Chapter 8
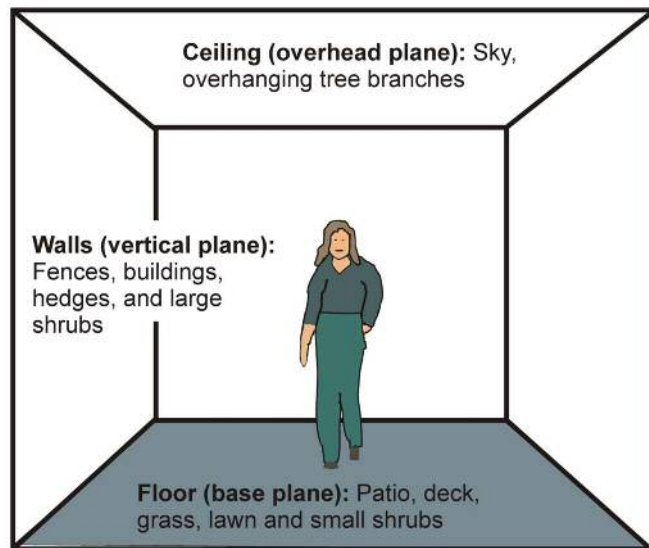
Principles of Organizing Space

This chapter is the second chapter in a three chapter sequence. It utilizes the principles in the previous chapter and focuses on the principles used by architects in organizing space. As noted in the previous chapter, Booth (2012, p.1) notes that "*One principal objective of landscape architectural site design is to impart a spatial organization for human use and enrichment by orchestrating a broad palette of elements in an inspiring and coordinated manner*." In addition, it does so with the acknowledgment of the person moving through the landscape. This chapter provides the basic principles that designers of space use to design landscape experiences (Booth 2012, Carpenter et al 1975, Dee 2001, Ching 2007, and Parker and Yu 2009).

The Outdoor Room

Space is defined by its container. The space inside a shoe box is defined by the six sides of the shoe box. Without the shoe box, the space doesn't really exist or is part of the next larger container present (e.g. the room). For architects and designers of space, space is created by defining the *base, vertical*, and *overhead planes* (figure 8.1). In smaller areas, this space can literally take on the dimensionality of an outdoor room with the floor, walls, and ceiling being formed by plants, fences, and overhead branches. The three planes can be large as in a scenic landscape or small and contained as in the outdoor room.

In the landscape, the *outdoor room* is defined by three planes. The *base plane* is the floor or the horizontal ground level. It may include the grass lawn or field in the foreground or an actual floor. The *vertical planes* are the walls. In large landscapes, the vertical planes are usually the mountains or other features in the background. In smaller and more contained

Figure 8.1: Outdoor Room – Conceptually, the visually landscape can be divided into three planes: base, vertical, and overhead planes. These planes can be managed. Source: author, Booth, N., (2012) and Ching, F., (2007). [file:\OutdoorRoom.jpg]

landscapes, the walls may include hedges, trees, walls, or other vertical elements. Mounding can also be considered part of the vertical plane. The *ceiling* is the overhead plane. The overhead plane can include the sky, overhanging branches of trees or the ceiling within a room.

Illustrating the concept of the outdoor room is a small park area in downtown Charlotte, North Carolina (figure 8.2). The area is part of a larger park. The area can be viewed as a room with entrances, walls, and a ceiling. The brick floor is the floor. The wall, fence and bushes form the walls. The ceiling is formed by the overhanging branches on the large tree when the leaves are present during the summer. The entrance on the left has a very low ceiling created by the small trees on both sides of the walkway. A focal point for this mini-park area, the fountain in the center of the area was turned off for the winter when the picture was taken.

Figure 8.2: Outdoor Room – This patio area is part of a larger park. The brick floor is the floor. The wall and bushes form the wall. The ceiling is formed by the overhanging branches on the large tree when the leaves are out during the summer. The entrance on the left has a very low ceiling created by the small trees on both side of the walkway. Charlotte, North Carolina. Source: author [file:\CHAR006OutdoorRoom[vg].JPG]

<b>*Managing the Vertical and Overhead Planes* – Varying the vertical and overhead planes creates several potential combinations of experiences. A typical descriptive technique is to delineate these combinations and to note their impact on the experience. Second, varying these landscapes become important for a person moves through space. Changing or varying these combinations of the viewscape can provide variety that enhances the experience. Conversely, all of anyone type of viewscape tends to lead to monotony and boredom. In this sense, viewscapes are dynamic and not static. An enclosed canopy by itself may be confining and like a tunnel. However, if it opens up to a vista, the enclosure sets up the opening to the vista. Next, these principles are equally applicable to a traditional park setting as they are to the trail situations depicted in the following examples. Last, when designing space, it is important to consider creating a mix of scenes. This will be visited in the next section on sequencing.

<c>**Open Top, Open Sides** – When initially coming upon an open top and open side setting the experience is often one of a delightful visual treat. Unfortunately, the experience can quickly become visually boring. This was suggested in the previous chapter with the photos outside Barstow, California (Figure 7.13), and from the south rim of the Grand Canyon (Figure 7.14). The simple reason is that there is little action or change that occurs in the middle or background.

Figure 8.3: Open Top and Open Sides – On this ridge line trail located close to Moosilauke in New Hampshire both the vertical and overhead planes are open. It is low on variety and mystery and is essentially a boring viewscape. Moosilauke, New Hampshire. Source: author – [file:\T1416-RidgeTrail.JPG]

The trail section pictured in Figure 8.3 is a ridge trail near Mt Moosilauke in New Hampshire. Examination of the photo from the hiker's perspective reveals that there is little or no "mystery" on this trail. The trail and the vistas along the trail are totally exposed and predictable. The vista for the hiker will be virtually the same an hour further along this trail as it is where this picture was taken. The hiker is fully aware of this lack of change also. The scene reinforces the need to vary the vistas created.

<c>**Open Top, Closed Side** – [Open one side and open top] – This scene creates a "forced perspective" or directs the movement of the eye toward the open area. The scene is on the Greater Allegany Passage trail in Maryland (Figure 8.4). The vista opens up briefly after being enclosed on the sides. So powerful is the effect that it could hide a junk yard in the woods on the left. People look to the right and not to the left. The open vista on the right has considerable draw for the viewer. Again, this scene emphasizes the importance of varying the scenes.

