Chapter 15

Landscape and Garden Design

Learning Objectives
1. Explain the history of landscape design and relate it to a constantly changing urban environment
2. List the principles and elements of landscape design
3. Determine what concepts a landscape design should be based upon
4. Use the principles and elements of design to create pleasing and functional landscape designs
5. Explain how to design a landscape plan step by step
Landscape and Garden Design

Landscape design, by definition, is the art and science of enriching outdoor space. Creating an appealing landscape requires using artistic principles together with scientific knowledge to create a functional and pleasing outdoor environment. A well-planned landscape will bring contentment to the family, add to property value and enhance the surrounding community. To design a landscape, it is necessary to select the right plants so the outdoor space created is environmentally sound, cost effective, low maintenance and aesthetically pleasing.

History

Two leading designers that were committed to advancing the principles of architecture and landscape architecture were Frank Lloyd Wright and Frederick Law Olmstead. Both artists played an important role in the history of design and were at the forefront of changing the American landscape during the period of 1850 to the 1920’s.

Frank Lloyd Wright endorsed the beauty of native materials, the methods of organic architecture and education, and the conservation of the natural environment. His architectural style insisted that buildings grow naturally from their surroundings, thus easing Americans away from rigid ‘Victorian’ boxes. His inherent love of nature began on his uncle's farm in Wisconsin where, as a boy, he spent hours studying the patterns and rhythms of nature. During his career, he created many sites including: office buildings, churches, private homes, a beer garden and an art museum. Nature’s influence on his designs can be seen in the earth-hugging ‘Prairie’ houses such as the Robie House in Oak Park, Illinois or the spiraling Guggenheim Museum in New York City. Wright once stated, “Study nature, love nature and stay close to nature, and it will never fail you.”

Frederick Law Olmstead, widely recognized as the founder of American landscape architecture, designed many present-day parks. Olmstead’s City Beautiful Movement notably affected the way communities are developed today. This movement encouraged the creation of attractive and functional communities that were designed with the best attributes of both country and city and that provided access to public grounds for rest and recreation.

In today’s world, there are still battles of loss of farmland to urbanization, overcrowding and visually apparent class distinctions. In 1868, Olmsted set the stage for modern-day urban advancement with the development of the 1600-acre community of Riverside, Illinois. Over the course of their lifetimes, Olmstead, his sons and successors continued his work, including designs for the U.S. Capitol and White House Grounds, Great Smoky Mountains National Park, Acadia National Park, Yosemite Valley and New York Central Park. Olmstead also had an influential role in the development of the National Parks Service.

Principals and Elements of Design

There are many elements to good garden design: balance, rhythm, form, texture and color, to name a few. Each of these design elements must be considered and woven thoughtfully together to implement a final design that becomes a work of art, and not just mere decoration.

Balance

In the design process, one strives for a type of balance that intrigues the eye of the beholder and provides a certain “weight” to the landscape view. Balance relates to a preconceived central axis in which different plant choices and placement will adjust the visual weight. There are two types of balance: symmetrical and asymmetrical. In symmetrical balance, each side of the axis is a mirror image of the other; this is the balance we see in formal-type gardens. In the less formal asymmetrical balance, there is still relatively equal weight to opposite sides of the axis, but the sides are not mirror images.
Focalization of Interest
Visually strong features are selected and positioned into the landscape so the viewer’s eye is drawn to a certain point that is strategically placed to command attention. The focal point may be the entryway, a specimen plant, statu-ary or other unique element.

Simplicity
Simplicity seeks to make the user comfortable in the landscape setting by creating shapes that flow with the natural shape of the land and existing forms.

Soft curving lines portray a more relaxing, comfortable, park-like setting. Straight lines and borders may be desirable in certain areas to ease maintenance and to reinforce architectural features.

Repetition
Repetition is used to reinforce an element throughout a design plan by repeating it. Lines, forms and textures can be utilized to create interests. Also, groundcovers, mulches and garden objects can be repeated to offer unity and order.

Rhythm
Repeating the same group of plants or the same plant will give a sense of movement or rhythm. Lines are created when different materials are visually connected, such as where the turf meets the sidewalk or a mulched bed.

Nature provides us with natural rhythm and lines that meet and flow, such as hills cresting a skyline or a river meeting the land’s edge. The viewer’s eye should easily follow the lines curving between use areas without drastic or abrupt changes.

Scale
Elements in the landscape should agree in the sense that they convey the size of the whole. Scale is concerned with the relationship between the sizes of an object to the size of other objects within the same composition.

