations, and appropriate paving surfaces are features that welcome any visitor.

Circulation design sets the viewing path, determines the speed of pedestrian flow, and regulates the volume of traffic. According to Simonds, "Lines of exterior and interior circulation are critical design elements since they control the visual unfolding of the plan."⁶² In their book, <u>Exhibition and Display</u>, James Gardner and Caroline Heller's discussion of circulation also relates aptly to garden railroads:

The planner of an exhibition attempts to foresee people's behavior and predict where they will hurry, stop, look, or drift on. His aim is to control the flow and arrest it where he wants; but controlling the flow does not mean that people are to be moved along predestinate grooves like trams or shuffled around hurdles like sheep. Ideally the planner is aiming to direct people's movement in such a way that they see what there is to see with ease and in their own time. He must also ensure that the public does not get lost, tired, or bored with the whole affair.⁶³

Garden railroads are designed to be enjoyed at a leisurely pace, with opportunities for pause and close examination. Viewing spaces set aside for lingering, irregular borders, meandering paths, comfortable conditions, varied surface textures, and opportunities for rest are all cues for the visitor to slow down. Movement through the scene is part of the visual experience, and for high volume venues, needs to be encouraged to some extent. Movement is facilitated by greater curve widths and carefully designed intersections that minimize turbulence. Pedestrian traffic flows toward points of entry and exit, places of comfort, areas of high interest, and along directional lines offered by design cues. Anything that elicits curiosity in the audience, such as partially blocked views, will also entice movement.⁶⁴

Design Development

During the design development phase, the conceptual plan is expanded, providing the details necessary for the project to become a reality. Specifications are listed for quantities, materials, dimensions, and plant selection. Additionally, structures take form, code compliance is addressed, and necessary changes are made to the design. The following discussion focuses on issues specific to public garden railroads.

As discussed earlier, interest can be added with variations in site elevation. Still, certain concessions are made regarding slope. To keep trains running smoothly, track gradient is best kept to a maximum of four percent, with less being desirable. Sidewalks also benefit from level grades of five percent or less, being more comfortable for extended standing and making the site accessible for visitors of all abilities. On the other hand, water features designed to represent streams rely on elevation change for a lively flow.

Slope is also relevant when addressing the inevitable drainage issues that arise with site manipulation. Anticipating and managing stormwater runoff is essential for water conservation, erosion prevention, and protection of adjacent sources of water. Recent innovations in stormwater management, such as the use of rain gardens and porous paving, provide attractive and effective design solutions. Since the topography of New Orleans guarantees drainage issues,

the garden constructed their raised layout with drainage in mind. Perforated pipes line the bottom, followed by twenty inches of gravel, landscaping mesh, and lastly soil. Montelaro reports that both intentional and opportunistic plants thrive in the amended area.⁶⁵ A detailed grading plan is required for managing slope and drainage.

Constructed water features are detailed at this point, to show extent and depth. Water conservation is a priority, requiring non-leaking bed surfaces, pumping mechanisms for recirculating water, and appropriate connection to water lines. Planting shelves along water feature edges provide necessary shallow areas for aquatic plants. Rock placement in streams and pools adds visual interest, wildlife habitat, sound effects, and a touch of realism. Materials used along the edges should reflect the environment being portrayed. Finally, the overall design must support a stream, with landforms appropriately disguising its point of origin.

A railroad should compliment the garden that surrounds it. Providing continuity between the railroad and other areas of the garden is an effective way to accomplish this integration. For instance, when fences are necessary, the style can emulate those found elsewhere in the garden. Similarly, paving materials, plant palettes, and signage can be used as unifying elements.

Various structures associated with the layout area are detailed in the design development phase. Useful shed features include workbenches, lights, ample windows, track entrances, storage shelves and electrical connections. Structures associated with spectator viewing include fences, platforms, walls, seating, ramps, and bridges. Other construction issues involve provisions for access to tunnels or layout features needing repair or maintenance. Additionally, structures may provide comfort from the elements, such as trellises for shade and screens that block or channel the wind.

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Viewers are more engaged when the sensory experience is rich. Offering colorful plant palettes, fragrant flowers, and water sounds are all ways to involve the senses. The finely detailed trains available now are even equipped with sound. Although visitors are discouraged from touching trains, tactile interest can be provided by utilizing a variety of textures in the area surrounding the layout.

Conceptualized circulation patterns are now finalized with dimensions and construction specifications. Path materials are chosen to provide easy strolling, a non-slip surface, access to maintenance vehicles, and suitability for strollers or wheelchairs. If trains are to run at night, which many gardens do for certain events, adequate lighting must be provided for safe and comfortable ambulation.

The quality of signage is important, not only in terms of the information it provides, but also in regards to its durability and aesthetics. Railroad visitors are curious about its history, its role in the garden, the designer, and the people who work on it. People of all ages enjoy learning experiences, making carefully crafted interpretative materials a valuable asset. Paul Soniat of New Orleans referred to their interpretive aids as "neighborhood stops," each featuring a sign with architectural descriptions and a photograph that corresponds to a printed handout. Visitors read the information and follow the numbered tour around the layout, making it an excellent way to tell stories about history.⁶⁶ Since the railroad at Hudson Gardens is not immediately visible to visitors, a directional cue is given by placing a familiar railroad crossing sign near the layout entrance.

