

chapter 1

Introduction to Sustainability

INTRODUCTION

Sustainable landscape management is a philosophical approach to creating and maintaining landscapes that are ecologically more stable and require fewer inputs than conventional landscapes. They are still artificial landscapes inserted into highly disturbed site environments and maintained to meet the expectations of owners and occupants. Sustainability is a relative concept and more a goal to strive for rather than a well-defined end point. There will never be truly self-sustaining constructed landscapes, only landscapes that are more or less sustainable than our current efforts. To better understand sustainability, it is useful to review the historical origins of the movement. This will shed light on why there is so much interest in the topic.

HISTORICAL PERSPECTIVE

The sustainability movement started shortly after the industrial revolution, beginning in the 18th century. As cities became more industrialized and the ability to extract and use resources increased, it was not long before cities grew to an unprecedented scale and the population began to explode. This transformation changed everything and quickly brought out detractors.

It was 1798 when Thomas Malthus, an English country parson, penned his *Essay on Population*. In this writing, he questioned whether the earth could support geometric population growth (Malthus 1798). He feared the poor (the laboring classes) would reproduce faster than the world could provide for them, resulting in a total collapse of society. Malthus's essay sparked reaction and has been debated almost continually since it was published. The heart of the debate is whether nations can keep finding and extracting enough resources to support a constantly increasing population without running out.

The philosophical discussion deals with political and economic theory. Many of the major figures in the sustainable development movement have been economists. While industrialists were busy exploiting resources, there was always a skeptical economist who would raise his or her hand and say, "Wait a minute. I think we may have a problem." In 1865, William Jevons wrote *The Coal Question* (Jevons 1865). In Jevons's time, coal was the only functional source of energy. He hypothesized that as population (and demand for coal) increased, Britain would exhaust its reserves and the economy would fail. He proposed that the British economy would slowly decline and be displaced by other countries with more natural resources. In terms of coal, he was essentially correct. It never occurred to him

that other energy sources would ever be economically feasible (which was a big mistake). Two things can be learned from Jevons: first, hard-and-fast predictions will probably be wrong; and, second, technology will attempt to solve any problem caused by misuse of resources.

The idea that there is a technological fix for every problem is debated among those interested in sustainability. Even though humankind has been incredibly resourceful in finding new technological solutions for energy resources, there is a nascent feeling among proponents of sustainability that the world cannot indefinitely rely on innovation to find ways to exploit the earth's resources. In their view, it is time to find ways to avoid depleting those resources and (perhaps) even enhance them.

Prior to today's sustainability movement, countries supported ever-increasing populations by extracting resources to produce food and other staples without regard for the environmental consequences. What these efforts were doing to the earth or how they might affect its capacity to provide for future generations did not factor into the equation. For example, the basic strategy for obtaining oil has always been to find new places to drill and to drill deeper. Oil companies have scoured the earth using an incredible array of technologies in search of more oil. Drilling occurs in climates and locations that would have been impossible a hundred years ago. As such, each new source seems to increase the potential for environmental catastrophes (e.g., the *Exxon Valdez* in 1989 and Gulf of Mexico in 2010).

EMERGENCE OF THE SUSTAINABILITY MOVEMENT

There is no verifiable starting point for the current sustainability movement. It seems to have converged from several different broad ideas concerning our relationship with the natural world. Some of the key figures who have contributed to the discussion include Frederick Law Olmsted and Calvert Vaux,

John Muir, Theodore Roosevelt and Gifford Pinchot, Aldo Leopold, Rachel Carson, and Ian McHarg. Their history provides a better understanding of how the sustainability movement has evolved to the present. This discussion will consider the landscape management perspective.

Olmsted and Vaux

In the mid-1800s, Frederick Law Olmsted and Calvert Vaux partnered to develop the Greensward Plan for an urban park, now known as Central Park, in New York City. Even though the park was built on largely derelict land and required massive efforts to reconfigure the topography, these two artists produced a relatively wild and natural landscape that provided a welcome natural experience for the public. This came at a time when New York City was becoming increasingly industrialized and home to a huge labor force living in squalid tenement buildings. Population density was high, and workers were unable to escape the summer cholera epidemics. There were virtually no recreational options available to the working class. Life was hard for all but the wealthy.

