Defining the Sustainable Park: A Fifth Model for Urban Parks

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Abstract: *How can parks contribute to the overarching project of helping cities become more ecologically sustainable? The history of urban parks in America reveals more concern with social problems than with ecological sustainability. Four types of city parks have been identified—the Pleasure Ground, the Reform Park, the Recreation Facility, and the Open Space System—and each of them respond to social issues, not ecological ones. Yet today, ecological problems are becoming one of our biggest social concerns, so a new urban park type focused on social solutions to ecological problems would be consistent with this pattern. Using the same social and physical criteria that described the previous four models, Part I describes a fifth model, the Sustainable Park, which began to emerge in the late 1990s. Part II postulates three general attributes of this new kind of park: (1) self-sufficiency in regard to material resources and maintenance, (2) solving larger urban problems outside of park boundaries, and (3) creating new standards for aesthetics and landscape management in parks and other urban landscapes. It also explores policy implications of these attributes regarding park design and management, the practice of landscape architecture, citizen participation, and ecological education.*

In the past, citizens saw parks as an antidote to cities, which they perceived as stressful, dangerous, and unhealthy places to live. Once a contradiction in terms, the sustainable city is now an intellectually and socially recognized goal. Within this framework, we now ask what contribution parks can make to the project of making cities more ecologically balanced and sustainable. Historically, urban parks responded to social problems and expressed various ideas about nature, but they showed little concern for actual ecological fitness. Today, in contrast, ecological problems may be counted among our most pressing social problems. Because ecological and social problems are now conflated, a new urban park type that focuses on solutions to ecological problems and expresses new ideas about nature can build upon the traditional social genesis of urban parks in the United States to help improve the quality of life in American cities.

Part I: A New Type Of Park?

A Park Typology. A classic study of urban parks (Cranz 1982) described four types: the Pleasure Ground (1850–1900), the Reform Park (1900–1930), the Recreation Facility (1930–1965), and the Open Space System (1965–?). This typology includes both the shifting social purposes that parks served and the corresponding variations in designed form. Each park type evolved to address what were considered to be pressing urban social problems at that time. Table 1 summarizes the social goals, social actors, and formal characteristics for each of the four types. The *Pleasure Ground* was typically large and located on the edge of the city (Figure 1). Frederick Law Olmsted, the father of landscape architecture in America, designed many of them. He favored a pastoral style, neither wild nor urban, with curvilinear circulation and naturalistic use of trees and water. Mental appreciation of the landscape was important, but

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Table 1. A Comparison of the Sustainable Park to Prior Park Types after Cranz (1982).

	Pleasure Ground 1850–1900	Reform Park 1900–1930	Recreation Facility 1930–1965	Open Space System 1965–?	Sustainable Park 1990–present
Social Goal	Public health & social reform	Social reform; children's play; assimilation	Recreation service	Participation; revitalize city; stop riots	Human health; ecological health
Activities	Strolling, carriage racing, bike riding, picnics, rowing, classical music, non-didactic education	Supervised play, gymnastics, crafts, Americanization classes, dancing, plays & pageants	Active recreation: basketball, tennis, team sports, spectator sports, swimming	Psychic relief, free-form play, pop music, participatory arts	Strolling, hiking, biking, passive & active recreation, bird watching, education, stewardship
Size	Very Large, 1000+ acres	Small, city blocks	Small to medium, follow formulae	Varied, often small, irregular sites	Varied, emphasis on corridors
Relation to City	Set in contrast	Accepts urban patterns	Suburban	City is a work of art; network	Art-nature continuum; part of larger urban system; model for others
Order	Curvilinear	Rectilinear	Rectilinear	Both	Evolutionary aesthetic
Elements	Woodland & meadow, curving paths, placid water bodies, rustic structures, limited floral displays	Sandlots, playgrounds, rectilinear paths, swimming pools, field houses	Asphalt or grass play area, pools, rectilinear paths, standard play equipment	Trees, grass, shrubs, curving & rectilinear paths, water features for view, free-form play equipment	Native plants, permeable surfaces, ecological restoration green infrastructure, resource self-sufficiency
Promoters	Health reformers, transcendentalists, real estate interests	Social reformers, social workers, recreation workers	Politicians, bureaucrats, planners	Politicians, environmentalists, artists, designers	Environmentalists, local communities, volunteer groups, landscape architects
Beneficiaries	All city dwellers (intended), upper middle class (reality)	Children, immigrants, working class	Suburban families	Residents, workers, poor urban youth, middle class	Residents, wildlife, cities, planet

these parks were actively programmed and sports were popular, so they were not merely "passive."

The working class seldom used these parks because they were far from the tenements. Consequently, small park advocates wanted the city to establish parks on a few square blocks in the inner city. Eventually this movement merged with those advocating playgrounds for children, resulting in the *Reform Park* with special play equipment for children. These parks were small and symmetrical, with no illusion of countryside or nature. Their principal architectural innovation was the field house, envisioned as a clubhouse for the working class (Figure 2a).

To justify their expenditures, park commissioners during the first two eras enumerated all the social goals that parks served: to reduce class conflict, to reinforce the family unit, to socialize immigrants to the American way of life, to stop the spread of disease, and to educate citizens. In contrast, a new era was claimed in 1930 when Robert Moses was appointed commissioner of New York City's Park Department. For him, parks had become a recognized governmental service requiring no justification (Moses 1940, 3). Instead, he and park departments nationwide established uniform standards and extended service to the suburbs and urban areas that had not yet received parks or playgrounds. The major innovations were the stadium, parking lot, and asphalt ball courts—hence the term *Recreation Facility* (Figure 2b).

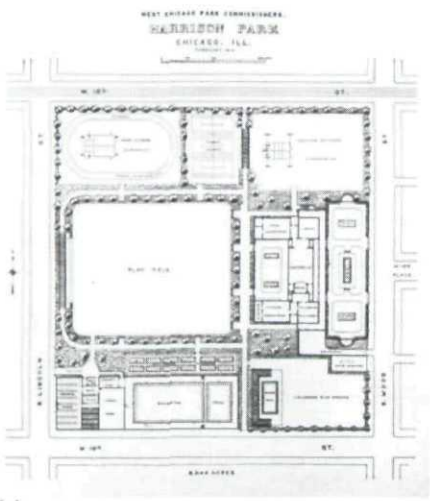
Figure 1. Central Park, the first Pleasure Ground in the United States. (Photograph by M. Boland)

A generation later, a dialectic response against the perceived sterility of the Recreation Facility emerged in 1965 when Lindsay ran for mayor of New York City. He published a policy paper on parks that reclaimed parks as a mechanism of social control and reform. In defiance of previous notions of standardization, he recruited landscape architects to design site-specific recreational settings. A more artistic, participatory sensibility flourished, part of a closer tie between park programming and popular culture. Accordingly, recreation came to be seen as something that could take place anywhere—in the streets, on a rooftop, at the waterfront, along an abandoned railway line, as well as in traditional plazas and parks. Paley Park, for example, is a tiny site, violating the standards of the recreation era, and emblematic of the new ideology because it embraced the city. All parks came to be conceived as part of a network of disparate open spaces linked together, hence the term *Open Space System* (Figure 2c).

Noting that park models tend to dominate for 30 to 50 years, we conclude that these models are generational. That is, each generation has its own set of ideas about how parks can help cities, its own experience in putting these ideas into practice, and its own frustrations and victories with those models. Accordingly, we expected that our generation would formulate and realize its own model. Given the current attention to ecological fitness and sustainable development, we expected that the fifth model would focus on solving ecological problems.

Postulating A Fifth Park Model: Methods. How would we recognize the fifth model if and when we saw it? General definitions may not be of much help. Sustainability and ecological design have many different facets, so it is understandable that most definitions are very broad, but such definitions run the danger of becoming weak as guides to action. The commonly cited Brundtland definition of sustainability as meeting "the needs of the present without compromising the ability of future generations to meet their own needs" emphasizes that aspect of sustainability having to do with justice within and between generations (Thompson 2000, 12–32). However, this definition is too broad for most landscape architects, urban designers, and park planners who want to know how the general value of sustainability might be recognized and realized in the specific context of urban parks. Yet we agree with the British sociologists Simon Guy and Graham Farmer (2000) in their observations about the early stages of searching for a definition of green buildings: we might benefit by resisting the urge to find one "true or incontestable, consensual definition . . . [in order to remain] sensitive to the range of . . . innovations which may surface" (73–74).

