PART I

Public Gardens and Their Significance

CHAPTER 1

What Is a Public Garden?

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Introduction

If a public garden is any space that has been laid out for public enjoyment, then the history of public gardens can be traced back across both continents and centuries to such luminary garden creators as the Chinese emperor Shen Nung (ca. 2800 BCE), Queen Hatshepsut of the Eighteenth Dynasty of Egypt (ca. 1470 BCE), and the Greek philosopher Aristotle (384–322 BCE).

But in its modern context, a public garden is more than a property that holds a gathering of plants, even when those plants are laid out in an aesthetically pleasing manner. A public garden is both a *physical presence* that includes plant collections, buildings, and infrastructure and an *organization* that manages those elements and uses them to further its mission.

To answer the question posed by its title, this chapter will examine the essential criteria for a public garden, offer examples of the different kinds of institutions that meet those criteria, and identify the individuals and organizations that create public gardens and what motivates their efforts.

Essential Criteria

In its essence, a public garden is a mission-based institution that maintains collections of plants for the purposes of education, research, conservation, and/or public display. It must have a system for maintaining plant records and professional staff. Further, it must be open to the public and provide accommodations for access to all people.

This definition is also useful in identifying what is *not* a public garden. A park may have beautiful ornamental plants and they may be well cared for by the maintenance staff. Likewise,

KEY TERMS

Curation: selecting, organizing, and looking after the objects in a collection.

Systematics: the branch of biology concerned with classification and nomenclature; taxonomy.

Accession: a new item added to a collection in a museum or library.

Accessioning: the act of adding a new item to a collection.

Herbaceous perennial: a plant whose growth dies down annually, but whose roots or other underground parts survive.

Woody plant: any plants with stems and limbs containing lignin; as trees, shrubs, vines.

Ethnobotany: the scientific study of traditional knowledge concerning the medical, religious, and agricultural uses of plants.

Dendrology: the scientific study of trees.

Basic research: research that is driven by a scientist's curiosity or interest in a scientific question. The main motivation is to expand human knowledge, not to create or invent something.

Applied research: research that is designed to solve practical problems of the modern world, rather than to acquire knowledge for knowledge's sake.

Mission statement: a concise statement that defines why an organization exists, what are its primary activities, and whom it serves.

amusement parks, shopping malls, and even hotels can have lovely and diverse plantings, and community gardens devoted to food production may be public. But such sites do not meet the essential criteria of being public gardens unless there is a mission statement driving their efforts and their plants are actively curated, that is, cared for as objects that are part of the collection of a living museum. Chapter 20 deals in depth with all that is involved with the curation of collections at a public garden.

Mission Statement

Whether it is being applied to a public garden or to a private corporation, a mission statement defines why an organization exists, what its primary activities are, and whom it serves. A public garden's mission statement might focus on the types of collections it holds, how its collections are to be used, the focus of its programs and/or research, and who its primary audiences are. The mission statement should be the basis for all decisions and planning by the garden.

Plant Collections

Plant collections are fundamentally distinct from purely ornamental displays. Collections can be grouped either taxonomically (i.e., by family association), geographically (plants from one region of the world), functionally (groundcovers), or by plant needs (shade plants or plants for dry soil). One of the greatest challenges for public garden managers is how to merge the method by which collections are organized with the aesthetic goals of the garden.

Education/Research/Display

The degree to which a particular public garden is involved with education, research, or ornamental display will vary depending on the garden's mission. Whether for primary, secondary, collegiate, or adult audiences, educational programs at public gardens focus on increasing an appreciation of plants and their value to society. Programs generally include classes, workshops, tours, outreach, exhibits, visitor information, and special events.

Research at public gardens has traditionally focused on nomenclatural or plant systematics and plant breeding issues. But increasingly, many gardens today emphasize plant conservation and biodiversity research.

Plant Records

An essential component of plant curation for all public gardens is the accessioning and deaccessioning of individual plants. Each plant added to the collection is given a unique identifying number, and records are kept of each plant that is removed from the collections, along with the reasons for its removal. Start-up gardens may not be able to afford a plant records specialist and may assign this task to the gardeners or even to the director. Whoever has the responsibility for managing plant records and whether records are kept electronically or in a notebook, it is essential that every public garden maintain a record of all plants that have the potential to be long-term additions to the collections.

Professional Staff

Individuals who are attracted to work in public gardens typically possess a different set of qualities than people who go into parks management. While public garden staff members recognize the aesthetics of how plants are combined in collections, they also value how those plants are managed and are used to further the garden's educational or research mission.

The active management of plant collections therefore requires staff with specialized curatorial training, including a thorough knowledge of plant taxonomy and plant nomenclature. Typically, such individuals have backgrounds in horticulture, botany, or plant taxonomy, and are adept with the computer programs that many public gardens now use in curating their collections.

Open and Accessible to the Public

To be a public garden, a garden must maintain regular, posted hours and make reasonable efforts to accommodate those with disabilities or limited mobility. This does not mean that every section of every garden need be wheelchair accessible, but it does mean ensuring that every visitor is able to experience the garden in a meaningful way.

Types of Public Gardens

The origin of the public garden in the Western world dates to the sixteenth century in Europe. There—in cities such as Padua, Pisa, and Montpellier—medical universities created symmetrical, foursquare gardens filled with plants that were believed to be medicinally active. These *hortus medicus* gardens were then used as teaching sites for the medical and pharmaceutical students at these schools.

While public gardens have branched off in several directions since that time, all are living museums of curated plants, with programs in education, conservation, research, and/or display. In the following section on the types of public gardens, it is important to recognize that the distinctions between these types are becoming blurred. Increasingly, arboreta contain some

herbaceous collections, botanical gardens usually have areas devoted to trees and shrubs, and display is certainly important to all institutions. In North America, approximately seven hundred institutions are currently considered public gardens.