<c>**Closed Top, Open Both Sides** – [Open both sides and closed top] – A closed top and open sides directs the vision outward rather than upward toward the sky. In Figure 8.5, a dense canopy is created overhead by the trees. This forces the perspective sideways. Also, this scene is time sensitive. During summer when the foliage is on the trees, this scene will normally be transformed into a closed top and closed side scene.

Figure 8.4: Open Top, Closed One Side – The closed side is open on the other side. On this gentle C-curve on the Great Allegany Passage trail, the eye is immediately drawn to the valley on the right as the scene opens up. So powerful is this draw is that there could be a junk yard in the woods on the left and few people would see it. Near Cumberland, Maryland. Source: author – [file:\GAP003trail002.jpg]

Figure 8.5: Closed Top, Open Both Sides – The trees bordering the trail form a dense overhead canopy. Because it is fall when there are no leaves on the trees, this scene is also open on the sides also. This scene is also time sensitive. In summer when there are leaves on the trees, this scene will become closed on both the top and on both sides. Ohiopyle, Pennsylvania. Source: author – [file:\GAP041aa-marker005.jpg]

<c>**Open Top, Closed Both Sides** – The open top and closed sides forces the perspective of the viewer upward toward the sky (Figure 8.6). As most people perform a quick examination of the scene, they will find that their eye moves upward toward the sky.

From a management perspective, opening up the overhead canopy can be used as a management tool. The vegetation on the side of the trail is so dense that it could easily hide a junk yard or other eye sore on either side of the trail. If there was an eye sore on either side of the trail, management could open up the overhead canopy and the sides of the trail would quickly become overgrown with vegetation that would visually hide the eye sore. In addition, opening up the overhead canopy would create an "edge effect" for deer and other browsers. It is not unexpected to find the deer at this location close to a food source either.

<c>**Closed Top, Closed Sides** – The enclosed top and sides creates a tunnel effect. As with an extensive open top and open side scene, by itself, it can become boring and uninteresting (Figure 8.7). It can feel confining. However, it can provide contrast when used with other approaches. It can be used to set up scenic vistas and in combination with the other approaches, it can help establish interest for the viewer.

Figure 8.6: Open Top, Closed Both Sides – Notice how the eye is drawn upward to the sky. In addition, because there is no overhead canopy, vegetation along the trail receives ample sunlight to encourage the dense vegetative growth. Deal, Pennsylvania. Source: author – [file:\GAP025deer003.JPG]

Figure 8.7: Closed Top, Closed Both Sides – The enclosed top and sides creates a tunnel effect. By itself, it can become boring and uninteresting. However, in combination with the other approaches, it helps to establish interest for the viewer. Markleton, Pennsylvania. Source: author – [file:\GAP049markleton003.jpg]

These principles can be applied to man-made landscapes also. The trees close the top of this scene and the building closes the sides of this portion of River Walk in San Antonio (Figure 8.8). A design criticism of the original River Walk was that it was too enclosed and that this isolated it from the city. Conversely, the enclosure tends to make the area more intimate. Either design creates an experience, just different experiences.

<b>*Sequencing* – Sequencing is managing the combinations in the previous section to create an experience. Booth (2000, p.39) refers to this sequencing as "spatial sequencing." As noted, the extensive use of anyone format will usually lead to boredom and monotony. The previous section used linear trail systems such as rails-to-trails to illustrate these experiences. Sequencing these experiences are equally applicable to traditional park spaces and to more confined spaces like Big Cat interpretive trail in the following sections. Although not shown here, sequencing can be applied equally well to the hallways and open spaces within buildings.

The Big Cat Falls at the Philadelphia Zoo earned the best new zoo or aquarium exhibit award from the Association of Zoos and Aquariums. Examination of the map at the beginning of the exhibit indicates that the space occupied by total exhibit is fairly confined (Figure 8.9). Even so, the layout including the trail system makes the exhibit seem three times as large as it really is. Part of this is due to the serpentine loop trail that weaves its way through the exhibit and buildings. Part of this is achieved by managing the vertical and overhead views to manage the viewshed and the experience. The visual management of the viewshed within this exhibit creates an exciting experience juxtaposing mystery with what is around the corner with opening vistas into the different lion and tiger habitats. Also, the trail illustrates managing the vertical and overhead planes on a small scale to create the desired experience.

Figure 8.8: Closed Top, Closed Both Sides – These principles apply to man-made situations also. The buildings (vertical plane) and trees (overhead plane) create a closed top and closed on both sides type of experience. River Walk, San Antonio, Texas. Source: author [preferred – [file:\SA351.jpg]

Figure 8.9: Big Cat Falls Entrance Sign – The sign indicates the serpentine loop trail layout. Both the sides and overhead planes at the entrance are closed. Dark and with a restricted view, most people quickly move along the trail toward the next experience. Philadelphia Zoo, Philadelphia, Pennsylvania. Source: author – [file:\PHZ0895.jpg]

Examination of the loop trail layout on the sign reveals two important features of the trail. First, the display efficiently utilizes a very limited space. Yet, because of the trail layout, the trail seems much longer than it really is. Second, the trail applies good sequencing to provided continued interest for people walking on the trail. Also, the trail layout and buildings illustrate a good use of mystery. There is always something new around the corner.

<c>**Closed Top, Closed Both Sides** – The first photo on the trail was taken in the entrance area of the pavilion (Figure 8.10). In terms of the vertical and overhead planes, it is a closed top and closed side situation. The enclosure creates a relative dark area at the beginning of the trail. It is uninviting and because of the enclosure, people move quickly through the experience. As a footnote, care must be take so that they don't turn around and exit the exhibit either. They follow the trail and move toward the open area which is brighter and more inviting. Conceptually, this entranceway transitions people from the general concourse into the exhibit and into the world of the big cats.

<c>**Open Top, Closed One Side** – From a closed top and closed side view, the scene opens up with a view into the lion's cage. The view becomes an open top and open on one side (Figure 8.11). The second side is closed. The bridge and the transition from the darker restricted view area at the entrance to the open view create a wow factor for visitors. A wall with vegetative barriers separates the main concourse on the other side of the wall with the Big Cat exhibit. Other than some noise filtering through from the main concourse located no more than thirty feet from the trail, most people are oblivious to the close proximity of the main concourse. Visually, the view is so dominant into the lion's cage that most people never even look at the more subdued closed view of the vegetative covered wall on the other side. Comparatively, it is very uninteresting.