Olmsted, the more dominant and vocal of the two, stood out as a passionate advocate for natural spaces in the city that would provide passive recreational activities for city dwellers. He viewed landscapes in the same manner as a naturalist would view a forest or prairie (Figure 1-1). Olmsted and Vaux's designs created apparent natural landscapes that were, in fact, manufactured. Interestingly, though Olmsted obsessed over plant materials, he felt constrained by his lack of knowledge of plants and their appropriate niches in the landscape.

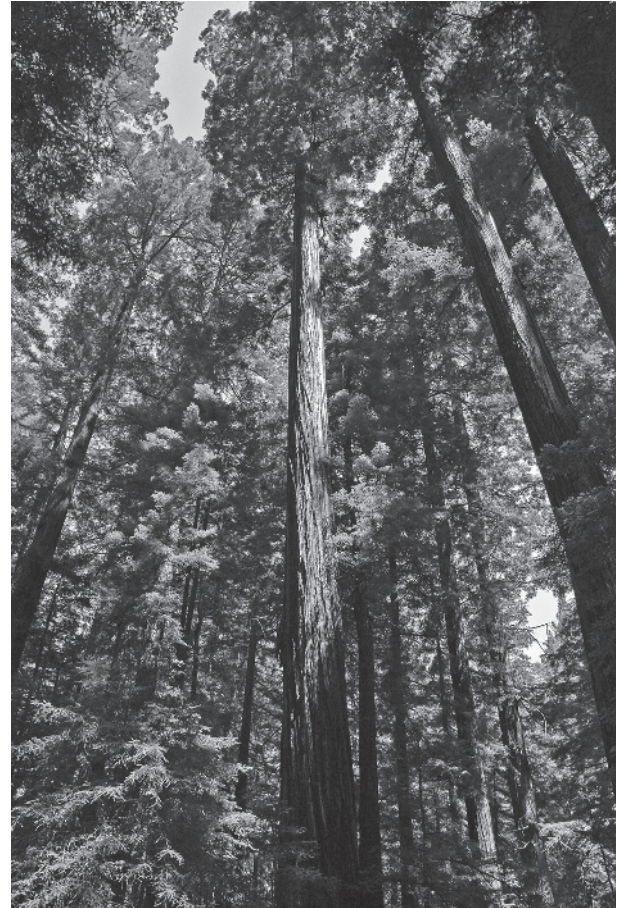
Olmsted's and Vaux's careers (and those of Olmsted's sons) spanned a period of major public park development throughout the United States. Their efforts enhanced the public's awareness of the value of beautiful and natural-looking landscapes. During his 50-year career, Olmsted was involved in designing some of the most outstanding



(a)



(b)



(c)

Figure 1-1 The designs of Frederick Law Olmsted and Calvert Vaux often mimicked nature. These natural landscapes are typical of scenes created in their work: (a) mountain meadow, (b) lake surrounded by forest, and (c) towering trees in a forest.

and enduring public parks in the world. He was well ahead of his competition and today is widely regarded as the father of landscape architecture in the United States.

Preservation versus Conservation

Coming from a completely different perspective and emerging as a major voice during the last half of

Olmsted's career was John Muir. Muir was a self-taught naturalist who devoted much of his life to extolling the virtues of the natural world and who lamented the defiling of the wilderness by humans. Muir felt wilderness should be preserved for its own sake (Figure 1-2).

A visit to Yosemite in California in 1868 fueled Muir's love of wilderness and nature. He spent much of his time exploring this region and quickly began



Figure 1-2 John Muir's view was to preserve wilderness by making it off-limits to all commercial interests.

to understand the negative impact of cattle and sheep grazing on fragile ecosystems. During this time, the nation was rapidly expanding, and opportunists were quick to exploit all natural areas as they sought their fortunes. This new breed of entrepreneurs disregarded the intrinsic value of natural areas and how resource extraction threatened to destroy nature.