Botanical Gardens

Botanical gardens contain a wide array of both herbaceous and woody plant collections, varied educational offerings for all ages, and research programs focused on plant improvement, conservation, ecology, or basic science. As the examples that follow demonstrate, if there is one characteristic that unites all botanical gardens, it is that they have botanically diverse, rather than simply aesthetic, collections of plants.

Brooklyn Botanic Garden, Brooklyn, New York

Established in 1910 on the site of a former city dump, today the Brooklyn Botanic Garden (BBG) occupies 52 acres in the heart of Brooklyn and contains world-class collections, including the Cherry Esplanade, the Cranford Rose Garden, the Japanese Garden, and the Steinhart Conservatory. But the breadth of BBG's programs and influence is exemplified by its educational and outreach work. The garden is home to the first and oldest children's garden in North America, and its education programs reach constituents in all age groups. One of its most innovative projects is the Brooklyn Academy of Science and the Environment, which the garden comanages along with Prospect Park and the New York City Department of Education. This mini–high school uses the resources of the garden and the park to educate young people on subjects related to the natural sciences and the global environment. BBG also offers an intensive Certificate in Horticulture program to individuals interested in professional careers in the green industry. Outreach efforts include locally based greening programs such as Greenest Block in Brooklyn and Brooklyn GreenBridge, family events, and research on the flora of the New York metropolitan area.

Chicago Botanic Garden, Chicago, Illinois

With 385 acres of natural beauty and twenty-three specialty gardens set on nine islands, the Chicago Botanic Garden (CBG) offers an incredible array of adult and children's educational programs nested within the School of the Chicago Botanic Garden. Beyond its collections and public programs, the CBG has developed a depth of intellectual activities that are seldom fully seen or appreciated by the casual visitor. With highly regarded scientists and facilities on-site, it is a recognized leader in conservation science and horticultural research. In addition to workshops and symposia directed at professionals in public horticulture, CBG has formed academic partnerships with Northwestern University in offering a master's program in plant biology and conservation, and with the University of Illinois at Urbana-Champaign in offering a bachelor's degree in horticulture. Through its outreach division, the Garden disseminates plant-based information and answers inquiries on subjects of interest to home gardeners.

Missouri Botanical Garden, St. Louis, Missouri

Located in St. Louis, Missouri, but with conservation and research programs that circle the globe, the scope and complexity of the Missouri Botanical Garden (MOBOT) and its work is truly inspirational. MOBOT was started by a young hardware merchant who desired to emulate the great gardens of his native England. In 1840, when Henry Shaw was only forty, he retired from his hardware business in St. Louis and spent the next decade traveling, learning botany, and laying the groundwork for what would for many years be called "Mr. Shaw's garden." MOBOT houses some truly fabulous horticultural collections, including those in the geodesic-dome-shaped Climatron, the 14-acre Japanese garden, and the Kemper Home Demonstration Gardens. But in other ways, the institution more closely resembles a plant-based university than a traditional botanical garden. It is a leading center of conservation and taxonomic research and houses a world-class library, herbarium, and laboratories. It supports many major endeavors in horticulture, including the Flora of North America and the Center for Plant Conservation. It also offers accredited courses on the university level and educational programs for every age group. A great deal of credit for all that it has become is due to Dr. Peter Raven, its longtime director and an acclaimed botanist and environmentalist.

The New York Botanical Garden, Bronx, New York

Much as Henry Shaw was stimulated by his European tour to create a botanical garden that would emulate the grand landscapes to which he had been exposed, the eminent Columbia University botanists Nathaniel Lord Britton and his wife, Elizabeth, were so inspired by their visit to England's Royal Botanic Gardens at Kew that they determined that New York should also possess a great botanical garden. A magnificent site of outstanding natural features was selected in the northern section of the Bronx. It includes dramatic rock outcroppings, a river and waterfall, rolling hills, ponds, and a 50-acre remnant of the forest that once covered the region. The land was set aside by the New York State Legislature for the creation of "a public botanic garden of the highest class" for the City of New

York. Prominent civic leaders and financiers, including Andrew Carnegie, Cornelius Vanderbilt, and J. Pierpont Morgan, agreed to match the city's commitment to finance the buildings and garden developments, initiating a public-private partnership that continues today. In 1896, the New York Botanical Garden (NYBG) appointed Nathaniel Lord Britton as its first director.

Today the Garden ranks as one of New York's premier cultural resources, with its fifty horticultural collections and its fabulous special exhibits. But the NYBG is also a world-class scientific institution, with researchers in its International Plant Science Center focused on exploring, documenting, and preserving the earth's vast biodiversity.

Fairchild Tropical Botanic Garden, Miami, Florida

While the previously described botanical gardens all house plant collections reflective of diverse geographic and environmental origins, the Fairchild Tropical Botanic Garden (FTBG) focuses its collections on species from tropical and semitropical regions of the world. Its palm and cycad collections are among the greatest in any public garden, and its collection of tropical fruits is internationally significant. In addition, the Garden has developed an internationally known and replicated education program, the Fairchild Challenge, which focuses on youth and plant science. Another of the efforts that distinguish the FTBG is its use of exhibits to attract greater and more diverse visitation. Some of these exhibits fit within the traditional purview of a public garden, such as "Windows to the Tropics," its permanent 16,428-square-foot conservatory of plants from the humid tropics. Other, more temporary exhibits—such as those featuring works in glass by Dale Chihuly or monumental sculptures by Roy Lichtenstein—stretch the definition of what is customary at a public garden.