As a compromise between being too broad or too specific, we started out with a loose working definition of Sustainable Parks. A working definition would allow us to identify parks that we could reexamine in order to come up with a progressively more refined understanding of what Sustainable Parks are or could be. To start, we knew that Sustainable Parks would have to have traits generally thought to increase the ecological performance of parks. To warrant being recognized as a distinctive model, we expected that at least some of these traits would not be found in any of the other four prior park types. These new characteristics included the use of native plants, restoration of streams or other natural systems, wildlife habitat, integration of appropriate technologies or infrastructure, recycling, and sustainable construction and maintenance practices. This working definition started out emphasizing the ecological value of parks, but we knew it would also include social values. After all, sustainability is ultimately a social con-



(a)

(b)

(c)

Figure 2. Examples of the (a) Reform Park (courtesy of Chicago South Park District), (b) Recreation Facility (reprinted From New York City, Department of Parks, *Report For 1967*), and (c) Open Space System (courtesy of New York Public Library).

cept rather than a technical or biological one because humans are responsible for the ecological crisis today.

We began the search for a new park model using a sociological technique called content analysis. We analyzed parks published in five prominent landscape journals over the previous 20 years from 1982 to 2002. We started in 1982 when *The Politics of Park Design* was published in order to pick up where it had left off. (Only *Landscape Architecture* magazine was analyzed from years 1998–2002 due to limits of the research budget and because the vast majority of the articles about parks published between 1982 and 1997 had come from *Landscape Architecture*. See Appendix A for a complete list of publications reviewed.) In the publishing world, biases are inevitable regarding editorial selection, but the bias would presumably work in favor of innovation and change—the very thing we were monitoring. Therefore, an analysis of parks featured in these publications was a useful way to detect trends or shifts in emphasis.

We found 125 parks in our analysis and have listed them in Appendix A. Each park was described based on the information contained in the published text and illustrations. We analyzed each park on identical worksheets in terms of physical form, social program, promoters, intended and actual beneficiaries, and public reaction. On the basis of this analysis, each park was coded as one or more of the park types, using a simple coding system: Pleasure Ground (I), Reform (II), Recreation Facility (III), Open Space System (IV), and Sustainable Park (V). The physical and social information gathered on each park included the following: Park Identifier (name, location, designer); Model (Pleasure Ground, Reform Park, Recreation Facility, Open Space System, Sustainable Park); Physical Form (location, size, composition); Landscape Elements (water, land, vegetation, other); Buildings; Construction Details; Program (designed purpose and unintended purposes); Promoters; Beneficiaries (intended and actual); Fate of Model in Practice (implementation, public reaction). Most parks received one number because they fell clearly into one of the park types, but some provisionally received two numbers because two types could be discerned. These cases were analyzed by a group of graduate student researchers led by the senior author to decide which type was stronger.[1]

We could not determine whether or not any of these parks actually succeeded at reducing resource use or creating self-sustaining, healthy ecological systems. Moreover, we did not distinguish between parks that merely evoked ecological symbolism and those that actually restored functioning ecological systems. This is not an evaluation of specific parks or places. At this point in history, making philosophical and ideological appeals to sustainability and ecology is enough to mark a significant change in thinking about the purpose of urban parks.

A New Park Type Is Emerging. Our analysis found that all five park types were published during this 20-year period, but Open Space Systems (46%) predominated (Table 2). The second largest category (23%) was the new fifth category, tentatively identified as *sustainable*. We conclude that a new model is emerging among landscape professionals.

Most (86%) of the parks exhibiting traits we had determined to be *sustainable* were featured in articles published after 1990. This change came 25 years after the shift to open space ideology in 1965. Since American urban park models have typically lasted 30 to 50 years, and since historically park bureaucracies have institutionalized changes in thinking about parks *after* landscape architects have begun to advocate them, we predict that the Sustainable Park will be adopted by municipal park departments between 1995 and 2015. We have already observed the number of

Table 2. Parks described in leading landscape architecture journals analyzed by park type.

	1982–1990	1991–2002	Total
Pleasure Ground	12 (23.5%)	12 (16%)	24 (19%)
Reform Park	0 (0%)	3 (4%)	3 (2%)
Recreation Facility	12 (23.5%)	0 (0%)	12 (10%)
Open Space	23 (45%)	34 (46%)	57 (46%)
Sustainable Park	4 (8%)	25 (34%)	29 (23%)
Total	51 (100%)	74 (100%)	125 (100%)

Pleasure Grounds drop significantly from 1998 to 2002 while the number of Open Space and Sustainable Parks have increased.

Table 1 summarizes all five models so that the Sustainable Park can be understood within its historical context. It shows that the fifth park model is distinctive enough to merit being differentiated from the others.

The characteristics of the Sustainable Park are both induced from what we observed and deduced from theoretical writing about ecology and sustainability regarding what should be in such a park. Working inductively from our content analysis, we were able to generalize new ecological traits appearing in some urban parks. Working deductively, we reviewed intellectual work about ecological design and the sustainable design movement to widen the range of our ideas about how city parks might function ecologically. The new model is an "ideal type" in the sense of the classical sociologist Max Weber not necessarily an ideal goal but rather a collation of all the ideas about different qualities and features of actual and future sustainable parks. No one park would have all of these features. We have tried to be comprehensive in our thinking, but we do not presume to have created an exhaustive list of characteristics. If the new type is itself developmental, so too is our collective understanding of it. We invite others to add to our list of characteristics and reorganize them as inspired and compelled. We especially hope to hear from those practitioners who will be contributing to the continued evolution of these ideas on the ground.

Part II: Policy Implications

Based on both inductive and deductive approaches, we concluded that sustainable urban parks differ from traditional parks in regard to many details and at least three general principles. First, Sustainable Parks attempt to become self-sufficient with regards to material resources. Second, they can play a role in solving larger urban problems outside their boundaries when they are integrated with the surrounding urban fabric. Third, new aesthetic forms emerge for parks and other urban landscapes. As we discuss these principles, we elaborate on their many policy implications, especially those regarding the design and management of city parks, the practice of landscape architecture, citizen participation, and ecological education.

Principle I: Resource Self-sufficiency. The Sustainable Park differs from other urban park models by emphasizing internal self-sufficiency in regard to material resources. Past urban park models have not been self-sufficient, requiring instead large amounts of energy, fertilizers, plant material, labor, and water while producing noise, pesticide-laced runoff, wastewater, lawn clippings, and garbage—all of which are disposed off-site at great cost or with negative impacts. The heavy maintenance and sustained government funding required for most urban parks has endangered their long-term survival. For example, in New York's Central Park, Olmsted sought to create a naturalistic landscape that mimicked nature in aesthetic terms but not in its species composition or ecological function. In the ensuing century, Central Park slowly fell into a state of disrepair, the victim of declining budgets, increasing use, and the natural lifespan of non-native, non-regenerating landscapes. The planted woodlands were among the first landscapes abandoned in terms of maintenance and, as a result, have suffered from the spread of invasive species such as Norway maple and Japanese knotweed (Cramer 1993, 106). City parks have been subject to the vagaries of the municipal budgeting process and vacillating attitudes about the role of government. Short-term reductions in funding have often translated into deferred maintenance, prompting a vicious cycle of abandonment whereby parks fall into a state of disrepair and further abandonment by the public, both in use and funding.

Sustainable Parks employ a diverse array of strategies to reduce the need for resources and to increase self-sufficiency. These strategies are woven into every aspect of park design, construction, and management. Sustainable Parks manage to increase their ecological health in the face of funding cuts and changing recreational demands. We identified recurring strategies for increasing resource self-sufficiency, including sustainable design, construction and maintenance practices, plant choices, composting, water harvesting, public-private partnerships, and community stewardship.