Muir's efforts eventually led to the preservation of several wilderness areas, notably Yosemite Valley in California. Muir founded the Sierra Club in 1892, long considered one of the most powerful voices for preservation of wilderness. A split developed between preservationists like Muir, who believed wilderness should be left alone and appreciated for its beauty and spiritual values, and conservationists such as Gifford Pinchot and President Theodore Roosevelt, who believed that forests and wilderness areas should be preserved but also be profitably used for grazing, timber harvest, and other commercial activities (Figure 1-3). This difference in opinion continues today and is reignited whenever plans are

announced for logging in old-growth forests or when areas containing endangered species are targeted for development.



Figure 1-3 Theodore Roosevelt and Gifford Pinchot believed wilderness should be conserved but still used for commercial resource extraction, such as the logging shown in this photo.

Emergence of the Land Ethic

In the 1940s, Aldo Leopold expressed a more philosophical view of the relationship between nature and humans. Trained as a forester, Leopold spent much of his career working with wildlife in the arid Southwest and later in the Midwest of the United States. Although he held strong opinions about how the earth should be treated, he was not entirely opposed to using natural resources for hunting and fishing or even mining. His opinion was different from the opinions of other environmentalists and his message less extreme than that of the preservationists.

In 1949, shortly after his death, Leopold's *A Sand County Almanac* was published. This collection of essays starts with the naturalist's year in Sand County, Wisconsin, followed by his experiences in the western states, where he observed human successes and failures in understanding ecosystems in a diverse array of climates. The text concludes with an elaboration of his philosophy about wilderness, conservation, and, ultimately, what he called "the land ethic." The land ethic is best explained in his own words:

All ethics so far evolved rest upon a single premise: that the individual is a member of a community of interdependent parts. His instincts prompt him to compete for his place in that community, but his ethics prompt him also to co-operate (perhaps in order that there may be a place to compete for). (Leopold 1949)

The land ethic simply enlarges the boundaries of the community to include soils, waters, plants, and animals, or collectively: the land. (Leopold 1949)

He goes into more detail in later passages:

A land ethic of course cannot prevent the alteration, management, and use of these "resources," but it does affirm their right to continued existence in a natural state. (Leopold 1949)

In short, a land ethic changes the role of *Homo sapiens* from conqueror of the land-community to plain member and citizen of it. It implies respect for his fellow-members, and also respect for the community as such. (Leopold 1949)

Leopold believed that people need to view the natural world in terms of a biotic pyramid (what today is known as an ecosystem), defined by interconnected webs of relationships among soil, plants, and animals. How humans impact the land affects, often profoundly, the relationships among all participants, and they need to be mindful of everything they do managing the "land." Even though Leopold's emphasis was on wild lands, his message is just as powerful when considering constructed landscapes (Figure 1-4).

Post-World War II

Reflecting on the times, it is interesting to consider that when Leopold was working, there were only about 125 million people in the United States. The nation had just emerged from the Great Depression and the Dust Bowl and had yet to develop the fertilizer and chemical industries of modern times. The dawn of the chemical age began just after World War II and had profound impacts on every facet of our relationship with the earth and all of its inhabitants. It is hard to imagine the sense of optimism that defined the postwar period from 1945 through the 1950s. In his description of this era in *The Life and Times of the Thunderbolt Kid*, Bill Bryson summarizes the period perfectly:

Happily we were indestructible. We didn't need seatbelts, air bags, smoke detectors, bottled water, or the Heimlich maneuver. We didn't require child-safety caps on our medicines. We didn't need helmets when we rode our bikes or pads for our knees and elbows when we went skating. We knew without a written reminder that bleach was not a refreshing drink and



(a)



(b)

Figure 1-4 Aldo Leopold's land ethic promoted the idea that humans should be part of nature rather than in control of it. (a) Natural area accessible to people and (b) wildlife area in the middle of an urban development.

that gasoline when exposed to a match had a tendency to combust. We didn't have to worry about what we ate because nearly all foods were good for us: sugar gave us energy, red meat made us strong, ice cream gave us healthy bones, coffee kept us alert and purring productively. (Bryson 2006)

In the midst of the euphoric optimism of the 1950s, the world embraced nearly all technological marvels. One of the biggest marvels was synthetic pesticides, or, more specifically, fungicides, herbicides, and insecticides. Having been developed during World War II, many products had just recently been released for public use. Significant among these was dichlorodiphenyltrichloroethane (DDT), an insecticide that promised to eliminate nearly every insect pest that affected humans and crops. At the time, it was considered safe for people, which meant that it could be used indiscriminately—and it was. By 1960, it was becoming apparent that users did not understand all of the implications of DDT, as well as other pesticides that were rapidly coming into the market. For one person in particular, widespread use of

insecticides posed a real threat to the natural world that was without precedent.