Most garden railroads are placed in outdoor settings, requiring materials that can withstand the effects of wind, rain, temperature extremes, and ultra violet radiation. Train equipment and landscaping components have both vastly improved in this arena. Durable finishes and routine upkeep are necessary for built structures. By anticipating and addressing potential problems, such as rodents with a penchant for chewing wires, a designer can prevent future costly repairs.

Visually complicated scenes must translate into mechanically simple track designs. Not only does it save on frustration, it also reduces costs. Many garden railroads design multiple loops that appear connected, but are actually separate. That way, if one loop experiences technical difficulties, the others continue to run, providing spectators with the moving trains they expect to see. For extra interest, areas can be designed that appear operational, even if they are not actually used. Although tighter curves are feasible, a minimum four foot radius is recommended to reduce wear on equipment. The basic idea behind track design is to keep it simple.

Safety at public sites is of paramount concern, with liability mistakes being costly. Careful design development can reduce risks associated with garden railroads. Compliance with construction codes is mandatory, pointing to the value of enlisting professional and technical expertise. Fences or walls of appropriate height and substance prevent falls at steep areas, keep children away from water features, and deny access to electrical sources. Tripping hazards are reduced by assuring even walkways, gentle gradients, and non-slip surfaces. Licensed electricians should install any permanent power configurations.

As with other decisions discussed so far, plant specifications depend largely on choices made during the first three stages of the design process. For instance, a botanical garden that gives prominence to native plants may specify the same for its railroad. Native plants are better adapted to the local climate than non-natives, reducing the need for replacement. Limiting choices to only natives may, however, make it more difficult to achieve a scale representation.

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Selecting plants that absolutely conform to the scale of a garden railroad is impossible, but achieving an appearance of relative scale can be done with great success. Consideration must be given to the time and effort required for pruning plants to maintain a scale appearance. For instance, to represent forests in the Colorado Rockies, Living Desert installed 150 rosemary plants that will be maintained at a height of twelve inches.⁶⁷ Chicago installed dwarf Alberta spruces last year, and has arranged for the local bonsai club to take over pruning responsibilities.⁶⁸

If there is no specific overall garden theme, the plants can be chosen to fit in with the program designed for the railroad. Mountain scenes may feature evergreen trees, while portrayal of a western town may demand plants that evoke an arid feeling. Living Desert features a cactus collection in its Grand Canyon section.⁶⁹

Planting designs may instead reflect a particular season or celebration, such as an autumn harvest festival or a Christmas holiday extravaganza. In such cases, festive plants traditionally associated with the season can be augmented with available annuals.

Permanent displays have the aesthetic advantage of an established, weathered look when perennials are allowed to fill in the nooks and crannies. This process takes multiple years, but the cohesive look is worth the wait.⁷⁰

Climatic zones determine horticultural selections as well, with temperature and rainfall being primary concerns. If irrigation is required, it needs to be efficient, minimally visible, and low maintenance. Features such as rain gardens or retention areas may augment irrigation.

Certain plants are chosen because they perform a specific design function. Shade trees need to attain height fast enough to provide canopy cover for visitors lingering beneath. Preservation of suitable existing trees is desirable, although it may require extra effort. Barriers
to access require a dense growth pattern as found in typical hedges. These can also function as wind blocks or view blocks. Vines with vigorous climbing habits are appropriate for trellises that provide shade.

Finally, some plants are chosen for their aesthetic appeal. Busse's design for Chicago features small crabapples and miniature pines planted at angles so they lean over water features. The staff prunes back the weeping leaves and branches just enough to keep them from encroaching on the tracks, while maintaining the tunnel-like appearance.⁷¹

This chapter began by asking if railroads in public gardens benefit from an intentional design process. The discussion that followed examined the many facets of planning required to bring such a project to fruition. This process is a familiar one to landscape architects, making them particularly suited to the challenges of designing a public garden railroad.

A planning process is about more than assuring a job is completed. A systematic and sequential design process reduces costs, increases visitor comfort and safety, provides integration with the existing garden, and ultimately maximizes the pleasure experienced by visitors. A garden railroad is a significant investment for a botanical garden, and deserves an intentional process.

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CHAPTER SIX

A GARDEN RAILROAD FOR THE ATLANTA HISTORY CENTER: A CONCEPTUAL PLAN

This chapter presents a conceptual plan for a garden railroad at the Atlanta History Center. Located at 130 West Paces Ferry Road in Atlanta, Georgia, the center is situated on the north side of the metropolitan downtown area (Figure 6.1). Reflecting the design process previously outlined for garden railroads, this plan is presented at a conceptual level.