The Desert Botanical Garden, Phoenix, Arizona

The Desert Botanical Garden (DBG) emphasizes the flora of one habitat type—the desert—rather than a pan-geographic sampling. Its collection of more than 20,000 plants features a particular focus on the American Southwest. The desert also serves as the unifying factor in the DBG's educational programs, which offer classes in desert landscaping, gardening, botanical art, photography, science, and healthy desert living. The survival of plants in the harsh desert environment is also the focus of the DBG's research programs in floristics, conservation, ecology, and ethnobotany.

Conservatories

A conservatory is typically a steel and glass structure for the display and study of tropical and other nonhardy plants. The earliest known conservatories date from the seventeenth century when they were merely stone structures with extra glazing to allow in light. They were used by the British scientific community, nobility, and landed gentry to protect plants, especially those that had been collected on European tours and which they wished to grow in England's colder climate.

The heyday of British conservatories came in the nineteenth century after the tax on the weight of glass had been eliminated and the technology for steel production improved. It was then that Joseph Paxton designed the Great Conservatory at Chatsworth and London's famous Crystal Palace.

The Crystal Palace served as a design motif for the great conservatories constructed in the United States in the late nineteenth century. The earliest of these was the Conservatory of Flowers in San Francisco's Golden Gate Park. This majestic three-dome structure sits behind carpeted beds of annuals, adding to the Victorian appearance of the site.

Less well known, but no less impressive, is the conservatory of the Buffalo and Erie County Botanical Gardens. Also a three-dome structure, this conservatory was part of the grand plan for Buffalo parks laid out by the father of landscape architecture, Frederick Law Olmsted. The structure itself was constructed by the Lord and Burnham Co., noted for building many of the majestic conservatories of this era. The Enid Haupt Conservatory of the New York Botanical Garden also was designed by Lord and Burnham and was completed in 1902. It is considered one of the crown jewels of New York.

All of these historic structures have required extensive renovations, given their outmoded heating systems, the deleterious effect of internal humidity on wood and steel structural elements, and deteriorating beds and walkways.

While monumental efforts were undertaken to update and restore each of the aforementioned historic conservatories, a decision was reached in 1955 that the 1898 Conservatory in Mitchell Park, Milwaukee, Wisconsin, could not be saved. A design competition was held, and the winning architect, Donald Grieb, designed a three-dome conservatory, in which each beehive-shaped dome houses plants of a distinct climate.

The Mitchell Park Domes presaged the design of the Climatron conservatory, which opened in 1960 and has become a symbol of the Missouri Botanical Garden. The geodesic dome was inspired by the design of R. Buckminster Fuller. Covering more than a half acre, the Climatron houses some 1,400 species of plants in a natural tropical setting.

One of the most progressive conservatories in North America today is at the Phipps Conservatory and Botanical Gardens. A series of innovative design and engineering

approaches—including passive cooling, earth tubes, a double-pane insulated roof, and a solid oxide fuel cell heating source—have been combined to make its Tropical Forest Conservatory the most fuel efficient in the world.

Arboreta

Arboreta, as contrasted with botanical gardens, focus on the study and display of woody plants, primarily trees and shrubs. They, too, typically offer educational programs for children, students, and adults. Their collections may be organized systematically, with each plant family assigned to its own area, or functionally, with plants located where their needs can best be met.

Arnold Arboretum of Harvard University, Cambridge, Massachusetts

Established in 1872, the Arnold is the oldest arboretum in the United States. Its first director, Charles Sprague Sargent, was one of the preeminent dendrologists and botanists of the nineteenth century. Sargent spent fifty-four years as director, shaping the policies and collections of the arboretum, and often collaborating with the illustrious landscape architect Frederick Law Olmsted. From the time of its founding, the Arboretum has maintained a complete record system, with a standardized accession number assigned to every plant on the grounds for use in tracking its name and origin. It is this detailed record system, along with the systematic organization of the collection on the grounds, that facilitates research by staff and other scientists. Currently, the living collections are used for research on a diverse range of subjects that include molecular systematics, plant physiology and morphology, vegetative propagation of woody plants, and evaluation and selection of new cultivars of woody plants with ornamental merit.

The Morris Arboretum of the University of Pennsylvania, Philadelphia, Pennsylvania

Many of the qualities that distinguish the Morris Arboretum today were established by brother and sister John and Lydia Morris when they first moved to the site: stewardship of the land, a dedication to horticultural excellence and collections diversity, a love of art and sculpture, and a focus on education.

Today, science, art, and the humanities are pursued through a variety of research, teaching, and outreach programs that link the Arboretum to a worldwide effort to nurture the earth's forests, fields and landscapes. Although formally affiliated with Penn, the Morris is also the official arboretum of the Commonwealth of Pennsylvania.

The Morton Arboretum, Lisle, Illinois

By including the phrase "and other plants from around the world" in its mission statement, Morton intentionally stretches the definition of what is considered an arboretum. The Arboretum has extensive herbaceous borders throughout its grounds. Among these are its Four Seasons Garden, Herb Garden, and Fragrance Garden. More recently, the Arboretum has added a 4-acre Children's Garden, one of the largest and most diverse such gardens in the country. The 1,700 acres of the Arboretum do hold collections of more than 4,000 kinds of trees and shrubs

So is the Morton Arboretum still an arboretum? Yes, in the mind of longtime president and CEO Dr. Gerard T. Donnelly, who sees an arboretum as a botanical institution that emphasizes the planting, display, and study of woody plants. Based on this definition, herbaceous plantings are not excluded, but trees are the central focus.

The North Carolina Arboretum, Asheville, North Carolina

The North Carolina Arboretum is a unique institution, as is clear from the first phrase of its mission statement: "The North Carolina Arboretum cultivates connections between people and plants through creative expressions." By immediately citing its location in the southern Appalachians, the Arboretum reveals the strong emphasis it places on its locale in carrying out its mission. Thus, its collections include a heritage garden, and annual events include a quilt show and a heritage crafts weekend to showcase the artistry of the region.