Figure 8.10: View: Closed Top, Closed Sides – Entrance to Big Cat Trail – In this scene, both the sides and overhead planes at the entrance are closed. Dark and with a restricted view, most people quickly move along the trail and transition into the next experience. Philadelphia Zoo, Philadelphia, Pennsylvania. Source: author – [file:\PHZ0890.jpg]

Figure 8.11: View: Open Top, Open One Side – View from the bridge – A normal reaction is that people stop on bridges. This bridge offers an excellent view of the lion cage. Also, note the smooth transition from the outside of the cage to the inside of the cage. Philadelphia Zoo, Philadelphia, Pennsylvania. Source: author – [file:\PHZ0892.jpg]

Complementing the vista into the lion's habitat, is the bridge. Inherently, pedestrians tend to stop and look at the scenery around them when they come to a bridge on an interpretive trail.

<c>**Open Top, Closed Both Sides** – From the bridge in Figure 8.11, the sequencing changes to one of an open top and closed sides (Figure 8.12). Dense vegetation (grass) on the left and right sides form a visual barrier. Other than for people stopping at the interpretive sign visible on the left side of the trail, most people move leisurely through this scene to the African Pavilion around the bend. Although it doesn't offer a lot visually, it is important because it helps sets up the next experience inside the African Pavilion Viewing Area.

From a visual management perspective and the sequencing of the different viewsheds, this restricted viewshed makes a valuable contribution to the overall experience. It is not a wasted experience. As noted in the previous section, having only one type of experience often leads to boredom and monotony. And, this restricted view is important for setting up the next visual experience.

<c>**A Unique View** – The trail quickly winds its way into the entrance of the African Pavilion Viewing Area (Figure 8.13). The entrance quickly opens up to the viewing area which is a closed top with an open side and closed side Figure 8.14). Inside the building, the only people occupying the back wall of the building (i.e. the closed side) are people passing quickly through the build without stopping or the person who is taking a picture of everyone else (see Figure 8.14). The action is to the left and that is where the visitors are. As a footnote, there is a gated area that leads

Figure 8.12: View: Open Top, Closed Both Sides – Interpretive Sign – The high grass on both sides of the trail create a visual barrier. The trail is open on the top and closed on the sides. Other than for the interpretive sign, most people move quickly through this area. Note: In the background, the roof over the entrance area (closed overhead) is clearly shown in this photo. Philadelphia Zoo, Philadelphia, Pennsylvania. Source: author – [file:\PHZ0899.jpg]

Figure 8.13: African Pavilion – The door to the building implies both the sides and overhead planes at the entrance are closed. People are surprised when they enter the viewing area where the glass wall on the left is an open side opening directly into the lion's exhibit (see Figure 8.14). Philadelphia Zoo, Philadelphia, Pennsylvania. Source: author – [file:\fig0812-PHZ0898.jpg]

to maintenance facilities directly behind where the photograph was taken. It is somewhat camouflaged to blend in with the vegetation. Regardless, most people simply pass by it. They are focused inward where they know the action is. They are wondering what is around the corner of the left bending trail (mystery), and they are wondering or anticipating what experience is on the other side of the door that leads into the building.

<c>**Serpentine Trail** – The Additional sections of this trail are discussed in Chapter 6 as part of the discussion on zoological parks. The trail uses buildings for displays. Exiting the first building the serpentine trail curves around toward the Jaguar exhibit (Figure 8.15). Examine the sign of the exhibit in Figure 8.9. Notice how the trail curves around to the right and opens up to the Jaguar exhibit (see Figure 6.16). Then the trail doubles back on itself to the Puma and Leopard exhibits. In a very confined space, the effect is to create a longer serpentine trail than would otherwise occur. Critical to creating this experience is the creation of a visual and physical barrier with a stone wall and vegetation shown in Figure 8.15.

Several additional sidebars are worth noting regarding Figure 8.15. First, a black fence was erected on both sides of the path to keep people on the path. It is a successful barrier. Its design and black color diminishes its visual impact as a barrier. Second, notice the curb on the inside of the bend. Its width is sufficient to encourage youth walking on it as a balance beam. Inspection of the ground next to the curb between the curb and the fence reveals that it is compacted. And people regularly walk on it. Either situation is not necessarily bad. However, if the planner doesn't want youth's using the curb as a balance beam, the curb need to be lowered or its top narrowed to discourage its use as a balance beam. Third, it is important to examine use patterns to identify potential problems.

Figure 8.14: African Pavilion Viewing Area – A large glass viewing cage to view the lions. As they usually do during the day, the lions are sleeping within twenty to thirty feet from the viewing cage. Notice how everyone is oblivious to the author taking the picture in the background. Philadelphia Zoo, Philadelphia, Pennsylvania. author – [file:\fig0619-PHZ0878_2.JPG]

Figure 8.15: Serpentine Trail – The trail curves around to the right to the Jaguar exhibit (see Figure 6.16) where it doubles back on itself to the Puma exhibit. Philadelphia Zoo, Philadelphia, Pennsylvania. author – [file:\PHZ0881.JPG]

<b>*Visual Zones and Scenic Corridors* –
The concept of visual zones and scenic corridors is a continuation of the sequencing and managing the vertical and overhead planes discussions. It is illustrated in the rail-to-trail examples and in the Big Cats Falls interpretive trail at the Philadelphia Zoo. The concept is used in managing scenic rivers which are linear trails also. In the next chapter, the concept is an integral building block in both the overlay system used at Antietam National Battlefield and in the determination of the sensitivity level in the Forest Service's Visual Management System.

The concept is useful in enabling what people can see, and it is equally useful in viewing the barriers it creates to what people can see. The previous discussion emphasizes both points in managing the viewscape.