Sustainable design practices that reduce resource use and maintenance are increasingly employed in Sustainable Parks. A strong example of the benefits of recycling is Crissy Field (Figure 3). The 230,000 cubic yards of soil removed during construction of a tidal marsh were used to elevate the historic airfield

Figure 3. Crissy Field has many examples of resource self-sufficiency. (Photograph by M. Boland)

and new group picnic area instead of being dumped off-site or in the Bay. The plan for the restoration of Crissy Field attempted to balance natural and human history with a modern desire for active recreation and ecological restoration. The project included the restoration of unique and ecologically valuable salt marsh and dune habitats intermingled with a heavily used promenade, a board-sailing facility, beach frontage used for off-leash dog use, and a 28-acre restored historic airfield to be used for public events and active recreation. The 15,000 tons of rubble removed from the beach were ground and re-used in landscape features (Figure 4). Over 45 acres of asphalt were removed, crushed, and used beneath pathways and parking lots as road base and structural fill.

Structures built within Sustainable Parks are sited and designed to minimize the ecological costs of their construction and ongoing use. Buildings are solar-facing, relying on natural lighting and ventilation systems. They use recycled or less energy-intensive construction materials. One implication of the concern for the ecological function of materials is that park departments work with materials experts to evaluate which materials—metals, post-consumer plastics, bamboo, wood, porous concrete vs. asphalt, flycrete—have the least long-term environmental costs under various circumstances. Swimming pools use the latest non-toxic purification systems. In practice we found examples that emphasize one feature or another. The Spring Lake Park Visitor Center in Santa Rosa, California, minimizes both construction and operating costs (Henderson 1993). The simple pyramidal structure was carefully inserted into the wooded site, so that only three trees had to be removed. The pyramid form was easy to frame and was angled to maximize the efficiency of solar panels. The structure was partially set into the earth to minimize its visual impact and increase energy efficiency. The structure is largely heated using the sun and cooled using simple, natural systems. Only on the coldest winter days is a wood-burning stove fired up to take off the chill.

Sustainable design practices have been useful in the restoration of historic Pleasure Grounds, such as New York's Central Park and Brooklyn's Prospect Park (Figure 5). The historic North Woods and Ramble in Central Park are slowly being converted to self-regenerating native woodland while preserving historic and recreational values. For example, invasive exotic Norway maples that were originally planted are being replaced by non-invasive horticultural species. To reduce maintenance and increase habitat values, park managers have adopted an attitude of letting "nature do as much of the work as possible" (Cramer 1993, 110). Historic paved edges around water features in Central Park such as the Turtle Pond have been softened and replaced with plantings of bog and marginal wetland species that are not invasive (Figure 6). Similar strategies have been employed in Prospect Park and other Olmsted parks.

Instituting these changes requires re-educating park staffs and developing new maintenance skills. Landscape architect Rolf Sauer (1998) emphasized this while he was working on Louisville's landmark park system restoration. After 20 years of training maintenance staff to "sweep concrete," they were instead trained to restore and sustain landscape as a living system. Additional management changes will be required in order to recruit scientifically trained staff, coordinate volunteers, and develop the reporting mechanisms and responsiveness expected for privately funded projects. For example, the Central Park

Figure 4. The West Bluff picnic area at Crissy Field was built with earth excavated to restore wetlands. (Photograph by M. Boland)

Figure 5. This sign identifies nature as a partner in the management of historic Prospect Park. (Photograph by M. Boland)

Conservancy, working with the City of New York, has developed a zone-gardener program in which responsibility for a section of a park and coordination of volunteers for that section is assigned to an individual gardener. This allows for staff and volunteer training related to the specific requirements of each landscape type, whether a restored woodland, lake, meadow, or manicured historic site.

Sustainable Parks depend on native, or non-invasive, environmentally appropriate plant choices. Although many parks have been designed in the image of nature, they were rarely designed to preserve or restore ecological function. Instead, their designers often used exotic species to create the desired, naturalistic effect. Some of these exotic species, like Norway maple, Scotch broom, and water hyacinth, have invaded adjacent natural areas. Mass plantings of regularly discarded annual exotic plants were used at points of interest. Where designers did use native species, their natural succession was arrested at a particular point for aesthetic effect. By working against rather than with ecological processes, the resources (fertilizers, herbicides, pesticides, and labor) required to maintain even naturalistic landscapes are greater than if native trees and plants were used. (However, we acknowledge that some native species can take considerably more effort than a more conventional landscape to establish, particularly in formerly weedy areas or areas adjacent to degraded sites.)

Figure 7. In non-turf areas at Crissy Field, only native foredune, back dune and dune scrub species were planted. (Photograph by M. Boland)

Sustainable Parks not only use ecologically suitable plants (native, appropriate exotics), but plantings are done in such a way that secondary plant succession can proceed. Planting schemes use drought-resistant plants in dry climates and use water-loving plants in wet ones. Correspondingly appropriate animal life—lizards and frogs, for example, whose future might otherwise be endangered—are able to live here. The resulting regional variation in the palette of plant materials is a welcome change from the homogeneous look of most municipal parks nationwide. Planting decisions made at Crissy Field have produced a sustainable, self-regenerating landscape that requires establishment irrigation and weeding only for the first few years and does not require the application of polluting pesticides, herbicides, or fertilizers (Figure 7). With the exception of two tree species, all of the plant species are native to the Presidio and were propagated from locally collected seeds and cuttings.

Flowers still have a place in the Sustainable Park. The United States could follow the example of Chinese parks where flowers are harvested as medicinal herbs. Even when strictly ornamental, flowers are also home to birds, bees, and insects. Designers can still dazzle visitors with native plants if they use them in special plant combinations and planting schemes. For example, the senior author remembers as a teenager at the Seattle World's Fair of 1962 that onions planted formally were more distinctive and special than a hothouse of exotic orchids.

New attitudes about mown turf were observed in Sustainable Parks. For recreational uses, we did not see substitutes for mown, irrigated turf, but we observed some experiments

Figure 6. The "softened" edge of Central Park's Turtle Pond provides improved wildlife habitat. (Photograph by M. Boland)

regarding grass type and maintenance. Conventional turf can be replaced with less resource-intensive native grass species. At Crissy Field, conventional turf grasses could not be used because of the danger that they might spread into the adjacent restored tidal marsh. Consequently, planners chose a mix of native grasses, the species varying depending on the conditions and expected level of use (Figure 8). Salt tolerant native rye grass and salt grass were used for turf near the shore where board sailors bring their salt-covered boards for rigging. Planners chose native red fescue and Pacific hair grass for the 28-acre historic airfield and dune-like landforms because they require little irrigation and tolerate foot traffic. Although mown like conventional turf, these native species have flourished under harsh conditions with less water and no pesticides. The tradeoff is a somewhat less uniform turf with more seasonal color variation than a conventional lawn.

In Sustainable Parks where lawns were not used recreationally, native meadows have replaced conventional turf. Rolf Sauer of Andropogon calls turf "green asphalt" because it is mowed so closely and uniformly that water runs off of it—like asphalt. As part of the restoration of the historic Louisville park system, mown meadows and savannas of heterogeneous, indigenous grasses have replaced closely mowed lawns (Figure 9). Meadows are allowed to grow 1-3 feet high, and even pathways and heavily used fields are mowed to 5–7 inches rather than 3–4 inches. Mowing was significantly reduced, thereby saving resources and protecting ecological processes. Today mowing is used in only two conditions: to maintain herbaceous meadows (to keep them from eventually reverting to woodlands), and in pathways around or through meadows. These mowed pathways play an important role. By defining the edges of meadows and making them perceivable as an *intentional* landscape, these pathways allow users to appreciate that the natural strands of grasses represent a desired effect and not a lack of maintenance or care.

Composting is an increasingly important practice because it recycles resources in a way that simultaneously improves the health of the landscape and lowers the cost of maintaining urban parks. For example, New York's Central Park composts its green waste and debris at a composting facility on Manhattan's Upper East Side, using its waste to improve soil quality rather than paying to have it shipped off Manhattan Island. Compost can be generated on-site from leaves, pruned branches, and from animal waste (Figure 10). San Francisco's Presidio annually composts 1500 cubic yards of green waste and forestry debris, which is used to improve moisture retention in the Presidio's sandy soil. The compost is produced for less than it would cost to purchase it commercially. Sheep and other ruminants could be reintroduced to eliminate mechanical lawn mowing, produce natural fertilizer, and educate children. (One of the aesthetic implications is that compost could be elevated to the status of an art form, an idea developed further below.) On-site restaurants should also collect compost.