Program Development

The mission of the Atlanta History Center is to "inspire people to connect with the past so they may better understand the present and prepare for the future."¹ Serving a diverse audience, the center utilizes a variety of programmatic activities to fulfill this mission. The primary interpretive focus is the history of Atlanta, although historical information is presented for areas well beyond city boundaries.

Open to the public, the thirty-acre facility features a museum, an archive, and several garden collections with walking trails (Figure 6.2). The historic Swan House, a restored mansion dating from 1928, is available for tours or private rental. The Tullie Smith Farm, a replica of a mid-19th century Georgia farm, offers educational demonstrations for both adult visitors and local school classes. The Atlanta History Center has an active and varied support base that includes volunteers, corporate and private sponsors, local civic groups, and garden clubs.²



Figure 6.1 Location of the Atlanta History Center



Figure 6.2 Site Map: Atlanta History Center

Chris Brooks, Director of Historic Houses, identified four primary goals associated with a proposed garden railroad for the center. First, the railroad will provide an opportunity to expand the interpretation of Atlanta's railroad history, moving it beyond the museum and into the gardens. Second, it will entice guests to leave the buildings, encouraging exploration of the facility grounds. Third, the railroad will be a point of interest on a proposed children's trail intended to link the facility's gardens and buildings. Finally, it will increase visitor attendance at the center by providing a permanent attraction for people of all ages and backgrounds.³

As an interpretative tool, the display will focus on the railroad history of Atlanta, with an opportunity to feature other regions of Georgia as well. Originally named Terminus, Atlanta was the city of convergence for the earliest Georgia railroad lines. Although museum curators will be responsible for developing the educational components, the design will provide a framework for their interpretation.

The Atlanta History Center vision includes a commitment to "inspire a stronger sense of community."⁴ A garden railroad will provide an opportunity to involve the local community as volunteers, members and sponsors. Volunteers for the railroad will participate on many levels: operating trains, interpreting the exhibit, maintaining equipment, interacting with visitors, and caring for plants.

Site Analysis

The proposed garden railroad site is located directly behind the Atlanta History Center museum (Figures 6.3-6.21). A long, narrow site, it parallels the building for approximately 320 feet, with the width varying from forty to 110 feet. It is bounded on the east by Tullie Smith, the south by a former rock quarry, and the west by McElreath Hall. The vertical drop into the Quarry Garden is cordoned off by a black coated-aluminum picket fence along two thirds of the



Figure 6.3 View west from patio Site analysis: Atlanta History Center Photo credit: Author



Figure 6.4 View of patio from accessible sidewalk Site analysis: Atlanta History Center Photo credit: Author



Figure 6.5 View of patio stairs and museum entrance Site analysis: Atlanta History Center Photo credit: Author



Figure 6.6 View of drainage area Site analysis: Atlanta History Center Photo credit: Author



Figure 6.7 View of drainage area Site analysis: Atlanta History Center Photo credit: Author



Figure 6.8 View of drainage area from Tullie Smith Site analysis: Atlanta History Center Photo credit: Author



Figure 6.9 View of Tullie Smith and drainage area from patio Site analysis: Atlanta History Center Photo credit: Author



Figure 6.10 Entrance to Tullie Smith from footbridge Site analysis: Atlanta History Center Photo credit: Author



Figure 6.11 View of playhouse area from second floor Site analysis: Atlanta History Center Photo credit: Author



Figure 6.12 View into playhouse area Site analysis: Atlanta History Center Photo credit: Author



Figure 6.13 Exterior museum stairs Site analysis: Atlanta History Center Photo credit: Author



Figure 6.14 View west along service entrances Site analysis: Atlanta History Center Photo credit: Author



Figure 6.15 View west showing current circulation Site analysis: Atlanta History Center Photo credit: Author



Figure 6.16 View east along center of site Site analysis: Atlanta History Center Photo credit: Author



Figure 6.17 View into Quarry Garden Site analysis: Atlanta History Center Photo credit: Author



Figure 6.18 View of site and Quarry Garden from second floor Site analysis: Atlanta History Center Photo credit: Author



Figure 6.19 View of museum from Tullie Smith Site analysis: Atlanta History Center Photo credit: Author



Figure 6.20 View out of Quarry Garden Site analysis: Atlanta History Center Photo credit: Author



Figure 6.21 Site Analysis Map

SITE ANALYSIS MAP Atlanta History Center Garden Railroad KRISTA GRIDLEY APRIL 2005

edge and a split rail fence that covers most of the remaining distance. There is a gap in the fence behind one set of hemlocks that requires attention. A playhouse and picnic tables located on a point overlooking the quarry are currently scheduled for relocation.

Visible on the south-facing building façade are ground and second level floors. The building has a flat roof and a long curved wall section at the patio. Constructed of light pink brick mixed with darker pinks and grays, the building walls have white concrete sections that add rhythmic vertical lines. Windows are present along the length of the museum, with large areas of glass at the second floor banquet room and in the rounded exit area onto the patio.

Basement entry is gained by exterior steps which descend behind a low wall. Outside stairs from the patio provide access to the second floor banquet room. Other rear exits from the ground floor are at the patio and above the basement steps. These points of entry must be included in proposed sidewalk configurations.