An arboretum for this area was first envisioned by the great landscape architect Frederick Law Olmsted, who was working at the nearby Biltmore estate. The Arboretum was founded in 1986 by the North Carolina State Legislature as a unit of the state university. It is therefore distinguished from other college or university arboreta that are associated with and governed by a single institution of higher learning.

Display Gardens

Display gardens expend more of their efforts on developing aesthetically pleasing exhibits of plants throughout the year. Often they offer both outdoor displays and extensive plantings in conservatories. Such gardens will frequently feature the newest cultivars of ornamentals or unusual tropical plants as ways of fulfilling their display mission. But to be considered *public* gardens, these institutions must still comply with the requirements of curated collections, as described earlier. While their focus may be on display, many of these gardens maintain lively

educational programs and have highly skilled staffs managing well-documented plant collections, activities that enable them to qualify as public gardens.

Longwood Gardens, Kennett Square, Pennsylvania
Longwood refers to itself as the world's premier horticultural showplace, and it is hard to dispute this title. Longwood artfully combines plantings—both outdoors and in its extensive conservatories—with fountains, pathways, displays, and sculptures to create a true feast for the eyes. But Longwood is also a public garden that offers classes, tours, lectures, workshops, and internships to educate audiences on the beauty and importance of plants. In conjunction with the University of Delaware, the garden also offers the renowned Longwood Graduate Program in Public Garden Administration, which prepares candidates for leadership careers in public horticulture.

Chanticleer, Wayne, Pennsylvania
Like Longwood Gardens and Butchart Gardens, Chanticleer is a former estate, specifically of the wealthy industrialist Adolph Rosengarten. Rosengarten left his 31-acre estate to a private foundation, which opened the property to the public in 1993. Chanticleer is a shining example of the art of horticulture and rightly refers to itself as a "pleasure garden." Rather than concentrating on botanical collections, its focus is on plant combinations, which it executes through its exquisite container plantings, unusual textural and color combinations, and extensive reliance on foliage. Its educational mandate is carried out largely through collaborations with neighboring organizations.

Wave Hill, Bronx, New York
As an institution, Wave Hill falls somewhere between a display garden and a historic property. First settled in the early nineteenth century, Wave Hill has housed, at various points in its history, Teddy Roosevelt, Mark Twain, and Arturo Toscanini. In 1960, the Perkins-Freeman family deeded Wave Hill to the City of New York. Wave Hill Inc. was formed in 1965 as a not-for-profit corporation. Today, as one of thirty-three city-owned cultural institutions, Wave Hill provides an oasis of serenity and offers programs in horticulture, environmental education, woodland management, and the visual and performing arts. For many years, its director of horticulture was the esteemed Marco Polo Stufano, who was at the vanguard of a new and more expressive approach to ornamental display.

Historic Landscapes

All gardens are historic, and all landscapes are ever changing. Most sites that define themselves as historic and are open to the public have also attempted to restore or re-create their landscape to a particular period or style. The authenticity of such landscapes is dependent on the level of documentation available to guide the plant selection and design process. As with display gardens, historic landscapes can be considered public gardens if they are driven by an articulated mission and have plant collections that are curated and used to support education and/or research.

The Fells, Lake Sunapee, New Hampshire
The former summer estate of John Milton Hay, a private secretary to Abraham Lincoln during the Civil War, the Fells is a historic, designed garden and cultural landscape with a large Colonial Revival house and 15 acres of gardens. Its organizational structure exemplifies how complex the management of a historic estate can be. The historic gardens are part of the larger 164-acre John Hay National Wildlife Refuge, shaped by three generations of Hay family agricultural activities and forest conservation practices. Sixty-four acres of the refuge, commonly referred to as the Fells, are now managed by the not-for-profit Friends of the John Hay National Wildlife Refuge, in cooperation with the federal property owner, the United States Fish and Wildlife Service. The Friends work in collaboration with the Lake Sunapee Protective Association, the Society for the Protection of New Hampshire Forest, and the Garden Conservancy to provide educational programs, to conserve natural resources, and to preserve the cultural landscape.

Stan Hywet Hall and Gardens, Akron, Ohio
The estate was built between 1912 and 1915 for F. A. Seiberling, founder of the Goodyear Tire and Rubber Company, who gave it the name Stan Hywet, Old English for "stone quarry," to reflect the site's earlier use. Stan Hywet reveals the high level of sophistication that the art of landscape design had reached in the early twentieth century. Originally more than 1,000 acres, the estate grounds were designed between 1911 and 1915 by renowned Boston landscape architect Warren H. Manning and, though reduced to just 70 acres today, remain one of the finest examples of his work. The English Garden was designed by noted landscape architect Ellen Biddle Shipman. It was completely restored in the late 1980s, using the original plant palette specified by Shipman. In 1957 the Seiberling family donated Stan Hywet to a not-for-profit organization for its preservation.

What qualifies Stan Hywet as both a historic estate and a public garden is that every effort is made in the gardens to use the plant types specified in the original landscape designs and careful plant records are kept of the trees, shrubs, roses, and perennials.

Sonnenberg Gardens, Canandaigua, New York
Sonnenberg has had an unfortunately turbulent history. The property was sold by the original owners' nephew to the federal government in the 1930s. The government then converted the property into the grounds of a new veterans' hospital. In 1970, a group of local citizens formed the Friends of Sonnenberg with the intention of restoring the grand estate to its former splendor. Despite their many successes, in the late 1990s Sonnenberg Gardens endured financial hardship, which climaxed with the arrest and conviction of its CEO for embezzlement. Just as the estate faced foreclosure, in 2004 New York State came to the rescue, purchasing the land and buildings and turning over the operations to a separate 501(c)(3) organization.