Sustainable Parks treat stormwater and greywater as aesthetic and ecological resources, as *food* rather than waste to be disposed. On-site water management includes the use of natural systems to clean stormwater and greywater, while also creating habitat for wildlife. Water runoff has been a problem in conventional parks because they have a great deal of asphalt, hard-packed soil, and mown turf. Because rainfall cannot penetrate the ground, it runs off into city sewers and causes erosion. Sustainable design practices such as on-site stormwater retention basins and permeable asphalt do double duty by accommodating visitor use and reducing runoff. At the DuPont headquarters in the Brandywine Valley, the firm Andropogon Associates installed a porous asphalt

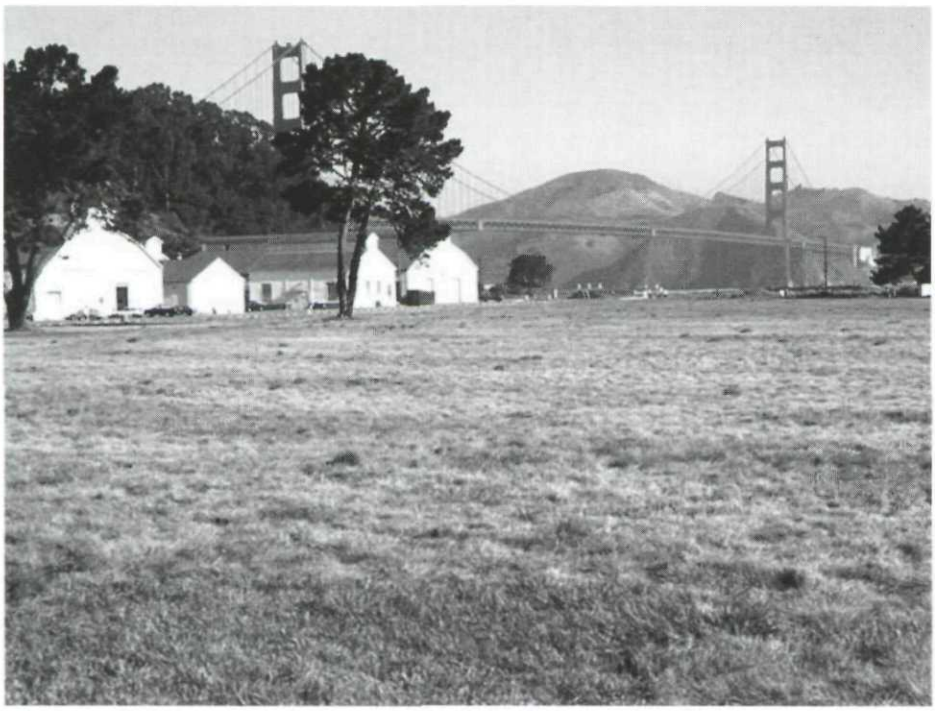


Figure 8. Planners chose native red fescue and Pacific hair grass for the 28-acre historic airfield because they require little irrigation and tolerate foot traffic. (Photograph by M. Boland)

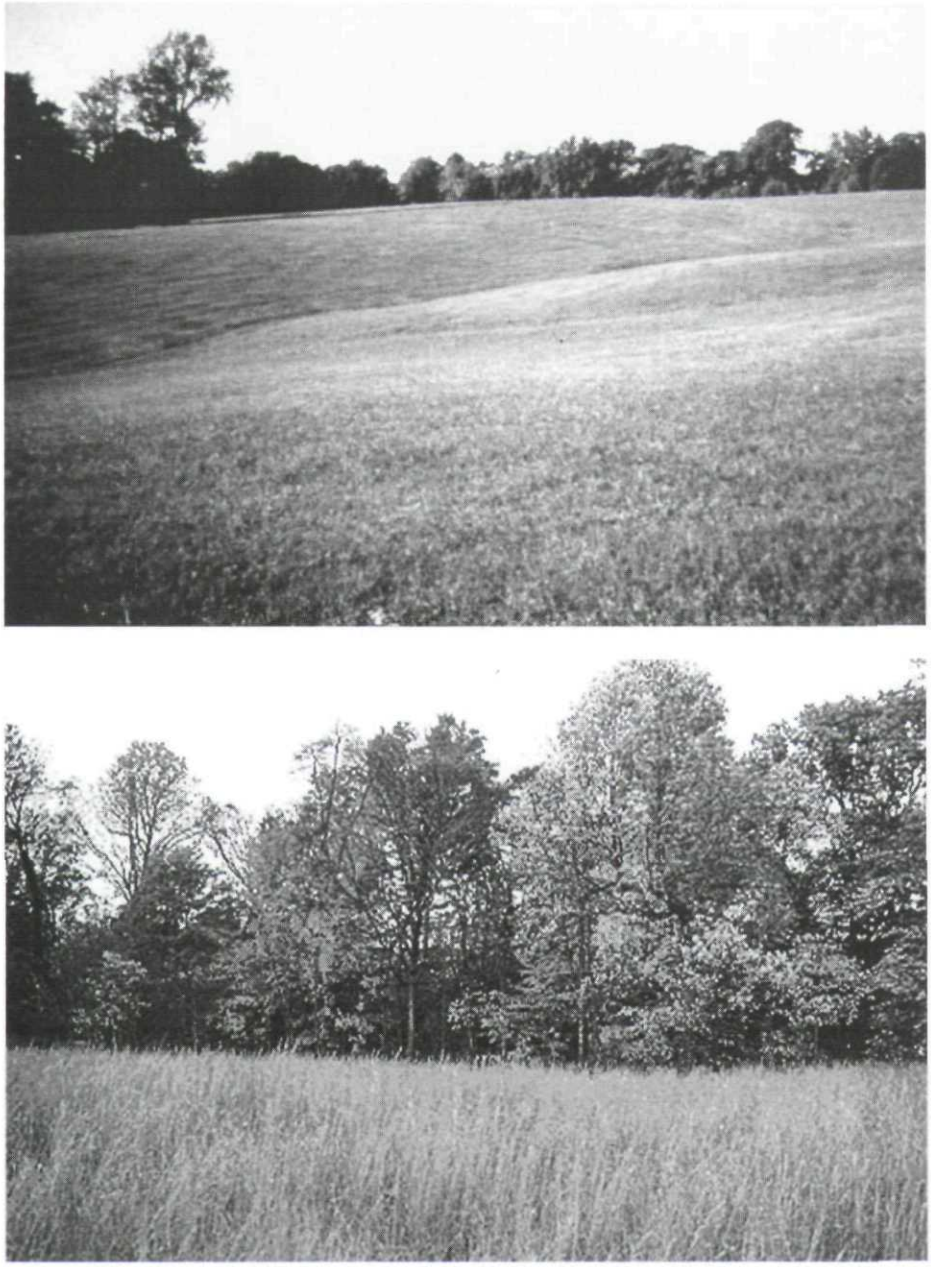


Figure 9. Turf at Louisville's Summit Field (above) was replaced with native prairie grass to reduce runoff and increase ecological value (below). (Courtesy of Andropogon Associates)

parking lot for cars that absorbs water on site. By combining these functions, woodland that was to be cut to build an on-site stormwater retention basin was preserved. With the money saved by not cutting the forest, nature trails were built and the woodland was restored (Hiss 1991).

The 20-acre tidal marsh at Crissy Field was built to restore a fragment of the large salt marsh system that originally spanned the north shore of San Francisco. In order to increase groundwater infiltration and reduce off-site stormwater flows into the bay, 70 acres of asphalt and hard-packed dirt were removed (Figure 11). Eventually, the complete restoration of the Tennessee Hollow watershed will bring three buried streams back into the open. (In regard to wildlife, the marsh fills a gap in the Pacific Flyway; prior to its construction, migrating birds had no stopping places in San Francisco. The marsh restoration was also used as an opportunity to re-establish a locally limited native plant community, the back dune swale.) The Sustainable Park uses water efficiently, so sprinklers do not waste water through evaporation by shooting it into the air, but occasionally fountains might express the joyful final stages of water purification.