The northern edge of the patio curves with the building, but other edges are linear. The impervious surface consists of a white concrete and pebble mix. Portable tables and seating are present, making this area ideal for observing trains. Decorative steps arranged in a circular pattern lead off the patio to the sidewalk that parallels the museum. A level walkway slants off the western edge of the patio to the sidewalk, providing wheelchair access. Located just inside the patio are restrooms, a café, and staff offices. A granite retaining wall abuts the patio edge closest to Tullie Smith.

The site terrain slopes downward gradually from the building to the quarry edge and from the center of the site towards both ends. Slopes are typically in the range of 12% - 15%, but drop to 6% in the playhouse area. The relatively low grades at either end of the proposed site will

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facilitate track planning, but the elevated section in the center will present a grade challenge for connecting the loops. The quarry walls are vertical.

Prevailing winds are from the west during the summer and from the northwest during the winter. The geographical orientation of the site along an east-west line will take advantage of cooling summer breezes. Additional accommodations for wind will not be needed. Georgia's warm climate is ideal for year-round operation.

Since most trees on the site are deciduous, the area receives significant sunlight during winter months. The lower half of the site along the quarry edge is heavily shaded once leaves appear. The upper half of the site near the museum has a few shade trees, but for the most part receives full sunlight. The patio area is open, with minimal shade provided by the building and a small live oak.

There are two primary lines of pedestrian circulation, intersecting at the patio steps. The first exits the building onto the patio through a circular area of glass windows and doors. The second runs between Tullie Smith and McElreath Hall. The Quarry Garden trail and parking are both reached from McElreath. Secondary circulation provides access to the basement, upper floor banquet room, and playhouse area. Circulation patterns will benefit from modification to establish a visual hierarchy and facilitate a smooth flow of pedestrian traffic.

Sidewalks are constructed of impervious concrete, with variable widths and slopes. In addition to serving pedestrians, they also accommodate motorized garden carts driven by the horticultural staff. Other types of service vehicles do not impact the proposed site. Sidewalk configuration will require changes to accommodate new circulation routes and ADA access.

Viewing points across this site are an asset for the proposed railroad. The "Grand Overlook" from the second floor banquet room surveys the entire area, including the Quarry

Garden. For evening banquet rentals, the trees edging the quarry are lit to enhance the scene. On the opposite side of the quarry, the Swan House is visible during winter months. Fencing at the quarry edge allows visitors to approach for a closer look. The only view blocks are evergreen trees located at two places along the fence and at the entrance to the playhouse area. Both the fence and museum are visible from the quarry floor, but ground level of the proposed site is not. Visitors seated on the patio have a full view of the proposed layout area. When approaching from either end, the opposite side of the area is hidden.

Small lights are situated at the patio steps and additional lights are mounted high in some of the trees. There is no lighting provided for the walkways. Special night events involving the railroad will require additional temporary or permanent lighting for both safety and viewing. The present underground irrigation system will serve the railroad, with some adjustments being required during layout installation. Water and electrical access is conveniently available from the museum.

Planting beds are arranged around areas of turf and along the museum walls. Plants featured include native and exotic varieties that grow in hardiness zone seven. Large, wellestablished trees are an asset and consist primarily of deciduous species. The hemlock, beech and pine trees provide visual interest and texture throughout the year. Hollies enclose the entrance to the playhouse area, screening it from ground level views.

Stormwater runoff exits a stone culvert on the north side of the wooden footbridge at Tullie Smith. Diverted under the bridge, it is detained in a shallow depression between the sidewalk and the split rail fence at the quarry's edge. Minimal plantings are found in this area, and standing water is present at times. The water is not filtered and appears to contain a large

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amount of silt. Alterations to this system will enhance its appearance and effectiveness. Additionally, small eroded areas are noted in the turf above the playhouse area.

Signage is attractive and consistent throughout the property. Directional information is displayed on black metal posts with red panels and white lettering. Interpretive descriptions are lettered in white on black panels. Railroad signage should reflect this style for an overall cohesive appearance.

Conceptual Design

According to historian O. E. Carson, "Atlanta was born in 1837 as the surveyors pegged the terminus in Land Lot 78 on the present railroad tracks between the Spring Street viaduct and the Magnolia Street bridge."⁵ Begun as a survey stake for the Western & Atlantic Railroad, the small town of Terminus would eventually become the thriving metropolis known as Atlanta. Railroads, as agents of change, made this transformation possible. The Atlanta History Center Garden Railroad will provide visitors with an entertaining and educational view of Atlanta's long and vibrant railroad history.

Currently, the proposed railroad site serves two primary functions. First, as a major circulation route, it connects the museum to the east-west path between Tullie Smith and McElreath Hall. Second, it provides visitor seating in the patio and playhouse areas. A garden railroad will perform a third function by adding a programmatic element to an underutilized area of the facility.