Rachel Carson

Rachel Carson was a naturalist, marine biologist, and author. Starting in 1941, she produced a trilogy of “sea” books: *Under the Sea Wind*, *The Sea around Us* (1951), and *The Edge of the Sea* (1955). *The Sea around Us*, the most successful of the three, explores nearly every facet of the sea. Carson's ability to blend science with the awe and wonder of the natural world made the life aquatic come alive. The book demonstrated her vast scientific knowledge and her love of nature and ecology. It was after her sea trilogy that she began work on her last, and by far most influential, book. In 1962, just two years before she died of cancer, Carson completed *Silent Spring*. *Silent Spring* was a different kind of book than the public had grown to expect from her. Rather than awe and wonder, it was filled with anger and frustration as she took to task “man's assaults upon the environment” (Carson 1962). Specifically, she singled out “contamination of air, earth, rivers, and sea with dangerous and even lethal materials” (Carson 1962).

Carson focused primarily on indiscriminate use of insecticides (DDT, endrin, dieldrin, and chlordane, among others). She was fully aware of the problems insects posed to humans and crops and made this clear early when she wrote:

All this is not to say there is no insect problem and no need for control. I am saying, rather, that control must be geared to realities, not to mythical situations, and that the methods employed must be such that they do not destroy us along with the insects. (Carson 1962)

She expanded on this later:

It is not my contention that chemical insecticides must never be used. I do contend that we have put poisonous and biologically potent chemicals indiscriminately into the hands of persons largely or wholly ignorant of their potentials for harm. (Carson 1962)

She then went on to detail numerous examples of environmental catastrophes and human tragedies resulting from poor judgment and plain misuse of insecticides in the quest for cheap and effective insect control. Although she does profile problems associated with other pesticides, insecticides are the primary focus.

This iconic book was controversial when it was published and remains so today. It split the world into two distinct camps: those who valued the benefits of pesticides and those who believed pesticides caused more problems than they solved. In the nearly 50 years since it was first published, copious resources have been spent looking for evidence to support either view. Many magazine articles and several books have followed *Silent Spring*, challenging Carson's viewpoint (Bailey 2002; Makson 2003; Marco, Hollingworth, and Durham 1987; Whitten 1966).

The impact of *Silent Spring* has been immense. It was influential in banning the use of DDT and numerous other chlorinated hydrocarbon insecticides, in

creating the U.S. Environmental Protection Agency, and in providing a blueprint for modern environmentalism. Along the way, Carson has been lauded for producing one of the most influential books of the century, cursed as a radical environmentalist who was wrong about many of the questions she raised, and blamed for the death from insect-borne illnesses of millions of people worldwide who otherwise might have lived if DDT had been available. Given her background in science, her distinguished career as a marine biologist, and her success as a nature writer, Rachel Carson cannot be dismissed as a mindless crank spreading doom and gloom without regard for the consequences.

It is remarkable how accurate she was in her analysis of how humans can create problems because of their failure to fully study the ramifications of their decisions. Her descriptions of fish kills as a result of widespread application of insecticides to control gypsy moths (*Lymantria dispar*) in forests stand out as systematic failures of public policy. Her book demonstrates the importance of studying problems thoroughly before acting and exercising healthy skepticism about new technology before it is adequately tested.

Design with Nature

In 1969, Ian McHarg, an urban planner at the University of Pennsylvania, wrote *Design with Nature* (McHarg 1969), which addressed many of the same issues raised by Rachel Carson. His discussion was in the context of our approach to the built environment. At intervals in his thesis, McHarg outlined in great detail various catastrophes of failed planning, which included a study of the New Jersey shore where lack of intelligent planning resulted in indiscriminate building of vacation homes on fragile dune areas. A major storm in March 1962 resulted in serious destruction of homes and roads throughout the development. McHarg's study explained the inevitability of this failure and showed that careful analysis of a site could enable us to develop areas mindfully, avoid destroying ecosystems, provide desired

Figure 1-5 This freeway interchange demonstrates our ability to impose our will on the land. Ian McHarg believed it was possible to design the built environment in harmony with the natural environment and avoid the problems associated with thoughtless development.



recreational opportunities, and facilitate a sustainable tourist industry.