Throughout this rocky chronology, Sonnenberg has managed to hold on to many of its notable gardens. Chief among these is the Italian Garden, for which gardening staff lay out 15,000 bedding plants each spring. Other collections include the Rose Garden, Rock Garden, Moonlight Garden, and Japanese Garden.

Bartram's Garden, Philadelphia, Pennsylvania
No extant garden in America can claim to be more historic than the one founded by John Bartram in 1728. Recognized today as America's first great botanist, John and his son William roamed far and wide in their investigations of New World flora. John was eventually appointed royal botanist to King George III, and William's heavily illustrated journals became a seminal early text of American natural history.

Today the John Bartram Association is actively restoring a number of garden areas on the original farm site. As with other historic public gardens, the staff at Bartram's keeps records of each accessioned plant and has policies in place for guiding the acquisition of additional plants.

Zoos

As the zoological world has transformed itself from a focus on individual animals in cages to fauna displayed in native habitats, horticulture has taken on an increasingly important role. Some zoos have developed accessioned collections of plants curated by trained horticulturists, which serve the dual purpose of increasing the sense of verisimilitude of the simulated habitats and providing an additional visitor attraction in their own right. There is even an organization—the Association of Zoo Horticulturists—to address the professional development of individuals in this field.

Arizona-Sonora Desert Museum, Tucson, Arizona
The Arizona-Sonora Desert Museum is a world-renowned zoo, natural history museum, and botanical garden, all at one site. Its educational offerings span the range from ecological to horticultural and zoological, and it also conducts research on the ecology and preservation of the Sonoran Desert.

San Diego Zoo, San Diego, California
One of the most highly regarded zoos in the world, San Diego is a leader in progressive animal displays, animal breeding and conservation, and the integration of an arboretum into a zoo setting. Trees, shrubs, and herbaceous plants are used to simulate particular habitats, to add to the aesthetic ambiance of the zoo grounds, and to provide feed for rare animals. For example, the Zoo raises forty varieties of bamboo for the pandas on long-term loan from China, and it maintains eighteen varieties of eucalyptus trees to feed its koalas. Plants that are part of the permanent display are all accessioned and properly labeled, just as in an arboretum without zoo animals.

Brookgreen Gardens, Murrells Inlet, South Carolina
Brookgreen is an excellent example of a multifaceted cultural organization. It is a zoo, with exhibits of both the native fauna of the South Carolina low country as well as animals that have been domesticated in the South. But it is also a sculpture park, housing the Center for American Sculpture and more than 1,200 sculptural pieces displayed on the grounds. Finally, it must also be considered a public garden, with accessioned collections that range from live oaks to dogwoods, palmettos, and flowering perennials. An institution such as Brookgreen reveals the limitations associated with pigeonholing an organization.

For-Profit Attractions

Even some sites that are not generally perceived as public gardens can qualify based on our operational definition. For-profit sites fall into two general categories: tourist businesses and for-profit corporations supporting nonprofit activities.

Tourist Businesses
Tourist or vacation businesses that qualify as public gardens include extensive, curated plantings on their grounds. For-profit public gardens have as their primary motivation the realization of business profits. Therefore, while not-for-profits may focus on the education of their audiences or research in plant biology, plant managers at profit-driven organizations must justify their horticulture as benefiting the bottom line.

Walt Disney World
Beautiful, well-cared-for plantings can serve to increase attendance or justify higher admission prices. Plantings have always been a central component of Disney theme parks, and Walt

Disney himself felt that landscapes should provide shelter and shade for visitors, conceal visual intrusions, and support the storytelling by creating the right look for the setting. The Disney approach to theme park horticulture, including the extensive use of topiaries, has become so well recognized that the Disney organization now offers how-to seminars on this subject for other professionals in the field.

Mohonk Mountain House

The Smiley family has owned Mohonk Mountain House, in New Paltz, New York, since it was first built in 1869. The gardens are one of the prime attractions, along with the nature trails, lake, spa, and cuisine. The design approach is intended to capture the picturesque or romantic style of landscaping so popular in the Victorian era: irregular of form, featuring variety and boldness of composition, and fitting into the rugged nature of the site. But while the thousands of annuals are never formally recorded, the perennials, shrubs, and trees are all accessioned and cared for by a team of professional horticulturists. Mohonk also sponsors special garden-themed weekends each year, at which notable speakers present lectures or provide demonstrations.

Bellagio

A Las Vegas gaming hotel as a public garden? While this may seem incongruous, actually Bellagio takes great pride in the diversity, display, and quality of its botanical collections. With more than 140 horticulturists on staff, the Bellagio is able to change its display several times each year and to effectively accommodate the 14,000 visitors the garden receives each day. This is a much higher level of visitation than at any not-for-profit public garden in North America.

For-Profit Supporting Nonprofit

The second category is for-profit businesses that direct funds to not-for-profit entities that manage their public gardens. A prime example of this type of arrangement is Callaway Gardens. The Gardens are owned and operated by the nonprofit Ida Cason Callaway Foundation. But its wholly owned subsidiary, Callaway Gardens Resort Inc., is a corporation that operates the recreational, lodging, and retail facilities at Callaway Gardens. After-tax proceeds go to the Foundation to support its efforts. This issue is further muddied by the fact that, as a type of public garden, Callaway should be considered a historic landscape, in that it is located on the former estate of Cason J. Callaway and his wife, Virginia Hand Callaway.

Another example of a public garden supported by a for-profit corporation is Hershey Gardens, which is operated by the M. S. Hershey Foundation and receives enterprise income from admissions, weddings, and other rentals. But it also receives extensive support from the Hershey Corporation, the founder of which also created the Gardens.