The suggested areas of use are shown on the functional diagram (Figure 6.22). Public seating and activity areas include the museum, patio, and present playhouse space. Landscaped sections occupy the center strip, running parallel to the building. Divided into three operational loops, the railroad layout is situated in the narrow space along the quarry edge.



Figure 6.22 Functional Diagram

FUNCTIONAL DIAGRAM Atlanta History Center Garden Railroad KRISTA GRIDLEY APRIL 2005

The Atlanta Loop is located in the space now occupied by the playhouse. Designed as a tool for interpreting Atlanta's railroad history during the mid to late 1800s, it features the basic track plan of the historic downtown junction known as the "Iron Triangle." This central hub had freight, passenger and engine facilities for three railroads: the Western and Atlantic, the Georgia, and the Macon and Western.⁶

This time period included the Civil War, an era that was greatly influenced by the railroads. According to Civil War historian George Abdill, the conflict "could also have been called the Great Railroad War, for the part played by the railroads of both North and South was a vital one, and the final outcome of the strife between brothers was decidedly influenced by the role of the Iron Horse."⁷ The museum features a comprehensive Civil War collection, making the railroad a logical adjunct interpretive tool.

The prominence of trolleys in the early rail history of Atlanta prompted their inclusion in the Atlanta Loop. Operation began in 1871 and soon this popular transportation system crisscrossed the city. O. E. Carson, in his book <u>Trolley Titans: A Mobile History of Atlanta</u>, described trolleys as "Atlanta's fourth public utility, after steam railroads, the telegraph and gas service."⁸ Mules pulled early cars along the rails, but they were quickly replaced by steamdriven trolleys referred to as "dummies." Eventually the streetcar system became electrified, continuing to serve the city of Atlanta until 1949.⁹

As noted earlier, issues of scale prevent the design from being an exact replica of Atlanta. To resolve this issue, the track plan was developed using a process of abstraction (Figures 6.23-6.28). City maps of Atlanta dating from 1853 provided a starting point. Next, Civil War military defensive maps were superimposed on the adapted city maps. Finally, trolleys were added, based loosely on city streetcar maps from the late 1800s. Merging and abstracting these



Figure 6.23 The Iron Triangle: Atlanta Railroads 1853 Adapted from <u>City Atlas of Atlanta, Georgia</u>



Figure 6.24 Georgia Railroads 1864 Adapted from <u>The Official Military Atlas of the Civil War</u>



Figure 6.25 Savannah Railroads 1864 Adapted from <u>The Official Military Atlas of the Civil War</u>



1.1.4

Figure 6.26 Atlanta Street Railway Company 1871-1881 Adapted from <u>Trolley Titans</u>



Figure 6.27 Atlanta Trolley Lines Adapted from <u>Trolley Titans</u>













ATLANTA LOOP





MACON

EXTENDED CITY LIMITS

ADAPTED MAPS



Figure 6.28 Process of Plan Abstraction



EAST END LOOP

FINAL PLAN ABSTRACTION

PLAN ABSTRACTION Atlanta History Center Garden Railroad KRISTA GRIDLEY APRIL 2005 historical documents produced a functional diagram of mid-1800s rail service in Atlanta. Transferring this functional diagram to the existing site resulted in a final layout plan. This selective editing process presents the history center with an interpretive framework that preserves the historic landmarks and connections while offering them a degree of flexibility.

The Central Loop serves three functions. As a matter of practicality, it connects the end loops, allowing all trains to run directly into the storage shed at the end of a session. Trolley lines do not connect to main lines, but these individual cars are easily placed onto the nearest track for a final night run. Second, the connections allow multiple running configurations for operational interest. Third, the long narrow loop lets trains travel through a landscaped area, just as real trains traverse the countryside between Atlanta and other destinations. A small rural depot is appropriate for this stretch of track. Featuring less intense train activity, the Central Loop is ideal for casual viewing from the patio.

The East End Loop visually balances out the rest of the layout. Thematically, it provides a chance to model the railroad history of Georgia cities distant from Atlanta. The existing drainage area is transformed into a rain garden, improving its stormwater function and lending authenticity to the bridges that span it. A separate pool in the rain garden provides a circulating water feature fed by a waterfall. The train shed is located here, unobtrusively situated near the fence line. Generous track curves and lower grades allow larger trains and passenger lines to be featured in this section. Track configuration accommodates trains running in both directions as well as trains arriving from other loops.

In addition to designating areas for the railroad, the functional diagram also illustrates primary and secondary circulation routes, marking all intersection nodes. The center of the primary east-west path is shifted to the south, eliminating a sharp bend in the walk and facilitating pedestrian traffic flow. By moving the major route away from the building and narrowing secondary walks at service entrances, a visual and functional circulation hierarchy is established.

Since garden railroads invite an audience to both move and stand still, wide sidewalks and designated seating areas allow some spectators to pass while others linger. Generous intersections are effective tools for reducing turbulence in traffic flow. Additionally, congestion is minimized by offering a long linear layout with features of interest at both ends.