McHarg's analysis demonstrates the power of careful investigation and the value of producing win-win solutions to solve problems, ranging from determining the least intrusive location for highways to developing metropolitan areas without spoiling watershed ecosystems or eliminating local agriculture (Figure 1-5). His approach required study of multiple factors such as historic features, scenic values, social values, geology, ecological associations, stream quality, forests, marshes, beaches, and wildlife. By creating a series of overlapping transparent maps, he was able to delineate areas suited to development and areas to be held "off-limits" to development. His efforts demonstrated that, in virtually all situations, it is possible to identify the most effective and least destructive way to develop an area.

McHarg was remarkably philosophical about the issues facing humankind. His writing is infused with lofty visions of the role of humans in protecting the natural world. One of his themes involves the concept

of entropy, which, in simple terms, is an increasing state of disorder. Negentropy is the opposite; it refers to an increasing state of order. In his view, entropy is synonymous with destruction, and negentropy is synonymous with creation. According to McHarg, our goal, as participants in the world around us, is to create diverse landscapes appropriately sited and constructed in a way that fosters biological diversity and builds from native plant palettes. In other words, we should strive for negentropy. The common process of removing all existing features of a site and imposing an artificial structure and landscape complete with imported soils and plants chosen without regard to the environment to which they are adapted simply increases entropy. In today's terminology, landscapes imposed on a site rather than fitted to it would not be considered sustainable.

Earth Day

Concerns about the world and our ability to sustain life on earth became increasingly focused on our treatment of the environment during the 1960s. In

1970, Senator Gaylord Nelson of Wisconsin called for an Earth Day celebration on April 22. Earth Day was a national alert that promoted the idea that all was not well with the earth and change was needed. Predictions of doom were abundant and focused on the effects of overpopulation and impending starvation. The predictions included the loss of 65 million Americans by 1989 due to starvation; a loss of more than 80 percent of the world's species within 25 years; a 50 percent reduction in the amount of light reaching the earth; a severe reduction in the earth's temperature, leading to an ice age; and exhaustion of world crude oil supplies by the year 2000 (Bailey 2000). Although none of these scenarios came true (think back to William Jevons's predictions), they did awaken the public from its complacency and served as a warning of what might happen to the earth if no one is paying attention to its needs.

Our Common Future

An awareness of sustainability continued to evolve through the efforts of concerned environmentalists, scientists, and governments. In 1983, the United Nations created the World Commission on Environment and Development. Led by the former prime minister of Norway, Gro Harlem Brundtland, the commission produced a report, titled *Our Common Future*, in 1987. Among other accomplishments of the report, the commission defined sustainable development as "meeting the needs of the present without compromising the ability of future generations to meet their own needs" (World Commission on Environment and Development 1987). This definition, simple and vague as it is, reinforces the reality that if resources are overused or misused, there will be fewer resources for future generations to draw on.

In a follow-up book, *Signs of Hope*, Brundtland writes in the foreword:

Our Common Future is a hard-won consensus of policy principles forming the basis for sound and responsible management of the Earth's

resources and the common future of all its creatures. (Starke 1990)

Sustainable development has since become the banner for creating a world where everyone can live now and into the future. The concept was further detailed in a report titled the *World Conservation Strategy: Living Resource Conservation for Sustainable Development*, published by the International Union for Conservation of Nature and Natural Resources, the World Wildlife Fund, and the United Nations Environment Programme.

According to the report:

For development to be sustainable it must take account of social and ecological factors, as well as economic ones; of the living and non-living resource base; and of the long term as well as the short term advantages and disadvantages of alternative actions. (*World Conservation Strategy* 1980)

This echoes the methods espoused by Ian McHarg and demonstrates that principles of sustainability apply not only to buildings, roads, and natural resources but to all aspects of our world, including our approach to landscape management.