Proportion
The harmonious relationship between one part of a design and the whole is called proportion. Proportion relates size relationships of structures, such as a house, patio or driveway, to the surrounding areas. Grouping plants should be in proportion with the structure or with the area in which they are located.
Unity and Harmony

All elements tie in together, with each contributing a distinctive quality to the total creation. Repeating fine textured plants helps unify the design and convey a sense of simplicity or harmony within the landscape. The design can be kept simple by eliminating excess details that have little to do with the overall composition of the landscape.

Form

Form describes the shape of a plant and the structure of its branching pattern. Every plant has a distinct growth habit such as the pyramidal shape of Colorado blue spruce or the broad, spreading habit of Rhododendron species.

Planting Flowers

Plant groupings of the same flower type in drifts of 3’s, 5’s or 7’s. Such drifts provide simplicity in the landscape allowing the eye to flow from one drift to the next. Repeating drifts of the same plant or plants of similar color and form throughout the garden will create a “color jump.” Color jumps create a sense of harmony, continuity and repetition to the garden design and keep it from looking like a random assortment of plants. Truly effective designs combine a variety of colors, form and textures between both plants and hardscape features in the garden.
Line

Lines in the landscape may be curved, linear, horizontal, vertical or diagonal. The viewer’s eye movement is unconsciously influenced by the arrangement of plants, their borders and how well they flow together—both horizontally and vertically.

Texture

Texture describes the “visual feel” of a plant, which may be fine or coarse. Using large textured materials may visually shrink the scale of a space while incorporating fine textures can do the opposite. Due to their large leaves, flowers and twigs, plants such as the oak leaf hydrangea and American holly are considered as coarse textured plants. Due to their slender, thin leaves and their small flowers, plants such as spirea are considered as fine textured plants.

Color

Emotional responses are elicited through use of color in the landscape. Hues of yellow, orange and red attract the eye and create excitement. These colors are more visible and appear closer to the viewer. Blues, greens and violets are cooler, thus creating a calming affect. These colors appear to be further from the viewer. White, gray and even black provide neutral overtones and are used to tie in other parts of the landscape and to create unity.

Adding color to our lives is often why we garden in the first place and few elements affect the personality of a garden as much as color. It is probably the first detail you think about when choosing a flower for your garden. Used effectively, color can create any mood a gardener wishes to achieve. Color can excite and stimulate or soothe and refresh the senses. The colors of our garden are a reflection of who we are. Learning to use the color wheel and knowledge of a few simple color design theories will enhance the ability of effectively combining colors in the garden.

The basic color wheel consists of 12 colors. Understanding these colors and how they relate to each other will allow you to compose a garden of pleasing combinations. It will show you what color combinations are monochromatic, analogous, complementary and polychromatic. It can be purchased at most art supply or paint stores and books devoted to color gardening often include a color wheel. It is an indispensable addition to any gardener’s toolbox.

The three primary colors are red, blue and yellow. Primary colors are pure and vibrant. Mixed in varying amounts, and blended with black or white, these colors produce all the other colors available in the spectrum. Secondary colors are half-and-half mixtures of the three primary colors: yellow and blue makes green, blue and red makes violet and red and yellow makes orange. Tertiary colors are generated using equal portions of a primary color and its neighboring secondary color: yellow-green makes chartreuse, yellow-orange makes gold, blue-green makes turquoise, blue-violet makes indigo, red-violet makes purple and red-orange makes scarlet. These colors are the palette of the basic color wheel.

White and black are not considered colors. If mixed together, they produce gray. If white is mixed with any color, it creates a pastel form.
of that color. The addition of black to any of the basic colors generates a darker hue of that color. If both white and black are added, the result is a tone of that color. A tone is a color that helps to blend brighter and darker hues.

Monochromatic color schemes contain flowers that are all the same color or that are lighter/darker shades of the same color. For example, a monochromatic scheme may include roses that are red, pink or burgundy. Introducing lighter and darker shades of the same color add visual interest while maintaining the overall theme. This scheme conveys a feeling of spaciousness because the eye is not interrupted by another color.

Analogous color schemes take advantage of colors that lie next to each other on the color wheel. One can start anywhere on the color wheel and go forward or backward to achieve a harmonious scheme. An analogous color scheme might include orange marigolds, yellow-orange coreopsis and yellow cosmos. Analogous color schemes express a feeling of harmony because they are pleasing and easy on the eye.