Sustainability refers not only to tangible resources, but also to social and cultural viability. Public-private partnerships are one kind of new social structure whereby the community may directly support urban parks. Organizations like the Central Park Conservancy, the Golden Gate National Parks Conservancy, and the Yosemite Fund were created in the last twenty years to compensate for the steady decrease in the amount of public funding allocated to parks. The non-profit Central Park Conservancy was created in 1980 to raise private funds to supplement public funding used by the New York Parks and Recreation Department to rebuild and maintain Central Park. Over the past two decades, the Conservancy has played an increasingly large role in the reconstruction of Central Park, both raising funds and implementing the restoration of the park. The Conservancy has raised nearly $300 million to fund the reconstruction of Central Park and endow ongoing maintenance and operation of the park. The San Francisco-based Golden Gate National Parks Conservancy raised over $32 million in private philanthropic dollars to fund the transformation of Crissy Field and proceeded to manage every element of its implementation, including planning, design, construction, and stewardship programs.

Community stewardship programs bring human resources to parks that governmental entities are unwilling or unable to access (Figure 12). Volunteer programs at

Figure 10. Compost is a subject "ripe" for collaboration between environmental artists and maintenance crews. (Photograph by M. Boland)

Figure 11. The Crissy Field tidal marsh filters storm water that formerly flowed untreated into San Francisco Bay. (Photograph by M. Boland)

the Golden Gate National Recreation Area in San Francisco annually provide over 100,000 hours of support to the restoration and stewardship of native plant communities and several endangered species in the park (Farrell 2001). The restoration of Central Park's North Woods started with a community advisory board that crafted a vision for the north woods and guided the planning process. Volunteer groups and the educational programs of nearby institutions implemented the vision. Ongoing community-based stewardship programs still guide the restoration and engage the local community in the maintenance and rejuvenation of the woodlands. While such programs clearly rely on help from outside their borders, they are self-sufficient in the sense that they rely so little on government funding. This raises a larger issue about the role of human labor, whether paid or volunteered. Strictly speaking, an ecologically self-sufficient park might not require human labor, but a Sustainable Park that is both ecologically self-sufficient and culturally satisfying

Figure 12. Presidio Stewardship Program volunteers planting a former U.S. Army landfill. (Photograph by M. Boland)

still requires human care in planting and maintenance.

Principle II: An Integrated Part of the Larger Urban System. Insofar as Sustainable Parks are conceptualized as part of the larger metropolis, they can help resolve urban problems located outside park boundaries. Pleasure Grounds like New York's Central Park were conceived as an antidote to urban life, an opportunity to address the poor air quality, lack of access to sunlight, limited opportunities for exercise, and other problems associated with close urban quarters. Ensuing park models had equally well-developed social agendas and problem-solving roles for the city as a whole.

The Sustainable Park builds on this history. We identified several social and environmental urban problems that Sustainable Parks have been designed to address. These problems fall into four broad categories: infrastructure, reclamation, health, and social well-being. This list is not exhaustive, but it does summarize those strategies and tactics we encountered most frequently.

The first of these problems, the integration of urban infrastructure (waterways and roads) into parks, is in some ways a very old idea. Pleasure Grounds often played a key role in the city's transportation system by incorporating parkways that provided relatively unfettered routes for movement. Boston's Emerald Necklace is a network of roadways and parklands that shaped a significant expansion of the urban fabric. At the same time it was an elaborate stormwater retention system designed to solve a major drainage and water quality problem created by urbanization. However, the Emerald Necklace is the exception and not the rule; in many older examples, the park is only a container through which the infrastructure system passes. Rarely does the park landscape itself function as a component of the larger infrastructure system.

The Sustainable Park changes this by using parklands to treat city wastewater and stormwater. This strategy has valuable secondary benefits, including the creation of wildlife habitat as well as recreational and scenic settings. We noted different approaches to incorporating wastewater infrastructure into parks. Some utilize existing riparian systems for the treatment of urban wastewater or stormwater. Jackson Bottom Park in Hillsboro, Oregon, incorporates an existing riparian system and uses a system of ponds to retain and treat effluent, stormwater, and other types of urban runoff (ALSA Merit Award 1992, 75).

At historic Xochimilco Park outside of Mexico City, work to protect the ancient system of *chinampas* or *floating farms* not only protected an endangered historic landscape, but it also addressed water quality concerns in the area and improved wildlife habitat. (Additionally, the scheme preserved threatened farmland by increasing farm profits, making it more lucrative to farm than to sell the land for development).

In contrast, some theorists have proposed synthetic ecological systems to address water quality issues. The example we know the best is a 1991 proposal for New York City's Riverside South. Donald Trump proposed this large development for an abandoned rail yard on Manhattan's Upper West Side. The project had as its centerpiece a 23-acre park, which a consultant (the senior author) proposed should be used to address negative environmental impacts of the development (Figure 13). The proposal was to construct wetlands to treat both stormwater that might otherwise be dumped untreated into the Hudson River and sewage from 9000 new residential units. Ornamental plantings of water hyacinths and bull rushes in the park would have created a beautiful setting while quietly removing heavy metals and other toxics from the water. Inside each apartment building, biologist John Todd's (1984) *"living machines" would treat* wastewater. These ideas were introduced and discussed by the public and the Trump organization in 1991–1992, but they were ultimately rejected as "untested" at such a large-scale.

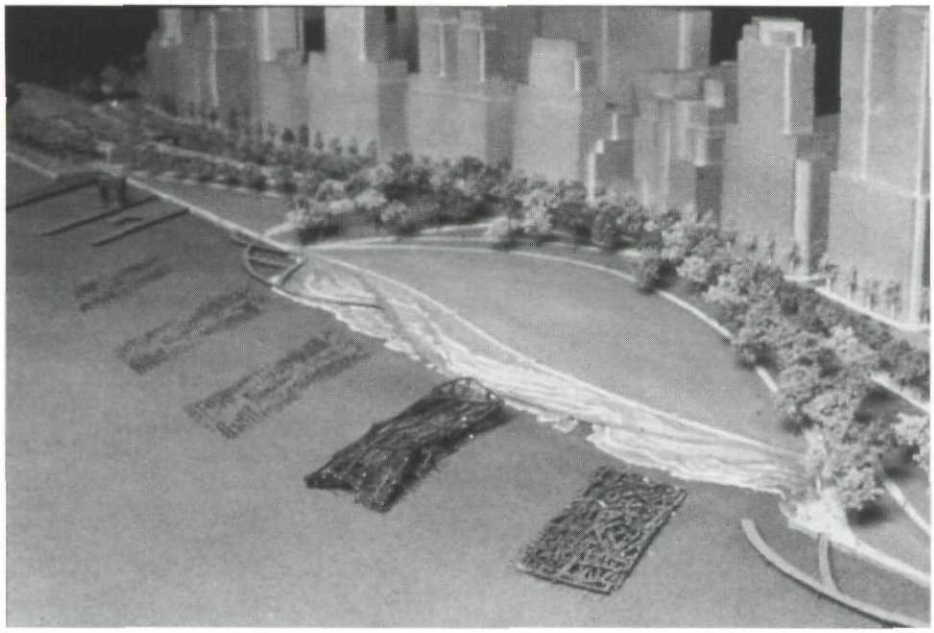


Figure 13. The park was a central component of the Riverside South Development proposal. (Courtesy of Riverside South Development Corporation)

A second urban problem that Sustainable Parks tackle is urban land reclamation.[2] After a century of rapid industrialization and deindustrialization, many cities contain large derelict sites within their boundaries, including former military bases, landfills, industrial yards, and obsolete transportation systems. The soil at these sites is often contaminated with heavy metals, lead paint, petroleum products, pesticides, and other toxic materials; otherwise it is unconsolidated and unstable. These conditions often make these sites unsuitable for new construction. Considering that they are often the last undeveloped sites within the urban environment, they offer an excellent opportunity for new parks. In this sense, park-making itself becomes a form of land reclamation.

Several Sustainable Parks address problems of reclamation in more specific ways. Mel Chin's bioremediation art project outside of Denver, Colorado, made art of science. By using plants that extract heavy metals from earth, he set an example for park landscapes. The designers of both Bixby Park in Palo Alto, California, and Dyer Landfill Restoration in Palm Beach County, Florida, used a combination of ecological process and technology in an attempt to restore former landfill sites. At Bixby Park, landscape architect George Hargreaves used native grasses to clothe a series of sculptural landforms (Figure 14). Earthen dams in swales control erosion: by trapping water they also create micro-environments for native plant species. Yet fragments of industrial culture along with methane extractors and other infrastructure related to the decommissioning of the landfill remain visible, left as interpretive and mnemonic devices (Rainey 1994). The Dyer Landfill goes a step further by re-creating a wetland at a former landfill. Native cypress, live oak, Florida slash pine, and saw palmettos were planted at the same elevations one might find them in nearby natural landscapes. According to landscape architect George Gentile, native vegetation has begun to reseed itself, and many native wildlife species (the kite, ibis, raccoon, armadillo, and alligator) now use the site (Hess, 1992).