Who Creates Public Gardens and Why

Public gardens are strongly influenced by their initial creators. Whether an individual, a group of individuals, an organization, or a government body, each entity that creates a public garden leaves its mark. Although most public gardens are started and owned by not-for-profit educational corporations, there are private public gardens and for-profit ones as well. The groups and organizations that start public gardens are incredibly diverse, so it is not surprising that the gardens they create are equally diverse, as the following examination will demonstrate.

Not-for-Profit Organizations

As their name implies, these are legally incorporated organizations formed by altruistic individuals. Not-for-profit gardens engage in their activities without any commercial or profit motives. Such organizations never offer stock, nor do board members directly benefit from the garden's revenues. The following examples demonstrate the multiplicity of motivations behind the creation of not-for-profit public gardens.

As a Grassroots Effort

The Cheyenne Botanic Gardens was started in 1977 as the Cheyenne, Wyoming, Community Solar Greenhouse Project. Since its inception, it has been dedicated to the twin goals of landscape sustainability and volunteer engagement. Its current facility was constructed in 1986, when the organization was incorporated into the Cheyenne Department of Parks and Recreation.

With a paid staff of only four, more than 90 percent of the labor at the Cheyenne Botanic Gardens is provided by volunteers. A high percentage of these unpaid laborers are seniors, disabled individuals, or at-risk youth. Thus the Gardens is simultaneously receiving help with the planting and care of its collections and serving as a site for horticultural therapy. The latter is reinforced in many of the Gardens' educational programs, as is information on ways to garden sustainably using plants of the high plains. The Gardens has received many awards for its grassroots efforts, including two presidential citations.

To Achieve Organizational Objectives

Some not-for-profit organizations create public gardens to help fulfill their mission or to provide a central venue at

which to present their programs. An example is the Chicago Horticultural Society, which has existed since 1890, hosting flower shows and horticultural competitions. But it was only in 1963 that the City of Chicago granted the society 300 acres of land on the outskirts of Chicago, a site that was then transformed into the Chicago Botanic Garden (opening in 1972). Today the society has an enormous capacity to carry out its tripartite mission of education, research, and conservation because of the Garden's popularity and its urban location.

To Complete an Individual's Inspiration

Alternatively, a particular individual may be the driving force in creating a not-for-profit garden. In 1906, industrialist Pierre S. du Pont purchased 202 acres of wooded farmland originally owned by the Peirce family to preserve the majestic trees on the property. But du Pont was so inspired by the magnificence of the site that he soon began the process of developing Longwood Gardens. He then used his considerable fortune to create Longwood's most notable features, including the conservatories, fountains, outdoor theater, and plant collections.

To Pursue a Research or Education Agenda

A fourth motivator behind the creation of a public garden by a not-for-profit is the pursuit of particular research or education goals. For example, the Rancho Santa Ana Botanic Garden was created in 1927 by Susanna Bixby Bryant with the specific goals of displaying as complete a collection of California natives as possible and working on the preservation of the state's native flora. The garden was eventually moved from Orange County to Claremont, and currently provides graduate training in plant systematics and evolution through the Claremont Colleges.

Another garden that combines many of these elements is the Fairchild Tropical Botanical Garden (FTBG). It was created in 1935 by Robert H. Montgomery, who named the garden to honor the botanist David Fairchild, his friend and colleague. Fairchild had collected plants from around the tropical zones of the world, and many of them are still on display at the Botanical Garden. Although Montgomery donated the land on which the garden sits to Miami-Dade County, the FTBG today is run by a private 501(c)(3) nonprofit organization.

To Preserve a Historic Property

Because the cost of restoring historic landscapes to their former grandeur can be prohibitively expensive, many such properties are donated to municipalities, friends organizations, or historical societies. But these municipal or private groups must have compelling reasons to accept such donations and the heavy challenges that go along with them. Motives can include an altruistic desire to preserve important cultural resources, an expectation of revenue resulting from an enhanced tourist attraction, and a hope that the restoration will positively affect a declining neighborhood or city.

Many critical issues must be addressed by groups entrusted with the oversight of historic properties. Chief among these is the historic period to be depicted in the restored landscape: the period in which the landscape was first created or had its greatest prominence, or the one for which the most complete records exist. Related to this issue is the difficulty of locating particular plant cultivars appropriate for the period of restoration.

The Garden Conservancy is an organization that is devoted to the preservation of significant American landscapes and has assisted many such sites in making the transition from private to public status and in establishing their not-for-profit position.

TREATMENT OF HISTORIC PROPERTIES

Depending on its current condition, the landscape's significance and character is typically recaptured by one of the four approaches established by the secretary of the interior's *Standards for the Treatment of Historic Properties:* preservation, rehabilitation, restoration, or reconstruction.

- *Preservation* is the act or process of applying measures necessary to sustain the existing form, integrity, and materials of a historic property. It is therefore the most conservative of the four approaches and is applicable when the property's buildings and landscape elements are already in good shape.
- *Rehabilitation* preserves those portions or features of the landscape that convey its historical, cultural, or architectural values and conducts repairs, alterations, and additions on nonauthentic elements.
- *Restoration* is the process of accurately restoring the form, features, and character of a property as it appeared at a particular period of time by means of the removal of features from other periods in its history and reconstruction of missing features.
- *Reconstruction* is the process of depicting, by means of new construction, the form, features, and detailing of a nonsurviving landscape for the purpose of replicating its appearance at a specific period of time and in its historic location.

Government Organizations

Cities, counties, states, and nations create public gardens for a number of reasons: as engines to drive urban renewal of run-down neighborhoods, to spur tourism, to raise cultural standards in a locale, or to elevate the ambience and aesthetic appearance of a municipality. Many of these motivating factors are illustrated in the following examples of gardens created by governmental organizations.