<c>**Visual Zones** – The visual zones is defined as everything a person can see at a specific point in space (Figure 8.16 and Figure 8.17). It is a three dimensional zone. It includes all of the areas that the person in the bottom of the canyon can see from the vantage point. Conversely, it involves barriers that prevent the person from seeing in this illustration the other person in the nook on the side of the hill or anything lying over the top of the canyon. The visual zone becomes the map of everything that can be seen from this location. Figure 8.16 illustrates the basic concept graphically.

Although visual zones are usually associated with outdoor resources, the concept is equally applicable to man-made and indoor facilities. Main street at Disney World demonstrates the use of visual zones. A takeaway lesson from Disneyland in Anaheim, California was that visitors to the park could see features outside the park from inside the park. This reduced the experience of the Magic Kingdom or the creation of a separate world removed from the outside world. This issue was corrected with the design of Disney World. The storefronts on main street are designed to visually block the sight of the parking lots and
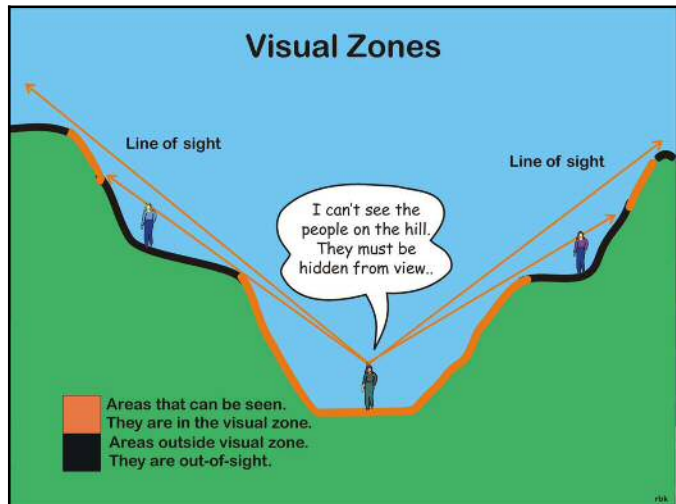
Figure 8.16: Visual Zone (1) – The visual zone includes everything a person can see at a specific point in space. Source: Author – [file:\ScenicCorridor01.jpg]

Figure 8.17: Main Street – A lesson learned from Disneyland was to create visual zones that visually blocked any connection with the outside world. Stand in the middle of main street. The building facades block the parking lots and support services on the backside of the buildings. Disney World, Orlando, Florida. Source: Author – [file:\DS083-other side.jpg]

supports services located behind the store fronts and buildings (Figure 8.18).

In Figure 8.17, stand in the middle of Main Street in the Magic Kingdom at Disney World. The visual zone is everything that can be seen at that specific location. The store fronts on both sides of the street are visible. So is the train station at the end of Main Street. The roof line of the buildings visually separates what is seen in the foreground and what is seen behind the buildings. In this case, only the sky is visible. To be effective in designing the experience, other sensory inputs of the outside world need to be blocked, particularly auditory sounds of vehicles in the parking lot. The buildings act effective sound barriers. The end result is Disney's success in creating a separate world removed from the outside world, the Magic Kingdom.

Figure 8.18: The Other Side of the Facade – The other side of Main Street is parking lots and support services. The scene looks like a shopping mall. It demonstrates the ability of designing visual barriers to create a visual zone that limits what visitors see. In order to complete the experience, other sensory inputs are blocked, particularly auditory sounds. It demonstrates Disney's success in creating an experience. Disney World, Orlando, Florida. Source: Author – [file:\DW2000-014.jpg]

<c>**Scenic Corridor** – The scenic corridor is defined as the collective mapping of all the visual zones along a trail or other corridor (Figure 8.19). It is the collective mapping of what can be seen from all the points along the road or trail (see Figure 8.18). It is a three-dimensional mapping and it includes all the overlapping areas from the individual visual zones. In Figure 8.18, it is all the visual zones as a person walks down Main Street. Also, it includes the visual zones when standing on either side of Main Street.

As a management tool an important consideration is whether the visual zone and scenic corridor utilize the topographic land features or whether they include the height of the vegetation in their determination. Although conceptually it includes vegetation, as a management tool, it may be more prudent to use the
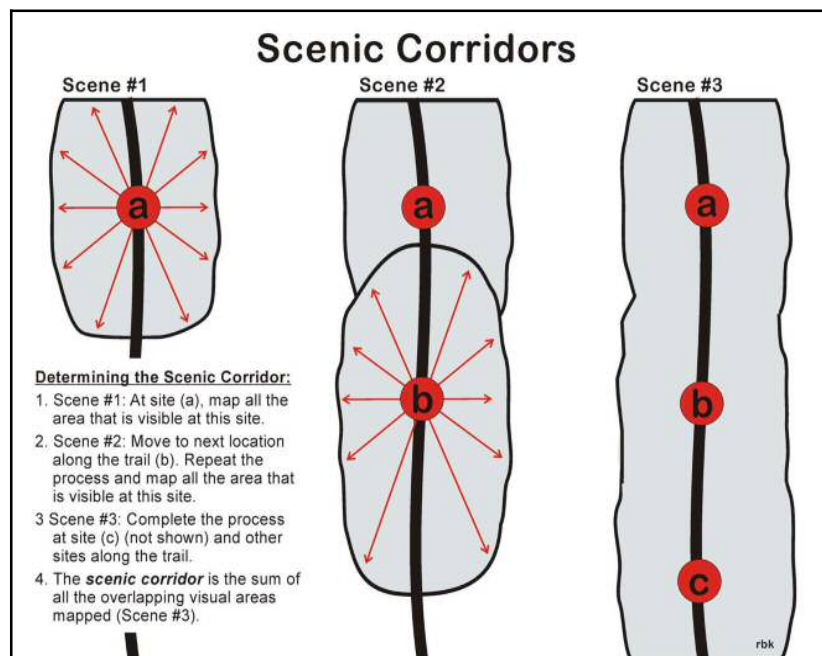
Figure 8.19: Scenic Corridors – The scenic corridor is the collective mapping of all the visual zones along a trail (see visual zones in Figure 8.16). Source: Author – [file:\ScenicCorridors[144].cdr]

topography without vegetation. This became an issue in determining the scenic corridor on the Upper Youghiogheny Scenic River in Maryland. The State DNR determined the corridor using the ridgeline of the canyon without trees. In the illustration in Figure 16, add a forty-foot tree-lined rim of trees along the lower ridge and the visual zone changes significantly. For the farmers on the backside of the rim, this made a significant impact on their farms and on their land use. Their point was well taken and the State compromised. In this case, there would be no timbering in the corridor and it was safe to conclude that the ridge would remain tree lined. This example illustrates the importance of calculating the visual zone with or without vegetation. The Main Street example provides a good contrast (Figure 8.18). The ridgeline is clearly the demarcating line and it is obvious from the photo that the height of the vegetation is not a consideration in determining the visual zone.