Site gradient issues are addressed in several ways. Trestles, walls, tunnels, and bridges are attractive structures used to maintain track elevation when the slope exceeds four percent. The Atlanta Loop is constructed on an elevated bed, bringing the track to grade at its sidewalk crossing and raising the viewing perspective on the opposite side. Added landforms such as hills or ridges lend authenticity to the scene and create another way to adjust for elevation changes.

Integration of the railroad with existing structures and permanent plant collections is an important aspect of this design. All large established trees and most of the existing ornamental plants will be incorporated into the plan. Continuity is further reinforced by utilizing construction materials and styles that reflect the facility standard.

Design Development

Even at the level of a conceptual plan, design development begins to address specific aspects of the overall design.

Since trains are the main attraction of this plan, it is imperative that they function smoothly and reliably. The track plan is illustrated in Figure 6.29, with gradients and elevations designated. All track gradients are maintained at four percent or less, with most having very little slope. Curves have a minimum diameter of ten feet, but most far exceed that amount. The





Figure 6.29 Track Plan

TRACK PLAN Atlanta History Center Garden Railroad KRISTA GRIDLEY APRIL 2005



Figure 6.30 Conceptual Plan

CONCEPTUAL PLAN Atlanta History Center Garden Railroad KRISTA GRIDLEY APRIL 2005 various operational possibilities ensure that trains keep running even if one section experiences a technical difficulty.

Atlanta's Iron Triangle is approached by trains from three directions, just as they did historically. Trains can run in both directions simultaneously on these loops, aided by electronic devices that pause one train on a siding while another passes by. Using these sidings to represent historical depots or industrial sites makes the wait plausible.

Historic Atlanta buildings offer a multitude of modeling opportunities. Train facilities such as roundhouses and passenger stations are popular with audiences. Confederate military maps show strategic army and navy landmarks: workshops, depots, a rolling mill, machine works, arsenals, a steam tannery, and laboratories. To keep things electronically simple, yet visually interesting, railroad and industrial facilities can be constructed to appear operational by placing unused sections of track around the buildings.

Design elements are important tools for modeling a cityscape. Creative placement of buildings and street depictions serve to break up the layout, blocking views and forcing the audience to move as they explore the scene. Compressing structures to the front or center of the layout draws the eye to them, changing the spatial perspective. Although the Atlanta Loop track is level, the land within it has slightly elevated or excavated areas to give the illusion of variations in terrain. City streets provide strong linear elements juxtaposed against curving sweeps of track. These city streets then "jump" the retaining wall onto the walkway surface, simultaneously maintaining and blurring the boundary between railroad and viewer. The walkway around the Atlanta Loop is surfaced with porous pavers, making it possible to represent these streets by choosing different colors of pavers.

The Atlanta Loop is built on a raised bed contained by granite blocks similar to those used elsewhere on the property. Wall height on the western side is two feet, decreasing gradually to ground level at the point where the track crosses the sidewalk. Even when it reaches grade, a short wall is maintained to give guests a visual boundary cue. A two-foot wall height is high enough to change the viewing perspective, but low enough for small children to peer over. Structures and trains are recessed from the edge by three feet to prevent curious hands from reaching valuable items.

Two seating areas are provided for the Atlanta Loop. A circular seat near the quarry's edge accommodates viewing of both the railroad and the quarry. Room is allowed for people to walk around the area and approach the fence. Benches in the western corner face the railroad and are screened from behind by shrubs.

At the only point where tracks cross the path, individual rails are placed in the paving just below the surface of the walk. This allows trains to pass through at the end of the day, but prevents foot traffic from damaging the track.

Trolleys run back and forth on individual lines. Reliable reversing units are available for programming a pause at each end before the car changes direction. Cars can also be set up to make multiple stops along a route, much as the real trolleys did.¹⁰

The Central Loop runs at a steeper grade to accommodate topographical changes. These grades will mandate shorter trains, similar to those of the late 1800s. Trains travel in either direction, disappearing behind plants only to reappear farther down the track. Trains seem more intermittent on this loop, raising the level of anticipation for viewers.

As previously described, the East End has more intense activity than the Central Loop, with several features adding interest to this area. The current detention area is converted into a rain garden, allowing stormwater runoff to be filtered and absorbed more efficiently. The channel diverting runoff into the area is designed as an intermittent rock streambed, both for functional and aesthetic reasons. A separate contained pool is placed in the rain garden, giving the impression that it is part of the overall wet area. Circulating water flows from a waterfall through a streambed and into the pool. Two bridges cross the wet area at different heights, with the inner loop bridge being the tallest.

To maintain elevation on the far side of the loop, trains run along the top of a roughly stacked rock wall. The waterfall originates from a cut in this wall. A combination of landform and rock near the end of the wall provide an opportunity to include a tunnel. Plantings along the rock wall break up the view and let trains disappear from sight.

The plan calls for a ten by twelve foot train shed placed near the quarry fence. The trestle on one side of the shed and rock wall on the opposite side allow trains to enter the building at a convenient height. Shed features include workbenches, lighting, storage shelves, windows, electrical outlets and doors that secure. Exterior walls resemble those of Tullie Smith, with the look of weathered hand-hewn wood.