SUSTAINABLE LANDSCAPES

Now that more people are taking the idea of sustainability seriously, there is a need to define specific practices and approaches that will move us in the direction of more sustainable landscapes. Much of this book will address the difficulties in balancing our desire to produce truly sustainable landscapes with the realities of designing, building, and maintaining landscapes. It will also address the issue of what to do with existing landscapes to make them more sustainable (Figure 1-6).

Efforts are currently under way throughout the industry to develop sustainable landscape practices.



(a)



(b)



(c)

Several organizations have (or are currently developing) standards. Opportunities to move landscaping practices toward sustainability are outlined in Figure 1-7.

Leadership in Energy and Environmental Design

The Leadership in Energy and Environmental Design (LEED) Green Building Rating System was first developed in 1998 by the U.S. Green Building Council. The rating system sets certification standards for building construction and, to a limited degree, landscape development associated with the building. LEED certification is awarded on a point system and addresses six basic categories (LEED 2009):

- Sustainable sites

- Water efficiency

- Energy and atmosphere

- Materials and atmosphere

- Indoor environmental quality

- Innovation and design process

Landscapes are addressed primarily under the “water efficiency” category with rating points allowed for reducing water use by 20 to 50 percent, using no potable water (or no water at all), and using innovative wastewater management technology. Points are also available under the “sustainable sites” category for reducing site disturbance through protection or restoration of open space, storm water management, and reducing heat islands associated with hard surfaces and roofs.

LEED certification recognizes landscapes as a component of the overall development of a building site but assigns somewhat arbitrary point values for landscape design strategies, leading to a “paint by

Figure 1-6 Which landscape is more sustainable: (a) this totally sheared and mulched bed; (b) this beautiful arrangement of herbaceous perennials; or (c) this urban park with water features, natural grass plantings, and a modest lawn area?