The visual zone and scenic corridor are impacted by the viewing distance (see Figure 7.23). Obviously, scenes in the foreground typically have more impact than background scenes. In the next chapter, the overlay system developed for Antietam National Battlefield focused primarily on managing the viewshed from the auto road lying in the middle-ground and background. These areas tend to be more tolerant to modifications than the foreground. Also, in the next chapter, the Forest Service's Visual Management System incorporates the visual impacts in the fore, middle and backgrounds in the determination of sensitivity levels.

Organizational Structures

Organizational structure helps to provide a sense of order to spatial compositions that otherwise might be viewed as incoherent. It can unify or tie together seeming unlike or dissimilar elements. It can direct the movement of the visitor within the landscape or direct the eye toward elements and away from other elements.

<b>*Axis or straight line* – A line element is a basic element that is used to form an axis or combined together with other line elements to form a grid or orthogonal structure. An axis can be used to unify like or unlike elements. The boardwalk in Corkscrew Swamp (see Figure 7.2) connects the swamp with the woods in the background. The intersection of axises creates focal points, or a diagonal can create emphasis. A straight line can provide a strong or dominate element by itself. The promenade at Canal Place (see Figure 7.15) is an example of a strong or dominant linear element. The brick walkway connects the seemingly unrelated elements of the rectangular patio area with the circular Greenhow garden area (see Figure 8.31 and see Figure 8.32).

<b>*Grid*– A grid or orthogonal grid is formed by intersecting lines or squares and rectangles juxtaposed with each other. The grid can become quite sophisticated and combine elements that seemingly breakup the right angles created by the underlying grid. For example, the paving in the background of Centennial Park (see Figure 7.08) is comprised of a series of orthogonal grids. Variations in the basic grid design can become sophisticated. The parallel lines may be unequally spaced. The focus may be on the intersections rather than the axises forming the grid. It is possible that only the intersections are identified with objects while the parallel lines are implied but not delineated. The classic design of Fallingwaters by Frank L Wright is a series of orthogonal grids that mimics the rhythm created by the rock strata (see 7.19 and Figure 8.24).

<b>*Symmetry* – *Symmetry* is the process of placing opposing but similar elements along an axis. Brook (2012, p.22) notes that symmetry is a basic organizational structure in both the natural and man-made world and that it is often mistakenly considered a characteristic of only the man-made world (i.e. Note McHarg (1992) quote in Chapter 5 regarding "Nature abhors a straightline."). However, many natural features display symmetry in their features. For example, most leaf structures and flowers display symmetry. Brook (2012) identifies three types of symmetry.

Figure 8.20: Ocean City Backyard – The backyard of a seaside property in Ocean City, New Jersey illustrates a strong bilateral symmetry. There are some differences in the plantings, but they are close. Ocean City, New Jersey. Source: author – [file:\OCNJ407[vg].jpg]

<c>**Bilateral Symmetry** – In bilateral symmetry, usually a walkway forms an axis that divides the landscape in half. In its pure form, each half is a mirror image of the other half. Illustrating bilateral symmetry is a random backyard along the boardwalk in Ocean City, New Jersey (Figure 8.20). There is a walkway down the center of the proper traversing through the center of the gazebo. The plantings on each side of the center walkway are virtually a mirror image of each other. There are a couple of subtle differences, but otherwise, there is excellent bilateral symmetry. For the most part, Versailles displays this bilateral symmetry also (see Figure 8.21)
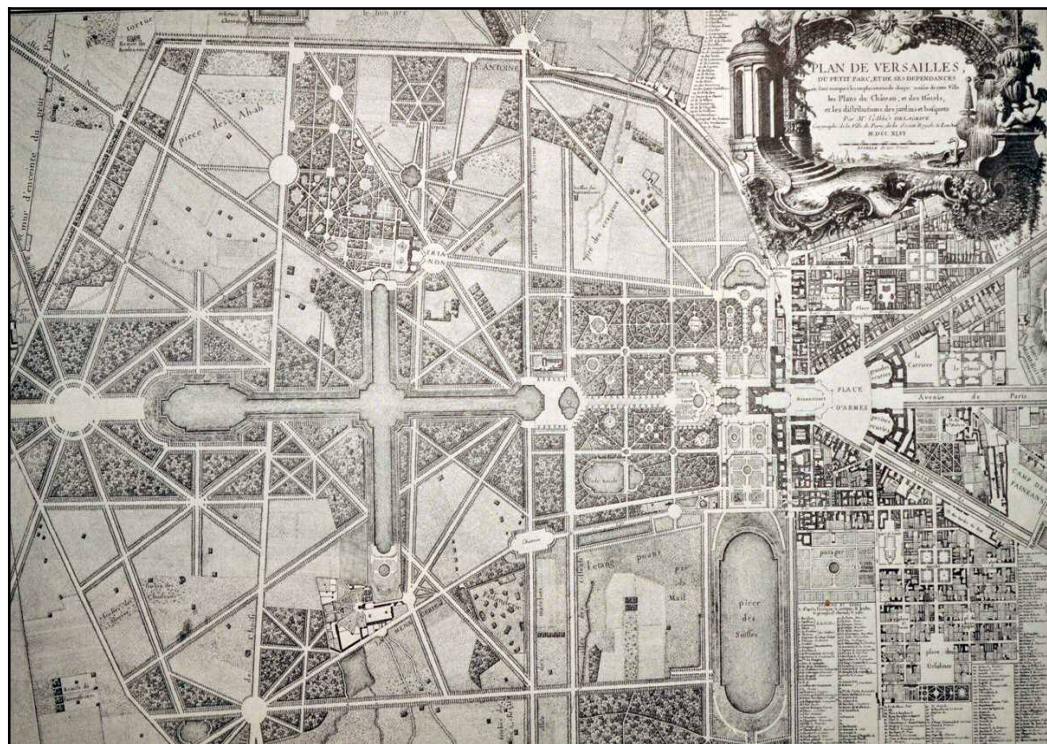
Figure 8.21: Versailles – The gardens of Versailles demonstrate both axial and cross-axial symmetry. Source: other – [file:\Versailles007.jpg]

<c>**Cross-axial Symmetry** – Cross-axial symmetry are axises off of the main axis that have bilateral symmetry to the axises. Versailles is an example of the many cross-axial axises emanating from the main axis which forms the main concourse (Figure 8.21). The main axis of Versailles is the horizontal axis in the center of the diagram in Figure 8.21. The palace or chateau de Versailles is located on the right of the diagram. Take any of the axises emanating at a right angle from the main axis. These axises are the cross-axises and they too are symmetrical.