Access must be granted and restricted throughout the layout. Various techniques are employed to welcome visitors and bring them in close to the trains. The layout paths are maintained at less than a five percent slope, meeting accessibility standards and creating a comfortable environment for guests of all abilities. The Atlanta Loop is surrounded by a walkway, inviting exploration off the main path. Sidewalks parallel the other two sections, giving viewers observation points close to the railroad. Benches are provided for resting and casual viewing along the walks opposite the layout.
Controlling access is more difficult than allowing it. Walls replicate history center styles and existing fences are retained, lending a familiar and unobtrusive appearance. The retaining wall on the Atlanta Loop is elevated, providing a tangible barrier. The sidewalk edge adjacent to the East End and Central Loop is lined with a series of bollards and planted buffers that provide visual cues regarding boundaries. Tracks and structures are set back three feet from all edges. Still, supervision will be the most effective means of controlling access.

Docent-guided tours are an excellent way for the Atlanta History Center to offer a supervised educational experience for visitors of all ages. Tours provide an opportunity to integrate the railroad with other educational programs, since volunteers already serve in this interpretive capacity at the center. Published materials can be available for distribution when docents are not available.

Integration of the railroad with history center structures and permanent plant collections is an important consideration. All large established trees are retained, as are most of the ornamental beds. The hollies in front of the current playhouse, a small number of bedding plants, and a few small shrubs in the stormwater detention area will be moved. Construction materials and signage will reflect the facility standard.

Concrete sidewalks will continue to be used throughout the site except for the walk surrounding the Atlanta Loop, which will be constructed of porous pavers. Such a change in surface texture cues visitors to alter their pace. Additionally, porous pavers assist in stormwater management by facilitating absorption of runoff. Lights are added along walkways for ease of ambulation in low light conditions. Minor grading changes are required to configure the sidewalk slopes at five percent or less. All walks adjacent to the railroad are at least eight feet in

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width, creating a comfortable place to linger or pass. Sidewalks supporting secondary circulation to service doors by the building are reduced to a width of six feet.

Visitor safety is paramount. Electrical controls for the layout are secured in the train shed. As a precautionary measure, fencing at the quarry's edge will be extended across the short gap behind the hemlocks.

Various design elements have already been discussed, particularly around the depiction of Atlanta, but a few others deserve mention here. Four elements of this plan contribute to a sequential viewing experience: trains in motion, a long linear form, shifting viewpoints, and varying intensity levels. It makes no difference at what point entry occurs, for these devices impel the visitor to move through the sequence.

Illusion and perspective are two elements found throughout the design. The long narrow format, broken into three sections, adds apparent size to the plan. Railroad structures and plants provide visual focal points and establish spatial relationships within the layout. Incorporating the borrowed scenery from the quarry adds an expansive backdrop, creating an open feeling.

Plant selection for the garden railroad is based on functional and visual characteristics. For instance, in addition to being attractive visually, rain garden plants stabilize the soil, filter runoff and promote absorption of water. In other areas, plants are utilized to prevent erosion, increase the sensory experience, screen views, enclose spaces, draw attention to features, and provide boundary cues.

The pool and rain garden areas are heavily shaded in the summer, requiring plants that tolerate increased moisture and low light conditions. Planted borders are irregular in shape, mimicking the form of a natural wetland area and adding authenticity to the scene.

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Evergreens provide color and texture throughout the year. There are many excellent dwarf varieties available for use around the railroad. Broadleaf evergreen species are mixed with conifers to vary the shades of green and offer textural interest. The light color of the museum provides an excellent backdrop for larger evergreen varieties.

Visitors enjoy the miniature atmosphere created by diminutive plants. Plant size is intentionally graduated in the layout, with smaller species being located near buildings where scale comparisons are more noticeable. Finely textured varieties give the impression of smaller scale and are also useful close to structures. Aromatic herbs not only fit the size requirements, but also add to the overall sensory experience.

Since the Atlanta History Center horticultural staff is directly impacted by a garden railroad, plant selection is a collaborative effort. Although volunteers may participate in plant maintenance activities, the horticultural staff will ultimately be responsible for acquisition of plant materials, installation, and any care that requires specialized skills.

The design process outlined in chapter five for garden railroads proved to be a useful planning tool for the Atlanta History Center project. As a first step, program development provided the contextual background necessary for directing the rest of the process. Site analysis yielded a realistic assessment of site variables, including both opportunities and constraints. The conceptual design phase encouraged thematic exploration, taking into consideration the stated goals and objectives of the center. The final step, design development, assembled the many pieces of information, transforming them into a garden railroad plan uniquely suited to the Atlanta History Center.