A third urban problem that Sustainable Parks address is health. The idea of using parks for teaching and maintaining public health is an old one. Medicinal gardens have been identified with ancient Egyptian, Greek, and Roman sites, and in America, the idea of the urban park as an asset to the overall health of communities is deeply embedded in our national culture.

Figure 14. Bixby Park landforms are representations of, but not the product of, natural process. (Photograph by M. Boland)

Part of the program for each of the previous four models included an effort to improve the health of urban residents.[3]

What is distinctive about the Sustainable Park is that it might be used to improve and maintain physical and psychological health even more directly than has been traditional in the U.S. For example, several parks in Germany, such as the 10-hectare health park near Bottrop, have been built specifically for patients from hospitals in nearby communities. These parks facilitate inpatient and outpatient rehabilitation, support community self-help groups, and assist in the aftercare of acutely ill hospital patients. In the United States, such specialized grounds have been associated only with hospitals or other medical facilities. Physician (and architecture student) Scott Prysi proposed integrating a health clinic into a neighborhood Park in South Berkeley, claiming that this would make the park more broadly ecological than it has ever been. Cranz (1982) anticipated that park programming might eventually offer holistic health classes, for example, yoga, tai chi, BodyMind Centering, Alexander Technique, Feldenkrais, etc.

A fourth problem is urban alienation, which Sustainable Parks address by seeking to increase social well-being. Many worry that urban residents feel alienated from nature and natural processes—and from each other. Contemporary park advocates believe that expanded citizen involvement in the stewardship of urban parks and urban farming can generate a sense of belonging and community (Franck and Schneekloth 1994, 361–362). Similarly, they claim that expanded awareness of and contact with ecological processes in the urban environment increase one's sense of connection to the local and regional environment. Sustainable Parks encourage reconnection of citizens to each other and to the land by providing new vehicles for direct public participation in the conception, creation, and stewardship of parks. The design of Strawberry Creek Park, located in Berkeley, California, is based on this idea (Figure 15).

Advocates of the fifth model believe that this use of native plants and the re-establishment of ecological process in the urban environment can generate a sense of regional identity even in dense cities (Hough 1990). Community-based stewardship programs in urban parks, such as the Presidio Stewardship Program at GGNRA and the North Woods in New York's Central Park, provide a vehicle for urban residents to rediscover ecological processes and wild places hidden in the urban environment and to play a role in their preservation. However, we presume that users feel less connected to the region, the park, and nature when plant restoration schemes like those in Prospect Park must rely on permanent fencing to keep people off of the restored slopes (Taplin 2001).

Service learning programs, middle school and high-school stewardship programs, and in-school nursery programs affiliated with Sustainable Parks may deepen citizens' understanding of ecological processes. The Presidio Stewardship Program not only engages thousands of students in ecological restoration, but also educates them about ecological cycles and pre-Columbian landscapes in San Francisco neighborhoods (Figure 16). As part of the construction of Crissy Field, over 3000 volunteers collected seed for, propagated, planted, and weeded over 100,000 native plants representing 73 native species (Prince 2001). The staff has reported a demand for native plantings in nearby residences and schools generated by this program (Farrell 2001). This involvement has also created more responsible park users. Clearly, engaging young people in the stewardship of native plantings in parks has the potential both to reduce intentional vandalism and to increase responsible use, thereby reducing unintentional damage as well. Reducing both types of damage is essential to protect ecological processes in urban environments.

Figure 15. In Berkeley, most creeks have been put under ground, veiling a critical ecological process. Strawberry Creek Park was organized around a newly revealed stretch of Strawberry Creek. (Photograph by M. Boland)

Education plays a big role in improving the quality of life. Sustainable Parks educate by exposing the public directly to new ideas and attitudes about nature and the urban landscape. They do this in a host of ways. At Crissy Field, signage and educational waysides that explain natural processes at work, environmental education programs that interpret ecological and cultural systems, and the Crissy Center building itself have all been designed to generate a greater level of understanding, appreciation, and commitment in visitors. Even the benches, pathways, and promenade are oriented to give visitors a direct experience of the natural forces at play.

Some educational strategies are self-consciously didactic. For example, Blueprint Farm in Laredo, Texas, designed by the Center for Maximum Potential Building Systems, is conceived as an educational landscape where technology integrates human and natural systems into a "metabolic unit" (Hess 1992). The park includes organic farmland, sediment ponds to clean stormwater, cisterns to gather water

Figure 16. Presidio volunteer monitoring a Presidio pilot project testing the survival of native species growing under non-native eucalyptus. (Photograph by M. Boland)

for use, windmills and other appropriate technology systems to generate power, and structures built from recycled oil rigs and other salvaged materials.

Other strategies are more passive, operating as object lessons in how to manage the interface between human culture and ecological process. Temporary barrier fencing to protect 'Mother Nature at work' on restoration sites offers a simple lesson. Seasonal maintenance events can also be educational. For example, prescribed burns simultaneously create more vital natural systems and educate by virtue of their drama. At the Crosby Arboretum in southern Mississippi, prescribed burns have been useful both to study the use of fire as a management tool and to educate the public using a combination of direct action followed by interpretive exhibits (Andropogon Associates 2003).

Sustainable Parks also improve quality of life by mitigating conflicts between adjacent land uses. For example, Ecton Brook Linear Park in Northampton, England, protects a stream corridor and at the same time functions as a buffer between high-density housing and adjacent agricultural land, deflecting potential conflicts regarding noise, foot traffic, pesticides, and child safety. Native plantings along the 2.5 km park have increased the density of the buffer between human uses and have increased the park's value to wildlife, serving as conduits for the movement of wildlife and the distribution of native plant species. In such instances, both homocentric and ecocentric ideas about ecological quality are fulfilled.

In the near future, community-based urban farming efforts could be instituted in parks to improve social well-being in many different ways. Right now, the San Francisco League of Urban Gardeners and the San Francisco Jail Garden Project teach job skills and fight malnutrition, thereby diminishing aspects of urban poverty. Moreover, by creating venues for collective neighborhood-based activity, they build community and fight crime. At the Edible School Yard at Martin Luther King Jr. High School in Berkeley, teachers use gardening as part of the school curriculum. The San Francisco League of Urban Gardeners operates the St. Mary's/Allemany youth garden in conjunction with the Allemany public housing project to provide jobs and job training for youth; they run a business that makes jelly, salsa, and vinegar, using produce grown in the urban farm. In Santa Cruz, the Homeless Garden Project employs and feeds the homeless, coordinating their efforts with social service agencies that provide support to the homeless affiliated with their farm (Lawson 2000). The idea of putting agricultural programs into parks proper may be a next step in the development of the Sustainable Park.

Principle III: New Modes of Aesthetic Expression. New types of aesthetic expression are emerging in Sustainable Parks. The form of the park itself and its relationship to the city, its style, and its management practices have moved in a more ecological direction, developing an evolutionary aesthetic, a new spatial relationship to the city, and a new role for designers. This new type may serve as a model for other urban landscapes, private gardens, and ultimately, the city itself.

Some landscape critics suggest that truly ecological parks must transcend the traditional notion of style predicated on a fixed, static image of the landscape and develop an *evolutionary* aesthetic. Louise Mozingo (1997) has argued that ecological landscapes should incorporate an aesthetic of "temporality" that moves beyond the fixed vision of the landscape and incorporates change. Similarly, Jusuck Koh (1988) has advocated an evolutionary approach to design that offers a "dynamic view of aesthetics" and a shift in focus "away from the traditional ordering of 'form' following positivistic aesthetics toward an ordering of 'process'" (185, 186). His aesthetic of "complementarity" lets the natural landscape complement, rather than hide, humans and buildings. Both landscape architect Lyle (1994) and landscape architect Thayer (1994) have emphasized that we should not camouflage technology. A number of artists and landscape architects have created landscapes that speak about ecological process (Figure 17).