<c>**Radial Symmetry** – In radial symmetry there is a center point or center focus. It may be a topiary, planting, or other focal point. Everything either radiates outward on axises emanating from the center point or in concentric circles emanating outward from the center. The garden outside the Barrington Mansion (see Figure 7.6) demonstrates this principle as does the garden behind the Greenhow House in Williamsburg (Figure 8.22). The topiary is the center point and the brick walkway and boxwood hedge form concentric circles emanating outward from the center.

The current garden behind the Orlando Jones house at Williamsburg was designed in 1939 by landscape architect Arthur Shurcliff (Figure 8.23). It shows how the rules can be challenged and in doing so reinforce the basic rules. The garden is slightly atypical of the 18th century garden it emulates but by being atypical, it demonstrates the basic principles

Figure 8.22: Greenhow garden – A typical 18th century garden, the Greenhow garden has a topiary or other attraction in the center with concentric walkways and hedges emanating outward. Williamsburg, Virginia. Source: author – [fig0818-WB048.JPG]

Figure 8.23: Orlando Jones Garden – The Orlando Jones Garden at Williamsburg bends some of the rules of a traditional radial garden. The mulberry tree is planted off-center and the island uses an oval rather than a pure circle. Otherwise, it demonstrates the principles of a typical radial design. Williamsburg, Virginia. Source: author [file:\fig0819-WB068.jpg]

of radial symmetry. A mulberry tree is planted just off-center rather than in the perfect center of the garden. Next, the garden is an elongated circle or oval rather than a being a perfect circle. Even with these deviations, the tulip planting, brick walkway, and boxwood hedge form concentric circles moving outward from the mulberry tree. The walkways radiate outward as axises from the center and the four benches are symmetrical to the walkways and are focused inwardly toward the center of the garden. The scene was photographed from the walkway leading from the house. In violating or bending the rules of the traditional 18th century garden, the Orlando garden actually reinforces it heritage.

As with axial and cross-axial symmetry, radial symmetry can be found naturally in nature also. Often there is a tendency to attribute radial and bilateral symmetry to only the artificial or man-made environment. This is not necessarily the case. Most flowers exhibit radial symmetry as do ferns and most multi-leaf plants exhibit bilateral symmetry.

Figure 8.24: Fallingwaters – Fallingwaters illustrates the concept of asymmetry. Consider the center stone column as the center or primary axis. Although the structure on the right is larger than the structure on the left, it is offset by the structure on the left. Ohiopyle, Pennsylvania. Source: Author – [file:\FW148.jpg]

<b>*Asymmetry* – Where symmetry trends toward placing equally sized and liked shaped objects in a mirror image along an axis, *asymmetry* creates balance with unequally sized or dissimilar shapes on opposite sides of an axis. It creates an equilibrium between the elements. Fallingwaters demonstrates asymmetry and balance (Figure 8.24). The center stone column of the building forms the center or primary axis much as the promenades form the major axises found in formal parks. Although the structure on the right is larger than the structure on the left, their masses offset each other and create an asymmetrical balance with the unequal structure.

<b>*Balance* – Imagine the scales of justice or a similar type of scales. When the visual weight on one side of the scale equals the visual weight on the other side of the scale, there is balance. The object on one side may be large but less dense than the object on the other side of the scale and still be balanced. Since they are mirror images of themselves, symmetrical landscapes tend to be balanced by definition. Asymmetrical scenes also display balance. Fallingwaters is a good example of a building displaying asymmetrical balance (Figure 8.24).

<b>*Visual Weight* – Individual elements and combined elements in the landscape create a visual mass that has dimensionality and perceived weight to it. It is a visual concept that is conceptually similar to texture or how an object feels visually. Denser and darker objects tend to have greater visual weight to them. Also, visual weight is related to the concept of balance since often there are offsetting masses that because of difference in their density or color tend to balance each other (Parker and Yijun Yu, 2009, p. 155).

Unifying Principles

Elements in the landscape can be unified. This is where objects are viewed as one or as belonging to the same set of objects. Booth (2000) notes that there are several ways to unify objects including elements that have unlike forms. First, the previously discussed axis and grid can be used to unify elements in the landscape.

<b>*Compartmentalization* – Next, like or even unlike objects in the landscape can be *encircled* to achieve unification. In a sense, the encircled area creates a frame around the objects or a compartment because it contains the objects. The hedges surrounding the Greenhow (Figure 8.22) and Orlando Jones (Figure 8.23) gardens demonstrate encirclement. Visually, the tree planter in Centennial Park, Atlanta (Figure 7.8) creates a unified whole that ties together the individual elements of the lights (square),

grating (square), the void between the tree trunk and the grating (square and circular), and tree trunk (circular).

<b>***Merging Objects or Interconnection*** – Physically *merging objects together* can unify objects. The merging can be facilitated by similarities in the objects also. Also as previously noted, as objects recede into the background, they tend to become interconnected and merge together into a single mass. The tulips in the Orlando Jones garden are spatially planted in close proximity to each other and are viewed as belonging with each other (Note: They are not in bloom in the photo). The hedges are formed by planting a series of plants in close proximity.

Viewing distance can easily merge objects together. Objects in the background will normally tend to merge together. The snow on the mountains in the background of Cades Cove (Figure 7.1) is unified as a singular mass. At the Kangamangus overlook (Figure 7.23), the forest in the background of the scene visually presents a unified single mass.