Municipalities

Most municipalities involved in the creation of public gardens have done so by partnering with independent friends groups. The roles and responsibilities of municipalities and 501(c)(3) groups vary with the institution. The site of the San Francisco Botanical Garden is owned and the director is hired by the City Department of Parks and Recreation. But the San Francisco Botanical Garden Society is responsible for the educational programs and collections curation. Similarly, the Los Angeles County Arboretum and Botanic Garden is jointly operated by the Los Angeles Arboretum Foundation and the Los Angeles County Department of Parks and Recreation. Still other relationships are even more complex: the University of Washington Botanical Gardens is jointly administered by the university, the City of Seattle, and the Arboretum Foundation.

While such administrative arrangements offer the public gardens the benefit of tapping into the resources of each of the partners, they can also create significant challenges. Problems that have surfaced at such gardens include having two directors, each responsible for administering part of the staff; a staff divided by differing wage rates, benefits contracts, or working conditions; and municipal managers or workers who do not follow expected levels of horticultural expertise at the garden.

To Improve Neighborhoods

The Garfield Park Conservatory (GPC) in Chicago, which first opened in 1908, became increasingly neglected and run-down during the 1980s and early 1990s. But as the West Side of the city became a focus for urban revitalization in the 1990s, the Garfield Park Conservatory was viewed as the centerpiece of this renewal. A support group, the GPC Alliance, was formed in 1998, and the conservatory was extensively renovated and restored to its former glory.

The result is that the conservatory is now the pride of this up-and-coming neighborhood, and attendance has grown from less than 10,000 annually to 200,000 in 2006.

To Counteract Economic Hard Times

The Montreal Botanical Garden was founded in 1931 by then mayor Camillien Houde at the height of the Great Depression to provide an economic stimulus. But the real credit for the garden's creation goes to the great botanist Brother Marie-Victorin, who campaigned for it for years. Today this garden is a major cultural attraction for Montreal and boasts one of the largest plant collections in North America, with more than 21,000 taxa under cultivation. It serves to educate the public in general and students of horticulture in particular and is deeply involved with the conservation of endangered plant species, and with botanical research (for more information, see Appendix A).

To Maintain Open Space

By the 1950s, it was clear to the civic leaders of Denver that growth was squeezing out available open space and that bold efforts needed to be taken to maintain the desired quality of life in the city. The first attempt at establishing the Denver Botanical (later Botanic) Gardens, on the site of a 100-acre park, ended in failure when too many of the young plants were stolen by poachers. But the city, county, and private citizens persisted in their dream, and in 1958 an old cemetery was identified as the future garden's permanent home. The Denver Botanic Gardens is now a heavily visited green space in a densely populated and vibrant city.

To Rescue a Facility from Imminent Collapse

Other municipalities become involved with a botanical institution in order to save them from the bulldozer. Such was the case for the City of St. Petersburg, Florida, which purchased Sunken Gardens in 1999 from the Turner family, which had owned it for nearly a hundred years. So highly regarded was this site by the residents of St. Petersburg that they approved a special tax levy to fund the purchase.

To Create a Larger Municipal Museum Complex

By clustering together several cultural centers, a municipality can make the complex a more attractive venue for tourists and other visitors. The Rio Grande Botanical Garden is a unit of the Albuquerque Botanical Park, which also includes the Albuquerque Aquarium and the Rio Grande Zoo. Visitors can purchase a combination pass that provides admission to all three sites. The arrangement also allows for economies of scale, with the three facilities able to share staffing, equipment, and promotional costs.

U.S. Federal Government

The proposal of a botanical garden for the citizens of the United States in 1816 eventually led to its establishment in 1820 by the U.S. Congress. While the site of the garden has moved several

times, the U.S. Botanic Garden currently includes a renovated and greatly beloved conservatory, the National Garden, and Bartholdi Park. It receives the bulk of its funding from Congress and is administered by the Architect of the Capitol.

Also created by an act of Congress, the U.S. National Arboretum is administered by the U.S. Department of Agriculture (USDA), not Congress. It fulfills its mission of "serving the public need for scientific research, education, and gardens that conserve and showcase plants to enhance the environment" through extensive arboricultural and herbaceous collections and its education programs, publications, and research efforts. Its annual allocation from USDA is supplemented with support from the Friends of the National Arboretum, Herb Society of America, National Bonsai Foundation, and both the national and several capital-district garden clubs.

U.S. State Governments

The State of Nebraska has taken a unique approach to the administration of public gardens. Rather than designating a single site as the state garden, it has created the Nebraska Statewide Arboretum (NSA). Under the auspices of Nebraska State University, the NSA is a network of arboretum sites, parks, historic properties, and other public landscapes located in dozens of communities across the state. The NSA provides technical support to each of the sites and helps nascent operations with their development process.

Colleges and Other Academic Institutions

In recent decades, one of the fastest-growing segments in public horticulture is that of the college- or university-affiliated garden. The many reasons why institutes of higher learning create public gardens are outlined in the following examples.

Unifying the Campus

A campus garden or arboretum can serve to unify the campus by providing a central design element in the overall layout of the landscape. It can also intellectually unite the campus. At the University of California, Davis, for example, the GATEways (Gardens, Art, and the Environment) Project will use the UC Davis Arboretum as the front door for the entire campus. Such innovative efforts can support synergies between faculty members from disparate disciplines and bring the campus community together around themes such as environmental sustainability or physical beautification.

Thresholds to the Larger Community

Because colleges and universities are often viewed as lofty or even intimidating institutions, a botanical garden can serve as a threshold to the larger community. A family may tour the university's gardens but would never consider exploring a molecular genetics lab (and probably would not be invited to do so). In this way, the garden can play a vital role in ameliorating town-gown conflicts and generate goodwill that can benefit the university when the next controversy flares.