Yet process-oriented things often appear messy in our current culture, so Joan Nassauer (1995) has described how designers can provide cues that an apparently untidy landscape is part of a larger plan. The importance of providing such cues became clear in a recent 2002 competition for Railyard Park in Santa Fe (where the senior author served as a juror). The program was explicit in calling for sustainable designs, requiring special attention to water and drought-resistant native species. One of the five short-listed entries followed an evolutionary aesthetic (Figure 18). It did not win in part because the jury considered it hard to sell to the public. More deliberate signs of intentional care would have tipped the balance in favor of this scheme.

An evolutionary aesthetic itself may have to become accepted in stages or steps. The first step is a simple change in materials: drought-tolerant, low-maintenance native species; recycled yard waste for soil amendment; wood chips from debris for paths and mulch; recycled plastic lumber for benches; low-maintenance, local, or renewable materials. At the next stage, designers manipulate plants and topography less as static materials and more as landscapes that emerge as the byproduct of dynamic ecological systems. Taking a cue from restoration ecology, designers in a few Sustainable Parks have created diverse plant communities that emphasize both the ornamental and ecological value of plants. This is a step beyond merely replacing ornamental exotics with native species. This way of managing vegetation allows for evolutionary change in structure and species diversity over time as a result of either anthropogenic or biotic factors. Central Park's North Woods and Crissy Field are two park landscapes where this shift from a focus on species to plant assemblages has meant emphasizing the spatial qualities of different plant communities and has necessitated new approaches to planting and managing park landscapes (Figure 19). In 2002, park competitions for Santa Fe and for Fresh Kills on Staten Island have had winning

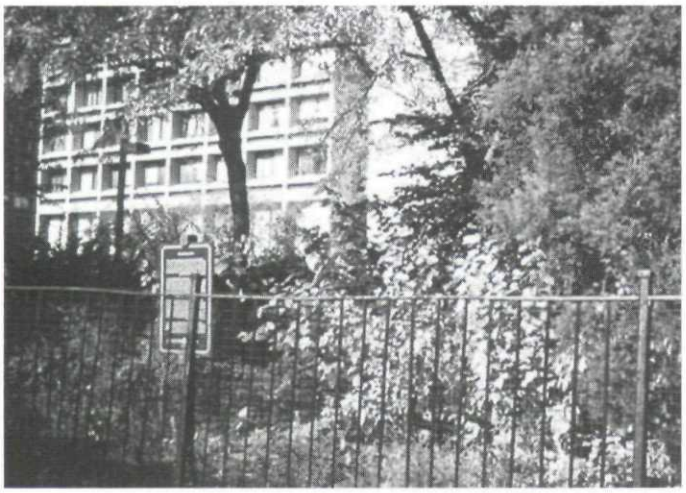


Figure 17. Alan Sonfist's "Time Landscape" reconstructs a tiny fragment of Manhattan's pre-contact landscape and explores the aesthetic dimensions of secondary plant succession in the urban landscape. (Photograph by M. Boland)

Figure 18. For Railyard Park, Ruddick Associates proposed a series of swales to slow water down, creating micro-environments in which plant succession would occur. (Courtesy of Ruddick Associates)

Figure 19. The form givers in this Crissy Field landscape are ecological variables like wind and depth to ground water. (Photograph by M. Boland)

and short-listed entries that emphasize evolutionary processes in their planting schemes. The recentness of such examples that demonstrate how an authentic evolutionary aesthetic might be integrated into urban parks suggests that the profession of landscape architecture has just barely begun this particular aesthetic exploration.

In contrast, some artists attempt to explore the idea of ecology in parks in primarily formalistic terms. The Village of Yorkville Park in Toronto, Canada, is a downtown plaza organized into 17 sections, each containing plants from a different local plant community. By identifying and celebrating local plant communities and local ecology, this park brings an awareness of the regional landscape into downtown Toronto. Yet these are disembodied fragments of plant communities without reference to the underlying geomorphological, climatological, and successional processes that created them in the first place. This design also gives the false impression that these plant communities can be easily replicated anywhere, can live in close proximity to each other, and are unchanging. Similarly, Hargreaves Associates landforms along the Guadeloupe River Parkway, at Bixby Park and Crissy Field—although inspired by the movement of water, wind, and soil in dynamic natural systems—are not created as the byproduct of those systems, nor are they dynamic in any ecological sense. Instead they are very precise, highly controlled representations or symbols of ecological process. Although perhaps imperfect models for how landscapes might incorporate ecological process, these evocative landscapes contain the first stirrings of an ecological (if not evolutionary) aesthetic and suggest that art can play a role in educating the public about ecological process in the urban environment. Moreover, formal designs have the potential to serve ecological purposes. Formal gardens may be better than pastoral English gardens for some animal and plant life because humans are restricted to fixed pathways (Figure 20). Birds, for example can nest and reproduce in the safety of hedges. Formally speaking, the Sustainable Park is stylistically open; it can be either naturalistic or formalistic in appearance.

Just as the Sustainable Park model suggests variety among the parks themselves, the model also suggests variety in the spatial relationship to the city between the park and the surrounding urban fabric. Instead of being conceived as an antidote set in contrast to adjacent urban life, the Sustainable Park builds on the ideology of the Open Space System by attempting to integrate open space into the city. However, it goes beyond the Open Space System by not only preserving, but also restoring open space for human viewing and activity; moreover, its ecological impulse goes *deeper* than Open Space ideology because it serves other species in the urban environment. Creating an underpass for wildlife, for example, is a recent proposal to join two tracts of land for a new park in Baldwin Hills, Los Angeles.

Eventually, this emphasis on system could have a centripetal effect on the form and distribution of parks. Indeed, the very idea of the park as a discrete locus of nature in the city may become obsolete in truly sustainable urban settlements. Instead of overall shapes predicated on aesthetic consideration or property ownership that has given rise to rectilinear or chunky parks, the configurations of Sustainable Parks will vary as an expression of the role that the land, water, air, vegetation, and animals—including humans—play in the local ecological system.

Because Sustainable Parks involve the community broadly and

Figure 20. Birds can nest and reproduce in the safety of hedges in formal landscapes like this at Parc de Sceaux. (Photograph by M. Boland)

in myriad ways, they are no longer the specialized domain of experts and managers. Community involvement necessarily brings a different set of form-giving forces to bear on park design and management, suggesting that the idea of a developmental or evolutionary aesthetic has enormous social application (Figure 21). An evolutionary aesthetic necessarily shifts the purpose of design and the role of the designer from artist-visionary to a medium through which the forces of nature and society express themselves. If designers see themselves as weaving new, unexpected developments into a pattern, even shifting the pattern itself, they would embrace a role that has been likened to jazz and other improvisational performance arts. The park, gardening, and landscape professions may attract those who are gratified by working with laypeople and other experts over time to create urban harmonies on the spot.

The National AIDS Memorial Grove in San Francisco owes its existence and its form to this new role for designers and evolutionary aesthetic. A group of concerned citizens who had lost many friends to AIDS and at the same time were keenly concerned about the sorry state of parks in San Francisco conceived of the project. For them the Grove was both the restoration of a derelict portion of Golden Gate Park and a tribute to lost friends and loved ones. Members of the community, instead of municipal employees, have coordinated all aspects of the design and construction. The design was evolutionary, unfolding slowly over seven years. The overall appearance and individual elements of the Grove are not the product of a single designer's vision. Rather, the Grove has evolved from the interaction of community and site over time (Figure 22). Simultaneously, the Grove has brought AIDS education and awareness to the larger community in a non-threatening way. This project exemplifies the developmental and emergent nature of the Sustainable Park.

Figure 21. Volunteers played a central role in defining the scope and design of the National AIDS Memorial Grove. (Photograph by M. Boland)

Figure 22. Stones in the dry stream, "bowls" carved in boulders and inscriptions encourage direct manipulation of the National AIDS Memorial Grove landscape by visitors. (Photograph by M. Boland)

Where to Begin? We encourage park departments everywhere to realize these principles for Sustainable Park design. With broad policy implementation, this new standard will move from the avant-garde and cutting edge to best practice. But even as it becomes more broadly disseminated, this new model will not produce uniformity because in each bioregion, the standards will be expressed in ecologically distinctive ways. Over time, the model can be evaluated in each bioregion and continuously elaborated and refined through practice *on the ground.*

Since ecology and sustainability are complex, people often ask where to begin and how to intervene. We recommend starting with the biggest, most expensive, most troublesome problem as the starting

point. In many parks today, maintenance is the biggest problem because it is the biggest expense. Therefore, we first recommend improving maintenance practices, rethinking them radically. This means focusing on resource self-sufficiency and developing a new aesthetic from that focus. Does this priority mean that solving larger urban problems may have to wait? Not if we consider that modeling a new aesthetic that derives from self-sufficiency would also solve problems for other urban landscapes. By getting started, eventually the entire urban system will be transformed for the better.