Chapter one posed the question, "Is a garden railroad appropriate for the Atlanta History Center?" More than 160 years have passed since Atlanta was the small railroad junction called Terminus. In the meantime, railroads have contributed a large and colorful chapter to the history book of this metropolitan city. The Atlanta History Center Garden Railroad celebrates this collective history, inviting visitors to remember, to learn, and perhaps most importantly, to play. Notes

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CHAPTER SEVEN

CONCLUSION

Today, garden railroads are increasingly popular in backyards around the world. Apparently, the same is true for public botanical gardens. Current exhibits are continuing and new ones are joining the ranks. Perceptions are indeed changing, and in moving from the private realm to a public one, garden railroads have grown up.

The June 2005 issue of the magazine <u>Landscape Architecture</u> featured a recent garden railroad exhibit at the United States Botanic Garden in Washington, DC. Described as a "trainscape" by author Marc Ethier, the Busse exhibit drew "record numbers to one of the city's least-appreciated landmarks."¹ Another Busse creation, "Locomotion in the Garden: Trains Across Georgia," opens May 2005 at the Atlanta Botanical Garden. Clearly, garden railroads have a place in botanical gardens and landscape architects have a contribution to make.

So, close your eyes. Take a slow, deep breath and imagine yourself strolling in a botanical garden, perhaps at the Atlanta History Center. Ahead, the railroad tracks sweep into a curve. Minutes later a Western and Atlantic engine chugs across the trestle under full steam. All is right with the world.

Notes

¹ Marc Ethier, "Landscape Architect in Training." <u>Landscape Architecture</u> (June 2005): 22.

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APPENDIX A

INTERVIEW QUESTIONS

- 1. When was the railroad constructed?
- 2. What was the reason for building a railroad?
- 3. Who designed the railroad?
- 4. Who actually did the construction?
- 5. Do you know how much it cost to install the railroad?
- 6. What scale is the railroad?
- 7. What is the size of the layout?
- 8. What type of power source is used to run the trains?
- 9. Does the choice of power present particular challenges?
- 10. Describe the maintenance requirements and the costs associated with it.
- 11. Who is responsible for maintenance?
- 12. How are funds generated to support the railroad?
- 13. Does the railroad generate income for the facility and is it expected to?
- 14. How often does the railroad run for the public?
- 15. Who is responsible for operating the railroad?
- 16. Is the railroad interactive in any way?
- 17. Does the railroad have a particular theme associated with it?
- 18. How was the theme chosen and developed?
- 19. Describe key features of the railroad.
- 20. Was the railroad installed in an established area of the garden? If so, what

accommodations were made?

- 21. Describe the railroad's accessibility to visitors.
- 22. Does the garden utilize volunteers at the railroad? What are their duties?
- 23. Has the railroad brought the local community together in any way?
- 24. Describe any challenges associated with having a garden railroad.
- 25. Is security an issue with the railroad?
- 26. Describe the benefits of having a garden railroad.
- 27. Do you have a special story to share about the railroad?
- 28. What do people enjoy most about the railroad?
- 29. Do you have pictures of the garden's railroad that I may publish in my thesis?
- 30. May I use this interview information in my thesis?
- 31. Do you have any advice for me?

APPENDIX B

INTERVIEWS

- Brooks, Chris. Atlanta History Center. 22 July 2004.
- Busse, Paul. Applied Imagination. 1 Nov. 2004.
- Carter, Pam. Longwood Gardens. 14 Jan. 2005.
- Gross, Megan. St. Rita School for the Deaf. 1 Mar. 2005.
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- Rodelius, Dave. Chicago Botanic Garden. 3 Feb. 2005.
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- Soniat, Paul. New Orleans Botanical Garden. 20 Jan. 2005.
- Sposato, Adam. New York Botanical Garden. 11 Jan. 2005.
- Stewart, Jon. Rio Grande Botanical Garden. 11 Jan. 2005.
- Thompson, Dave. Longwood Gardens. 22 Feb. 2005.
- Toohey, Bob. Fairplex Garden Railroad. 30 Jan. 2005.
- Webber, Kristie. Chicago Botanic Garden. 18 Jan. 2005.

APPENDIX C

CASE STUDY GARDENS

Atlanta History Center, 130 West Paces Ferry Rd. NW, Atlanta, GA 30305-1366.

Chicago Botanic Garden, 1000 Lake Cook Road, Glencoe, IL 60022.

Colorado Railroad Museum, 17155 West 44th Avenue, Golden, CO 80403.

Fairplex Garden Railroad, PO Box 2250, Pomona, CA 91769-2250.

Hudson Gardens and Event Center, 6115 South Santa Fe Drive, Littleton, CO 80120.

Living Desert Zoo and Gardens, 47-900 Portola Avenue, Palm Desert, CA 92260.

Longwood Gardens, Route 1, PO Box 501, Kennett Square, PA 19348-0501.

New Orleans Botanical Garden, City Park, 1 Palm Drive, New Orleans, LA 70124-4608.

New York Botanical Garden, Bronx, NY 10458.

Rio Grande Botanical Garden, Albuquerque Biological Park, 2601 Central Avenue NW, Albuquerque, NM 87104.

St. Rita School for the Deaf, 1720 Glendale-Milford Road, Cincinnati, OH 45215-1258.