<b>***Similarity*** – *Similarity* is another way to unify elements. Similar *color, form*, and *size* can be used to unify elements in the landscape. The clearcut area in Figure 7.10 is unified because of the size and color created by the clear cut. The individual bricks in the patios and the walkways are viewed as a singular mass because of their color, size, and shape (see Figure 7.6, Figure 8.2, Figure 8.20, and Figure 8.30).

<b>***Emphasis and Dominance*** – Booth (2012, p. 26) notes that dominance can be created by contrasts in *tone, size*, and *color*. Commissioned by Gordon Strong in 1925, Frank Lloyd Wright proposed the Sugarloaf Planetarium to sit atop Sugarloaf Mountain near Frederick, Maryland (Figure 8.25 and Figure 8.26) (Reinberger, 1984). Its size, shape, and color would differentiate the structure from its surroundings and the structure would dominate the visual landscape and its surroundings. Although it is not a large mountain, Sugarloaf Mountain comparatively dominates its surrounding landscape (Figure 8.26).

In terms of dominance, it is interesting to juxtapose the Sugarloaf Planetarium with Wright's Fallingwaters (see Figure (8.25). Fallingwaters expresses both dominance and lacks dominance at the same time in the same structure. When viewed from below the falls, the structure dominates the landscape. It stands above the falls and clearly overlooks it (see Figure 8.24). However, in terms of its entrance and the approach used by people visiting the building, Fallingwaters lacks dominance. It is located in the valley and not on a knoll or high spot. It is secluded, and it is virtually hidden from its surroundings. Reflecting a Shinto influence on Wright, a subdued main entrance to the house is in the rear of the building and requires a journey to discover it. This is atypical to most buildings in western society where the architectural strategy is to prominently display the entrance. Also, it is in contrast to the proposed Sugarloaf Planetarium.
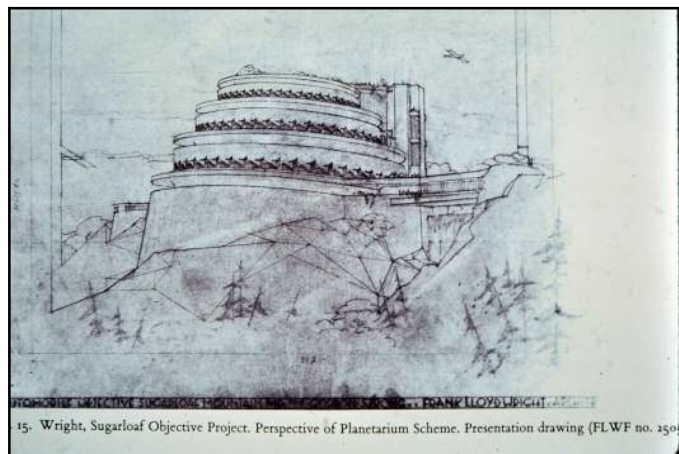
Figure 8.25: Sugarloaf Planetarium – Designed by Frank L Wright to sit upon the top of Sugarloaf near Brunswick, Maryland, it would have sat on top of the mountain like a top hat and it would have literally dominated the mountain summit and the surrounding valley landscape. Source: Reinberger, M., (1984, p.44) [file:\SugarloafPlanet.JPG]

Emphasis can be created by focusing, containing, or leading the eye. The boardwalk in Corkscrew Swamp leads the eye along the boardwalk and into the trees (see Figure 7.2). The second story window at the Barrington Mansion contains the eye and focuses it on the outside garden (see Figure 7.6). Looking out the window, it is difficult to see or focus on anything but the garden.

<b>*Convergence* – The orientation of the base, vertical and overhead planes can direct and move the eye toward specific locations in the landscape. Conversely, the same orientation of planes can be used to move the eye away from specific locations. In Figure 8.28 as a person views the scene, the person's eye normally follows the vertical (canyon walls) and base planes (water) to the place where they converge. As a footnote, this is a modern picture of Kolana Peak from Surprise Point in Hetch Hetchy after the dam was built. Convergence in this scene is where the different planes intersect or meet (Figure 8.28).

The principle of convergence can be used in locating building and other support services to either enhance their prominence or to diminish them. In Figure 8.29, two identical buildings are placed in the scene. One is located at the point of convergence and the other is located in a more subdued location. The viewer's vision is drawn to the building at the convergence location.

Convergence interacts with and is influenced by the principles of dominance. In Figure
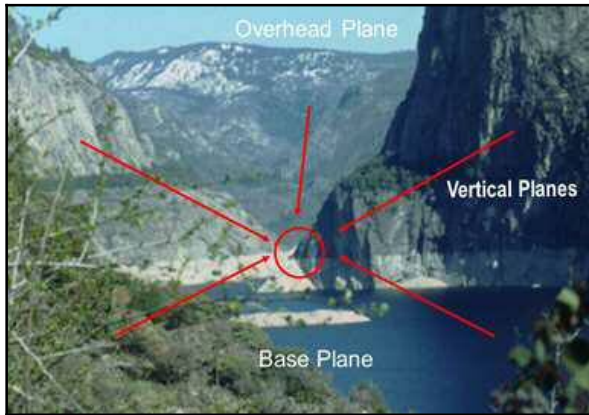

Figure 8.26: Sugarloaf Mountain – Sugarloaf Mountain is not a big mountain, but compared with its surroundings, it is a commanding peak. Imagine Wright's planetarium sitting on top of the mountain like a large top hat. The design would have emphasis and prominence. Source: author – [file:\Sugarloaf[FM1308].JPG]


Figure 8.27: Fallingwaters (lacking dominance) – Wright's Fallingwaters demonstrates both dominance and lack of dominance. From below the falls, the building has dominance (see Figure 8.24). In contrast, its location in the valley and its entrance suggest a lack of dominance (this scene). Source: author – [file:\FW152.JPG**]**

8.30, the building at the convergence point is painted red while the more subdued building remains gray. Again the viewer's eye is drawn to the red building because there is dominance as well as convergence. Compare the red building in Figure 8.29 with the similar gray building in Figure 8.29. Painting it red amplifies the natural convergence and adds a sense of dominance to the building.