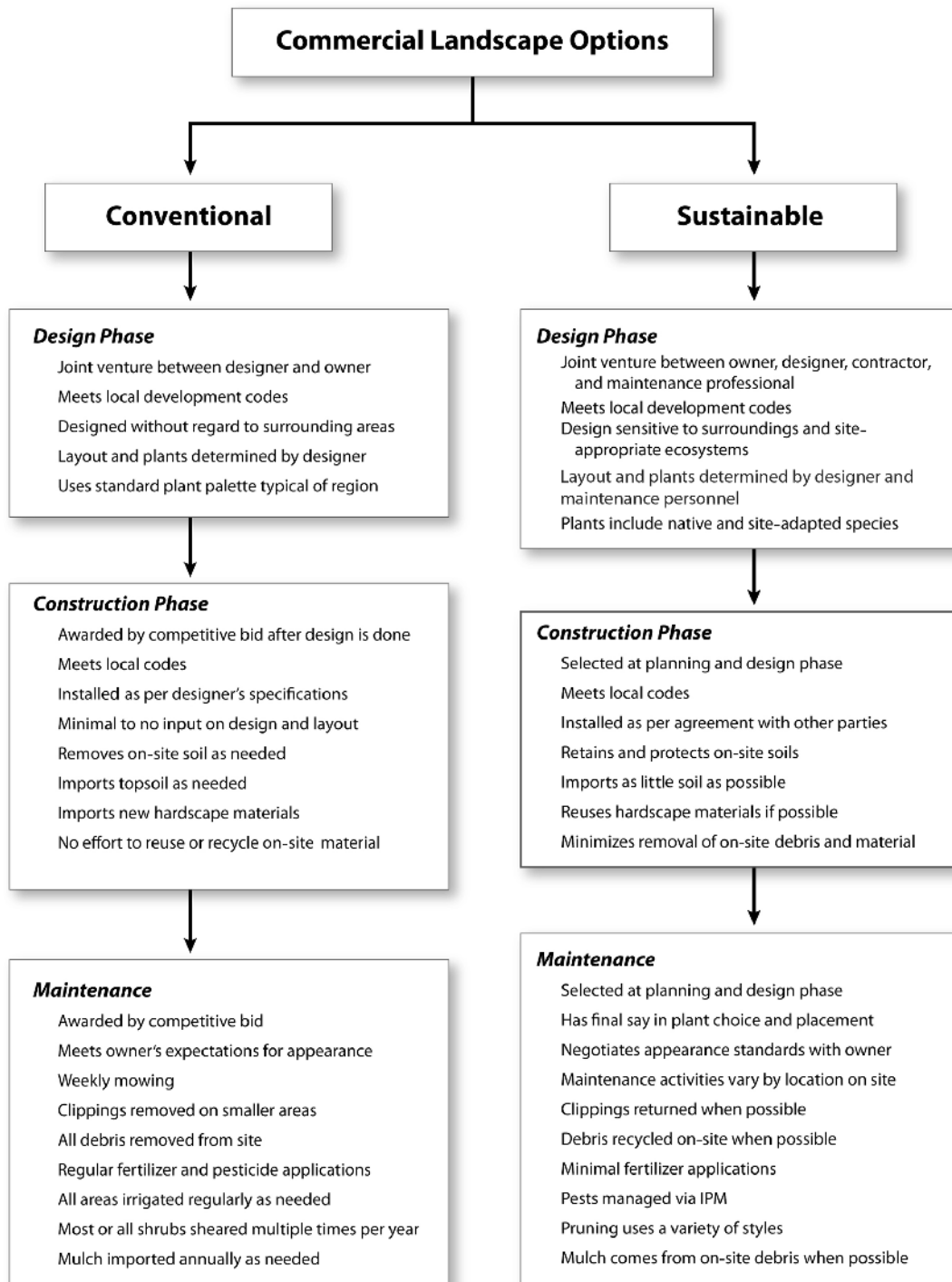


Figure 7 General comparison between conventional landscapes and sustainable landscapes.

numbers” approach to achieving the points necessary to earn specific certifications. It also involves only the designers in the certification process. Although it may be easy at the design stage to specify there will be no irrigation in the landscape, it may create numerous problems later for construction, establishment, and maintenance of the landscape. A more comprehensive and collaborative approach is needed to produce truly sustainable landscapes.

Sustainable Sites Initiative

In 2005, the American Society of Landscape Architects, the Lady Bird Johnson Wildflower Center, the University of Texas at Austin, and the United States Botanic Garden joined forces to develop sustainability guidelines for encouraging sustainable landscape development. The Sustainable Sites Initiative (SSI) interpreted the Brundtland report definition of sustainability as “design, construction, operations, and maintenance practices that meet the needs of the present without compromising the ability of future generations to meet their own needs” (Sustainable Sites Initiative 2009a). The intention of the initiative is to produce guidelines that “enable built landscapes to support natural ecological functions by protecting existing ecosystems and regenerating ecological capacity where it has been lost” (Sustainable Sites Initiative 2009b). As elaborated in Chapter 1 of the 2009 draft, the “Initiative’s guidelines and benchmarks are designed to preserve or restore a site’s sustainability within the context of ecosystem services—the idea that healthy ecosystems provide goods and services of benefit to humans and other organisms” (Sustainable Sites Initiative 2009b).

The guidelines and performance benchmarks identify five basic areas as criteria for determining whether sites are sustainable: soils, vegetation, hydrology, materials selection, and human health and well-being (Sustainable Sites Initiative 2009b). In attempting to elaborate on these areas, the SSI has opted for delineating desired outcomes rather than

detailing prescriptive measures. Recognizing the lack of standardized practices that define sustainability, the SSI’s hope is that the industry will innovate and develop its own strategies for sustainable practices.

Ultimately, the U.S. Green Building Council anticipates incorporating SSI benchmarks into the LEED Green Building Rating System. In its present form, the SSI focuses strongly on the design, construction, establishment, operations and maintenance, and monitoring and innovation phases of new developments. The need for ongoing evaluation is recognized due to the dynamic nature of landscapes. The SSI makes it clear that the initiative is a work in progress and will likely evolve over time.

Sustainable Maintenance

There are many facets of sustainable landscape management. In recent years, sustainable criteria for design and construction have become well defined, but what makes for sustainable maintenance practices is less clear. Currently, there is no blueprint for what constitutes sustainable maintenance. Further, maintenance is currently ongoing on the 99 percent of all existing landscapes that were neither designed with sustainability in mind nor constructed using sustainable methods.