Supporting University Research

The University of California Botanical Garden was established in Berkeley in 1890 by E. L. Greene, the first chairman of the Department of Botany. His intention to create as complete a collection of the native flora of California as possible has formed the nucleus of both collections development and use. Until the 1960s, the garden was used almost exclusively to support university research and teaching. Although a strong public outreach component has been in place since that time, worldwide research in plant biology continues to be an integral portion of its mission.

Not all research at university-based public gardens is basic in nature. The evaluation of plant breeding efforts has traditionally been a popular form of applied research at college- or university-based public gardens, especially those affiliated with land grant institutions. Sometimes the plants displayed are the products of breeding efforts within the institution or offerings from a national or international trade organization, such as the All America Selections for bedding plants.

An excellent example of a university garden with this type of mission is the JC Raulston Arboretum of North Carolina State University. The Arboretum is primarily a working research and teaching garden that focuses on the evaluation, selection, and display of plant material gathered from around the world. Plants especially adapted to Piedmont North Carolina conditions are identified in an effort to find better plants for southern landscapes.

Gardens as Living Classrooms

College and university gardens have also traditionally functioned as living classrooms to enhance undergraduate or graduate instruction. Institutions with colleges of agriculture or natural resources typically offer courses in many disciplines—from horticulture to plant pathology, entomology, landscape architecture, international agriculture, plant breeding, and forestry—whose students benefit from study inside the garden. Cornell Plantations, the arboretum, botanical garden, and natural areas of Cornell University, uses its 4,300 acres of extremely diverse holdings to serve faculty and students in more than a hundred courses.

Gardens may have special areas devoted to meeting the needs of particular instructors or courses and may feature certain plants or collections for use in classes. By making inquiries

to the departments that would most typically utilize the collections, curators can ascertain how the garden might support the academic program.

Gardens to Fulfill an Outreach Mission

Many colleges and universities, especially land grant institutions, also carry an outreach mandate as part of their institutional mission. Gardens can help to fulfill that outreach role by providing tours, classes, workshops, or other continuing educational activities to the audience beyond the campus. Alternatively, staff from the garden can reach out to school groups or community organizations as part of their extension efforts.

One public garden that is extraordinarily effective in its outreach activities is the Minnesota Landscape Arboretum. Creating engaging plant- and nature-based educational experiences for audiences of all ages is at the heart of the Arboretum's mission. It touches the lives of more than 53,000 schoolchildren each year through field trips, urban gardening programs, and a roving Plantmobile. It also programs effectively for adults and families and has an extensive program in therapeutic horticulture.

Providing a Competitive Edge

Institutes of higher learning compete to attract the most competitive students. While the academic standing of the school is the strongest drawing card for top-ranked students, the campus appearance or ambiance is also an important determining factor. The presence of a botanical garden or arboretum adds to campus beauty and allure. In some cases, the campus *is* the botanical garden, as is the case at the Scott Arboretum of Swarthmore College. Although the college offers no program in horticulture, the Scott manages impressive collections of conifers, witch hazels, crabapples, flowering cherries, hollies, hydrangeas, magnolias, roses, and tree peonies.

Serving as Living Museums

Because botanical gardens and arboreta are living museums, they contribute to the college or university's network of museums, which might also include art, history, anthropology, or local culture. Beyond whatever research or pedagogical roles they play, these museums are also prestigious centers for the institution and play a role in attracting not only great students but also top faculty, major grant funding, and local, state, or alumni support. Returning to the example of Harvard University, the Arnold Arboretum takes its place as one of the great museums of the university, along with the Fogg Art Museum and the Museum of Natural History.

Summary

In this chapter, we examined the basic criteria that are universal to all public gardens: having a mission statement; having professionally managed, accessioned collections; conducting some form of research and/or education programs; and being open and accessible to the public. We then explored the various types of public gardens and provided examples of each. Finally, the reasons why individuals or groups develop public gardens were presented, along with prototypical examples of each.

Students should now have a through understanding of how a public garden is distinguished from other sites in which plants are on display, and what the essential requirements are to create a public garden.

Annotated Resources

Berrall, J. A. 1966. *The garden: An illustrated history.* New York: Viking Press. Provides a broad overview of gardens and garden design over many centuries.

Birnbaum, C. A., and C. C. Peters, eds. 1996. The secretary of the interior's standards for the treatment of historic properties with guidelines for the treatment of cultural landscapes. Washington, D.C.: U.S. Department of the Interior, National Parks Service, Historic Landscape Initiative. Source of definitions for differing levels of historic preservation of landscapes.

A Brief history of the Brooklyn Botanic Garden. 2008. bbg.org/abo/history.html. Website traces the evolution of one of the nation's oldest botanical gardens.

Byers, B., G. Dreyer, R. C. Bumstead, G. Lee, R. E. Lyons, N. Doubrava, P. W. Meyer, and M. Zadik. 2003. College and university gardens: Profiles of seven diverse institutions. *The Public Garden* 18(4): 26–35. Profiles illustrate the breadth of public gardens affiliated with institutions of higher learning.

Hobhouse, P. 1992. *Gardening through the ages.* New York: Simon and Schuster. Essential text on how gardens have changed from ancient Egypt through the twentieth century.

Hubbuch, C. E. 1998. What is a botanical garden? *The Public Garden* 13(1): 34–35. Provides a concise definition for botanical gardens, distinguishing them from parks and other types of museums.

McNulty, E. 2009. *Missouri Botanical Garden: Green for 150 years.* St. Louis: Missouri Botanical Garden. In addition to providing a detailed history of America's first botanical garden, an introductory chapter also gives a short history of botanical gardens.