Figure 8.28: Convergence – The base and vertical planes tend to converge the viewer's view at the intersection of the planes. Hetch Hetchy, California. Source: photo – unknown; graphics – author – [file:\fig0824-Slide59.JPG]
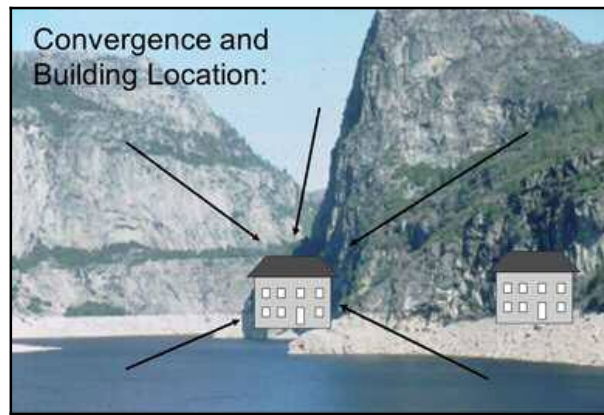
Figure 8.29: Convergence with Two Buildings – This scene superimposes a building at the point of convergence and in a more subdued location. The building at the point of convergence is more prominent. Source: photo – unknown; graphics – author – [file:\fig0825-Slide60.JPG]
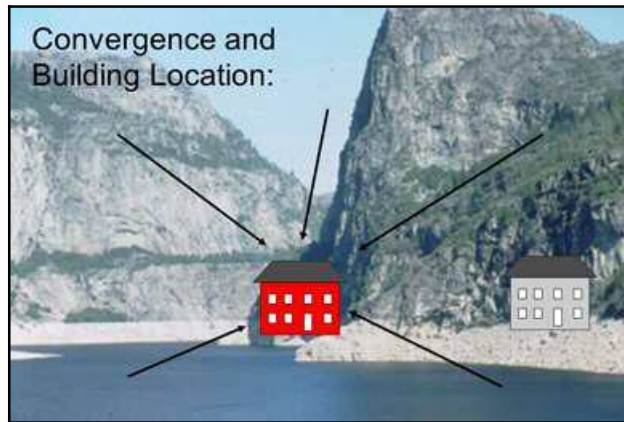
Figure 8.30: Convergence and Dominance – Painting the building red emphasizes the convergence. Also, it creates additional dominance. The dominance combines with convergence to make the building even more prominent than it would be otherwise. Source: photo – unknown; graphics – author – [file:\fig0826-Slide59.JPG]

Transforming Space

Booth (2012) indicates that space can be changed, altered, and metamorphosed into new forms to meet design needs. Take an element that is viewed as a unified whole. Portions of the space can be subtracted or removed from the element. They can be added to, rotated, or another space can intrude into the space.

The Greenhow patio is a space that can be viewed as a whole (Figure 8.31). The patio defines the ground plane. The walls of the buildings define the vertical planes, and the limbs of the trees form the overhead plane. Additional elements can be added externally to the element. An element can be rotated making it new and different. Or, a new and different element can be inserted or interjected into the unified whole.

<b>*Subtraction* – Subspaces can be subtracted from the edges or from within a form. The Greenhow garden at Williamsburg demonstrates both forms of subtraction (Figure 8.31). The small planter in the upper left of the photo is an example of subtracting subspace from *within* the brick patio. The planter on the right is an example of subtracting subspace from the *edge* of the form. The planter on the right can be viewed as pushing into or intruding into the brick patio. Second both intrusions create lines and corners where the spaces intersect.

<b>*Addition* – A second strategy of transformation is the addition of one major or primary space to another. Normally, in an effort to create overall cohesiveness, its geometric form is similar to the primary shape to which it is being added. For example, a rectangular area would normally be added to another rectangular area. Centennial Park depicted in Figure 1.4 is a series of rectangular spaces or *face-to-face additive transformation* where the rectangular spaces have common borders. Often the additive feature will intrude slightly or *interlock* with the primary space (not shown).

When the additive transformation is located near or in close proximity to another primary space, it creates a *spatial tension*, particularly if the additive space has a different primary shape or composition. Also, the further away the additive space is from the primary space, the weaker the tension becomes. The closer the features, the greater the tension. The circular Greenhow Garden (Figure 8.22) is

Figure 8.31: Greenhow Patio (part 1) – The Greenhow patio demonstrates the principle of subtraction. The small planter subtracts space from within the patio. The planter on the right subtracts the space from the edge. Williamsburg, Virginia. Source: author – [file:\fig0827-WB051.JPG]

Figure 8.32: Greenhow Garden (part 2) – The circular Greenhow garden is located in close proximity to the rectangular patio. The difference in form creates a tension between the two elements. Williamsburg, Virginia. Source: author [file:\fig0828-WB046.JPG]

located near the rectangular patio area (Figure 8.31 and Figure 8.32). The circular garden in Figure 8.22 is a closer view of the same garden pictured in Figure 8.32. For orientation purposes, the rectangular patio is shown clearly in the foreground of the picture and the same tree on the right in the foreground is now on the left in the picture. The transition from a rectangular format of the patio to the circular format of the garden in somewhat close proximity creates a tension and possible design conflict.

<b>**Rotation** – A primary space can be rotated on axis or presented off axis within another space. A square area can be rotated forming a diamond. Normally, the space is viewed in the context of its surrounding environment. The rotated space can be subtracted or added within the space or located on its edge. A typical example of rotating an element is a stage area located in the corner of a grid so that its seating arrangement forms an arch outward.

<b>**Intervention** – Intervention occurs when a totally different form is interjected into the landscape. It creates emphasis or an intrusion into the space. It could be an element that would normally be out of place, and because it is out of place, it becomes an integral part of design.

Summary

The previous chapter focused on the elements found in a landscape. This chapter focuses on how to assemble these elements to create viewscapes. Traditionally, many people don't normally think that the visual landscape is manageable. However, it is and this chapter provides the fundamentals of managing the visual landscape. It introduces the concept of the outdoor room which can be applied to both expansive large spaces and to smaller spaces that more approximate actual living space. It demonstrates how the planes can be manipulated to create experiences. It introduces the concepts of sequencing these experiences to create interest and variety along with the concepts of visual zones and scenic corridors. The chapter introduces the principles used in both unifying and transforming space to enhance the experience.

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