Complementary color schemes use colors that are directly opposite each other on the color wheel. Complementary colors contribute to some of the most bold and exciting flower combinations. Examples are orange and blue, yellow and violet, and red and green. Orange marigolds planted with blue lavender would be a complementary color scheme.

A polychromatic color scheme combines flowers that are equal distance from each other on the color wheel. For example, yellow sunflowers, red zinnias and blue salvia form a triadic harmony. This scheme gives you more color and the opportunity to grow a greater variety of plants.

The Design Process
A quality landscape will consist of: appropriate design principles, quality installation of plant materials and proper follow-up maintenance. To achieve a quality landscape design, five steps should be followed. These steps are: interview the client, take inventory of the site, analyze the site, design the outdoor room and draw the design.

Interviewing the Client
The client interview may be detailed or generalized, formal or informal. The type of interview mainly depends on the client. The purpose of the interview is to identify the needs and preferences of all who will be using the outdoor space. Below is a list of topics that should be addressed in the interview.

- **Activity level:** It is important to know the activity level of the client because it helps determine the type of plant that can be selected. A busy, young family will need room to grow, yet need low-maintenance plant choices. An older couple may have more time to spend in the garden, yet wish to reduce labor-intensive tasks.

- **Time spent outdoors and hobbies/interests of the gardeners:** Some people landscape so that they can spend more time outdoors, continually experimenting with new plants or changing the appearance of their home. Others just like to grow plants. Some people just want their landscape to look pretty, but not have to do a whole lot of work to keep it in shape.

- **Budget:** The budget for a job can be somewhat flexible because a large job may be planned in seasonal increments. A client can determine what is most important and complete those phases first. Landscaping can be expensive, but the investment of time and quality plants will save a lot of trouble in the long run.

- **Special needs:** Sometimes, special needs occur due to age or physical ability. If disability is a concern, walking paths will need to be wide enough to accommodate a wheelchair and slopes must

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**Figure 7. Use of Dramatic Contrast in Color**
be easily accessible. Raised beds may be needed so the client may garden with ease in beds at his/her level of reach.

- **Children and pets:** Children are drawn to plants with showy flowers and berries, but as the designer, it is extremely important to keep poisonous parts out of reach of small children and pets.

- **Desired maintenance level:** If the garden/landscape has grown to the point where it is not enjoyable anymore, then maybe there is too much going on in the landscape. It may be time to cut back on demanding annual gardens or decrease the mowing area by planting a small grove of trees. Follow-up maintenance is often overlooked and can be overwhelming for clients who jump into planting without any thought to the future.

- **Available labor and equipment:** Many businesses and even homeowners fail to realize the extent of landscape maintenance. Therefore, always ask clients questions regarding what type of equipment they own, what they are willing to buy and what type of labor they have—be it themselves, family members or a landscape company.

- **Special conditions:** Sometimes, special conditions such as heat islands or entrance/exit visual constraints exist. These situations require individual attention to select recommended plant varieties that are meant to grow in existing conditions.

- **Ordinances:** Before selecting plants, it is necessary to check with the local planning commission to learn of any landscape or tree ordinances that may affect species selection and implementation.

### Site Inventory

Site inventory involves collecting information that will guide the design process. A site inventory is done by gathering a pencil, a tape measure and some paper and then taking a long walk around the property. The site inventory should include a sketch showing the

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**Tips for Using Color:**

**Planting Dark Colored Plants**

Dark colors have the tendency to become lost in the shade. Therefore, if planting will be in a spot that receives little light, suggest using light colors such as white, pink, pale blue or green. If dark colored flowers are desired, suggest highlighting them with lighter colored flowers planted in the background. Burgundy impatiens surrounded by pale green coleus or coral impatiens, for example, will stand out because of the contrast.

**Using White in the Landscape**

White is reflective of the light and is usually the last to fade from view in the evening. It provides a feeling of purity, cleaniness and precision. White ties together other areas of the garden, softens bold colors and directs someone’s gaze from one location to another. In shady parts of the garden, white is effective because it stands out in the shadows and lends form and focus to an area that might otherwise be overlooked.

**Making Small Spaces Appear Larger**

If the garden space is small, warmer colors should be positioned in the front of the garden and cooler colors in the back. Using the cooler colors in the distance will lend a hazy ambiance, creating a sense of spaciousness and length that will make the garden appear to go on forever.