Maintenance contractors historically have been out of the decision-making process until the landscape is completed. They have no input in design from a maintenance perspective and often are not involved in construction. They have no say regarding where new sites are located. They enter into the process after a significant amount of time, money, and resources have been spent to create the landscape and often when considerably less money is available for ongoing maintenance. They inherit all of the underlying problems associated with the site, including soil quality and quantity deficiencies, irrigation system design and installation deficiencies, and plant material issues. They also have to contend with the owner’s expectations, which may differ from the design intent.



Figure 1-8 Current designs often include large water features and large lawn areas all kept green and neat and tidy. The corporate world embraces this look. Will their standards change any time soon?

Because aesthetic appearance is the criterion by which most judge a landscape, there is a premium on neat and tidy looking landscapes that distinguish themselves in this manner (Figure 1-8). The image projected by the building and grounds of a corporate headquarters is important to corporate stakeholders because, as the saying goes, “Image is everything.” Over time, as owners come and go, maintenance contractors have to adapt to changing attitudes and trends. In short, maintenance contractors are forced to find ways to efficiently maintain sites that may have many built-in deficiencies from a sustainable perspective. Clearly, the challenges of maintaining existing landscapes are immense if the goal is to achieve sustainability.

Greenwashing

As the age of sustainability dawns, it brings with it those who claim to use sustainable practices or products when, in fact, they do not. The common term for this is “greenwashing,” which is defined as “the act of misleading consumers regarding the environmental practices of a company or the environmental benefits of a product or service” (TerraChoice Environmental Marketing 2009). According

to TerraChoice Environmental Marketing, the vast majority of products offered in a range of markets are guilty of greenwashing by committing one or more of the “seven sins” of greenwashing. The most common sins include:

Hidden trade-offs. Pointing out one positive attribute while ignoring other negative attributes

Vague claims. Claims that are so broad or ill-defined that they mislead consumers

No proof to support claims. Offering no proof that claims are substantiated by research

These sins can be used to promote services as “natural,” “green,” or “organic” when they are no different from conventional landscape maintenance practices. A healthy dose of realism is needed as the industry pursues the goal of sustainable landscape management. It may be that on many sites contractors are already practicing sustainable maintenance while others who claim to be sustainable are only greenwashing.

SUMMARY

To succeed, sustainability has to be more than just a fad. In this chapter, the historical glimpse of how sustainable ideas have developed over time demonstrates that interest in sustainability has been a relevant topic for a long time. In all segments of society, there are opportunities to develop sustainable approaches, which include constructed landscapes. At this point, there are few rules and many ideas. The search for sustainable landscape management strategies is just beginning and will continue for some time. Techniques will evolve over time as a result of both successes and failures. This book aspires to offer practical ideas and techniques, based on current knowledge, to begin the process of creating sustainable landscapes.

STUDY QUESTIONS

1. Define sustainability as it relates to landscapes. Are any constructed landscapes truly sustainable? Explain.
2. Thomas Malthus and William Jevons were both pessimistic about the future. How have their predictions played out so far?
3. How did Frederick Law Olmsted and Calvert Vaux view the role of landscapes (parks) in the context of the urban environment? What did they strive for in designing their parks?
4. John Muir and Gifford Pinchot were both intimately involved with the wilderness areas in the western United States. How did their views differ from each other? What was Muir's lasting legacy?
5. Aldo Leopold developed the land ethic. Exactly what is the land ethic and what does it have to do with sustainability? How did Leopold's ideas differ from Muir's?
6. What changes occurred after World War II that led to the current unsustainable approach to landscape maintenance? Is conventional maintenance really unsustainable? Explain.
7. What did Rachel Carson do that has affected today's sustainability movement?
8. Explain Carson's attitude toward chemical pest control. In her view, what was wrong with pest control strategies in the DDT era?
9. What did Ian McHarg prove through his approach to landscape planning? Explain what McHarg meant by entropy and negentropy.
10. How did *Our Common Future* explain the concept of sustainability? How can that be interpreted in constructed landscapes?
11. What is LEED and what does it have to do with sustainability?
12. What is the Sustainable Sites Initiative trying to accomplish? What are the five areas it has

designated to determine the sustainability of landscapes?

13. What challenges does the landscape maintenance industry face in attempting to develop more sustainable landscapes?
14. What is greenwashing? How does it threaten the sustainable landscape movement?

SUGGESTED READING

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