Appendix A: Parks by Park Type (secondary rankings shown in parentheses)

Pleasure Ground (I)
Almada Park, Almada, Portugal
Andre Citrõen, Paris, France (IV)
Astoria Park Extension, Queens, NY
Battersea Park, London, England
Bay Adelaide Park, Toronto, CA
Biddy Mason Park, Los Angeles, CA
Bryant Park, New York, NY (IV)
Central Park, Sha Tin, Hong Kong, China (V)
Chase Palm Park, Santa Barbara, CA
Delamont Country Park, Strangford Lough, United Kingdom (IV)
Fair Park, Dallas, TX
Forest Hill Park, Cleveland, OH (III)
Glebe Park, Canberra, Australia
Great Park, Louisville, KY (IV)
Henry Moore Sculpture Garden, Kansas City, MO
Hudson River Park, New York, NY
Lechmere Canal Park, East Cambridge, MA
Mile End Park, London, England
North Point Park, Boston, MA (IV)
Olympia Fields, Olympia Fields, IL
Patriots Square, Phoenix, AZ
Royal Botanic Garden, Kew, London, England (IV)
Socrates Sculpture Park, Queens, NY
Washington Market Park, New York, NY

Reform Park (II)
Allegheny Riverfront, Pittsburgh, PA
Landscaftslehrpark, Erfurt, Germany (IV)
Princess of Wales Memorial Park, United Kingdom

Recreation Facility (III)
Academy Courts, The Bronx, NY
Albert Park, Melbourne, Australia
Burgess Park, London, England (IV)
Gin Drinkers Bay Park, Hong Kong, China
Lake Hico Park, Jackson, MI
Lastenlehto Park, Helsinki, Finland
Merrylands Park, Sydney, Australia
Midtown Park, Duluth, MN
Paloheinan Hippu Park, Helsinki, Finland
Pearl Street Park, New York, NY
Richard Oastler Park, Leeds, England
Southwest Corridor Park, Boston, MA

Open Space System (IV)
24th Street Park, Virginia Beach, VA
All Peoples Trail, Shaker Height, OH
Bicentennial Plaza, San Jose, CA
Bouthorpe Park, Norwich, England
BUGA, Magdeburg, Germany
Cambridge Center Garage Roof Garden, Cambridge, MA
Candlestick Point Park, San Francisco, CA
Charleston Waterfront Park, Charleston, SC
Children's Park, San Diego, CA
Cleveland Meadows, Cleveland, OH
Columbia Union Marketplace, Brooklyn, NY
Courthouse Square, Toronto, Canada
Docklands, London, England
Dunbari Close Garden, Edinburgh, Scotland
Ecton Brook Linear Park, England (V)
Elcho Gardens, Calton, Scotland
First Interstate Plaza, Dallas, Tx
Foothills Community Park, Boulder, CO
Freeway Park, Seattle, WA
Gene Coulon Beach Park, Renton, WA
Gore Park, San Jose, CA
Haas, Sherover, & Trotner Promenades, Jerusalem
Holyoke Heritage Park, Holyoke, MA
Imperial Beach Pier Plaza, Imperial Beach, CA
Japanese-American Plaza, Portland, OR
Jose Marti Riverfront Park, Miami, FL
Lafayette Park, Oakland, CA
Landesgartenschau, Lunen, Germany
Laumeier Sculpture Park, St. Louis, MO
Liverpool Garden, Liverpool, England
Lok Fu Park, Hong Kong, China
Los Angeles River Park, Los Angeles, CA
Louisville Waterfront Park, Louisville, KY
Martin Luther King Jr. Promenade, San Diego, CA
Memorial to the 56 Signers of the Declaration of Independence, Washington, DC
New Kirkgate, Edinburgh, Scotland
Nordsternpark, Gelsenkirchen, Germany
Post Office Square, Boston, MA
Promenade Plantee, Paris, France
Pyrmont Point Park, Sydney, Australia
Risley Moss, Warrington, England (V)
River Promenade, Indianapolis, IN
Riverfront Plaza, Hartford, CT
Royal Park, Melbourne, Australia (V)
S. Graham Brown Park, St. Mathews, KY
San Antonio River Walk, San Antonio, TX
Skyline Park, Denver, CO
South Cove, Battery Park City, New York, NY
South Waterfront Park, Hoboken, NJ
Thames Barrier Park, London, England
The Belvedere, New York, NY
Tiffany Plaza, The Bronx, NY
Tom McCall Park, Portland, OR
VOA Park, West Chester, OH
Westlake Park, Seattle, WA
Westlands Park, Greenwood Village, CO
Wolden Berg Riverfront Park, New Orleans, LA

Sustainable Park (V)
Alex Wilson Garden, Toronto, CA
Baldwin Hills Park, Los Angeles, CA
Blueprint Farm, Laredo, TX
Byxbee Park, Palo Alto, CA
Cherokee, Iroquois & Shawnee Parks, Louisville, KY
Denver Botanic Garden, Denver, CO
Dyer Landfill, Palm Beach County, FL
Fishtrap Creek Park, Abbotsford, Canada
Freedom Parkway, Atlanta, GA
Freshkills Landfill Park, Staten Island, NY
Gesundheitspark, Buttrop, Germany
Guadelupe Riverfront Park, San Jose, CA
Horseshoe Park, Aurora, CO
Jackson Bottom, Hillsboro, Oregon (IV)
Landscaftspark Duisburg-Nord, Germany
Liberty State Park, Ellis Island, NY
Long Nose Point Park, Sydney, Australia
North York Moors Park, England
Northside Park, Denver, CO
Old School Forest Preserve, Libertyville, IL
Presidio of San Francisco, San Francisco, CA
River Torrens Linear Park, Adelaide, Australia
Ross Landing Public Plaza, Chattanooga, TN (IV)
Samuel Love Greenway, Englewood, CO
St. Louis Forest Park Restoration, St. Louis, MO
Stadtpark West, Bochum, Germany
Strawberry Creek Park, Berkeley, CA
Village of Yorkville Park, Toronto, Canada
West Point Park, Seattle, WA

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Notes

1. Members of the research team were Michael Boland, Erika Conkling, Chris Heath, Rosa Lane, Lothar Maier, Jay Rambo, Nicola Probst, Scott Prysi, and Steve Middleton—students in two graduate seminars held by Dr. Galen Cranz in the Department of Architecture at the University of California at Berkeley in the fall of 1997 and spring of 1998. Additionally, graduate student Renu Desi worked with Dr. Cranz in the summer of 2002 to conduct the analysis for the years 1998–2002.
2. The most widely-known precedent for the transformation of industrial land into parkland is Rich Haag's Gasworks Park in Seattle, but it exemplifies Open Space ideology more than Sustainable ideology. This project transformed a dangerous, derelict industrial landscape into a socially useful park, emphasizing the Open Space idea that recreation could be anywhere. It did not claim ecological restoration, nor was it entirely successful as a reclamation project in that portions of the park were closed due to residual high levels of chemical contamination.
3. Pleasure Grounds were conceived as the "lungs of the city," facilitating the movement and purification of dirty urban air. The Reform Era introduced public bathing via the enticement of swimming as a public health measure. Reform parks provided opportunities for active recreation and exercise to ensure the health of urban dwellers, particularly children, while Recreation Era emphasized exercise for the entire family. Open Space Systems are reminiscent of Pleasure Grounds in their devotion to providing fresh air into the heart of cities, but their planners showed more interest in mental and social health. They emphasized re-creation, balance, and "keeping cool." The extensive open space system developed in post-war Stuttgart is a literal example of this, using convection currents to bring cool air from surrounding ridges down into the hot, dense core of central Stuttgart (Cranz 1982, Spirn 1984).

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