**Using Green**

Green is also a color. When planning out a color scheme, many people only consider flower color and forget about the foliage. Green is restful to the eyes, so allowing foliage to be seen and admired is beneficial. There are various shades, tints and hues of green foliage. The foliage of the plants selected may play a prominent role in the color scheme of the garden. For example, leaves that are blue-green complement flowers that are pink or magenta and leaves that are yellow-green highlight flowers that are red, orange or yellow. In addition, several new plant selections provide green flowers that are becoming quite popular. Nicotiana ‘Lime Green’ and a new Zinnia, appropriately named ‘Envy,’ are two green flowered plants that are now available.
dimensions of the lot and existing structures, the soil type, the soil test results, any drainage issues, any existing plants and structures, and the view. Dimensions can be obtained by taking field measurements.

**Doing Field Measurements**

To accurately fix existing elements, measure them from two fixed points, such as two corners of the house.

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**Figure 8. Site Inventory Analysis**

Site inventory analysis: define use areas, movement of sun across the landscape, water flow, utilities, existing plants and structures and views.
**Site Analysis**

A site analysis is an evaluation of the site inventory. It examines the challenges and potential benefits of the existing site. The site analysis aids the designer in creating and fine-tuning the concepts identified in the interview and site inventory. It also leads to the actual design sequence. The site analysis should identify the positive and negative points of the general land topography. For example, the site analysis should indicate if money should be spent improving site challenges, such as drainage, before planting begins. Also, the site analysis should indicate the amount of sun or shade an individual area receives at different times during the day, as this will affect plant choices.

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**Defining Use Areas**

Different parts of the landscape may be used in different ways. Although one area may overlap on how it is used, the following definitions may serve as a useful guide when talking to clients.

- **Public:** This is the area where guests are greeted. It is usually facing the street and is most visible to the general public. This may include the front door, walk or driveway.
- **Private:** This is the area where the family lives, plays and entertains. It may be the back or side yard, garden area or patio.
- **Service:** These areas are areas that may be screened from view. Service areas include utility sheds, clotheslines, trashcans, compost bins, air conditioner units and dog kennels.

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**Defining the Outdoor Room**

The landscape should be thought of as an outdoor room that consists of walls, ceilings and floors. Think back to Frank Lloyd Wright’s concept of open architecture and how each room should grow from its natural surroundings. The natural rhythm and line of the land should be used as a guide. The landscaped area is comprised of living and non-living components converging to provide aesthetic and useful values.

The “walls” of the landscape are structures or plants that define the limits and shapes of the outdoor room. These structures can be comprised of trees, shrubs and fences that act as windbreaks, screen undesirable views, absorb noise and dust, and provide privacy.

The “ceiling” of the landscape defines the upper limits of the area while providing shade, privacy or protection from rain or snow. Options may include an arbor, tree canopy, gazebo, patio/deck cover or overhang.

The “floor” of the landscape defines the pathways and the base of the area. It may be made up of living or non-living materials. Living floors include lawn grasses, ground covers and flowers. Non-living floors include stone, gravel, bark chips, bricks and mulch.

Use areas are described as being public, private or service. With the proper grouping of trees and shrubs, the living area can be screened from public view, providing a private sitting area where family and friends can gather. Ideally, the indoor living area or kitchen should open up to the patio, terrace or deck, providing a continuous flow from indoor to out.

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**Drawing the Design**

Basically, the design process includes: sketching a rough layout, problem solving and assembly of the final draft. First, by using the information gathered during the site inventory and client needs analysis, a scale map of the area to be designed should be prepared. Using graph paper, the scale should be set as appropriate for the size of the design. For example, a square may equal 1 foot or 5 feet. The scale map should include the following: indication of a North arrow point, existing structures and plants, driveway, walkway, property lines, views, areas to be screened, undesirable and/or desirable land features, and drawing scale.

Second, use areas, circulation routes and other items particular to the space should be determined and those areas should be placed on the plan. Next, the location of where plant masses are needed should be indicated. The plant masses will be used to provide shade or to separate areas. Use suggested landscape symbols to indicate tree and shrub masses.

At this point, it may be a good idea to make several overlays or ‘bubble-maps’ on transpar-
ent paper to try out different layouts. Bubble maps or diagrams are simply used to define space within the landscape. As the use areas are identified and each space is given a function, the design should start to come together. The design is considered a rough draft until the point where the designer is pleased with choices made.

The next step is to look back at the massed areas and to specify the plant and non-plant materials required to meet the needs of those areas. Symbols should be drawn to represent the eventual amount of space that the plants will use. The space for the plant should be based upon the size the plant will be in 10 to 20 years, not the size the plant will be at full maturity. For example, a red maple at maturity will have a spread of 40 to 50 feet. The diameter of the symbol in this case should be 20 to 30 feet. Once the plant parameters are drawn, the location of sidewalks, fountains, etc., should be indicated.

Finally, a plant key should be created. The key should include a number for each plant followed by the common name, scientific name and amount needed (Table 1).

### The Design Process

1. Prepare scale map of area
2. Determine use areas, circulation routes, etc and place on plan
3. Indicate where plant masses are needed
4. Determine which plant and non-plant materials will suit the determined needs

### Trees and Shrubs in the Landscape

Trees provide many benefits to the homeowner by providing beauty, screening undesirable views, shade, windbreaks and wildlife habitat.

The right tree in the right place will grow to be an asset, rather than a detriment, to the homeowner. When the decision to plant a tree is made, follow these general recommendations: Determine:

- Purpose for planting the tree
- Soil conditions
- Proper Tree location
- Species for ideal growth and form

### Table 1. Plant Key Example

<table>
<thead>
<tr>
<th>Plant Identification #</th>
<th>Common Name</th>
<th>Scientific Name</th>
<th>Amount Needed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Burford holly</td>
<td>Ilex cornuta ‘Bufordii’</td>
<td>10</td>
</tr>
</tbody>
</table>

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Selection, Implementation and Future Maintenance

Landscape design is an art as well as a science. The process involves not only creating a visually pleasing outdoor environment, but also involves selecting the right types of plants necessary to achieve the desired landscape effect. Therefore, when selecting plants, the designer must consider their cultural needs. (See Table 2, on next page).

Specialty Gardens for Children

Theme Gardens

Many gardens have a theme of some sort. There are vegetable gardens, herb gardens, bird and butterfly gardens, dinosaur gardens, pizza gardens, and salsa gardens. Whatever the theme, it should match the interests of the client. Children are naturally drawn to gardening, which offers opportunities to nourish all of the senses. If working with a school or developing a garden for children, curriculum goals and objectives should be considered, then plants and objects for the garden should be selected.
Steps to Planting a Theme Garden

- Determining the type of theme garden desired
- Determine the location and size of the garden. For example, a vegetable garden, needs an area that receives at least 6 hours of full sunlight every day and is close to a water source
- Take a soil sample and send it off for analysis with the help of the county Extension agent
- Plan your garden’s look and boundaries. The shape of the garden may be a large circle with triangle sections to look like a pizza or whatever other shape fits the landscape
- Amend the soil according to the soil test results. Using a tiller, work in a 3-inch layer of organic matter to improve soil structure
- Select plants from a list of recommended varieties. Plant warm-season vegetables such as tomatoes, peppers, eggplant and most herbs after April 25th to avoid frost or freeze damage
- Water, weed, fertilize and harvest on a weekly basis throughout the growing season
- Enjoy the abundance of fresh vegetables or herbs, or enjoy the simple beauty of a flower garden

Theme Gardens

Theme garden brochures have been developed to assist in the creation of specific themes such as “Pizza Gardens,” “Salsa Gardens,” “African-American Gardens” and “Asian-American Gardens.” These are available online through the University of Tennessee Extension website.

Summary

Landscape design is an art and a science. It can be complex or simple. This chapter has taught you to: understand the history, principals and elements of landscape design, understand what a landscape design should be based upon, and understand how to develop a theme garden. Finally, this chapter has taught you to use the principles and elements of design to create pleasing and functional landscape designs.
Terms To Know

Asymmetrical balance
Focal point
Grouping/massed area
Site analysis
Site inventory
Symmetrical balance

Test Your Knowledge

1. The first step in landscape design is to divide available space into use areas. What are the three use areas listed in your handbook?

2. List three of the six principles of landscape design.

3. Explain two of the four elements of landscape design.

4. A quality design will consist of what three things?

5. The landscape should be thought of as an outdoor room that consists of walls, ceilings and floors. What could represent the “ceilings” of these outdoor rooms?

Resources


*Landscape Plants: Their Identification, Culture, and Use* by Ferrell M. Bridwell; 1994, Delmar Publishers, Inc.


*In the Three Sisters Garden: Native American stories and seasonal activities for the curious child* by JoAnne Dennee, Jack Peduzzi and Julia Hand; 2001, Common Roots Press.

*Roses Love Garlic: Companion Planting and Other Secrets of Flowers* by Louise Riotte; 1998, Storey Communications Inc.