MATERIALITY OF PLANTS IN THE LANDSCAPE
Plants as space-defining elements (Part One)

Introduction

Materiality[i] of plants is the concept of, or applied use of, various plants including trees, palms, shrubs and groundcovers as building materials and/or substances in the landscape. Man's relationship with plants is complex and multifaceted. We live with and use plants in many ways. One such primary relationship with plants that is deeply ingrained in us is the perception of plants as space-defining elements, through our living in the spaces that were formed naturally by plants such as the forest, the forest canopy, the savannah etc. However, our conscious efforts to form spaces with plants probably did not begin until after the creation of the first gardens. Indeed, the first gardens were more likely spaces to house plants, then spaces enclosed by plants. The enclosures of such garden spaces were often walls built of stones and/or bricks or fences or markers set to protect the rights to a property such as the hunting grounds of a royal family. Nonetheless, our perceptions of plants as elements that define the landscape spaces would have been inevitable as we navigated and moved within the natural environment. An understanding of how plants defined spaces can offer garden and landscape designers a more conscious and deliberate application of these perceptions in the design and building of landscape spaces.

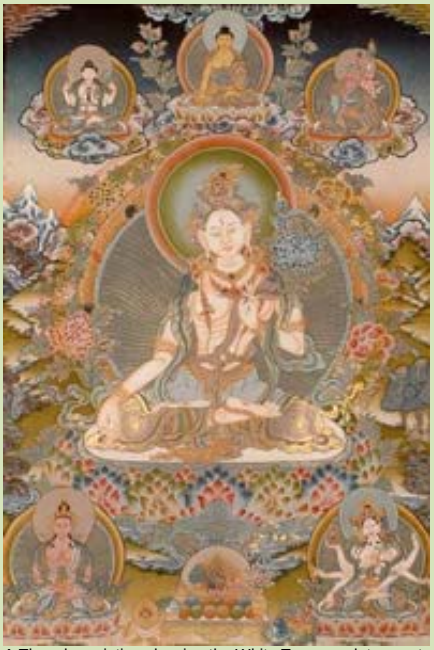
Plants of our imagination

In the book *The Landscape of Ideas*, Patrick Nuttgens wrote: "The very beginnings of the landscape are dictated by the way in which Man has reacted to the difficulties and challenges of Nature. The demand is for survival and improvement, and in an unsophisticated world the shapes and forms of man-made places are explained almost wholly by his reaction to his condition." In this unsophisticated landscape, we perceive plants first and foremost as food and resources. They nourish us; provide material to clothe us, as well as logs, with which to build our shelters. However, the plants of our imagination soon assume other significance. In the religious depictions of plants such as in the book of Genesis, morality was a fruit of the "Tree of Knowledge of Good and Evil". Similarly, in Buddhism, the lotus plant represents the progress of the soul from the mud of materialism into the light of enlightenment.

Box-up Note 1:

Religious stories in different cultures underline the significance of plants, for example, the "Tree of Knowledge of Good and Evil" in the story of Genesis and the "Lotus Seat" of the Hindu, Buddhist religions.

Adam and Eve, Lucas Cranach, 1526 oil on panel, Courtauld Institute of Art Gallery, Samuel Courtauld Trust



A Thangka painting showing the White Tara on a lotus seat

Box-up Note 2:

In this painting on the left from ca 1590 of a Mughal garden, the garden as a walled-in entity is depicted.

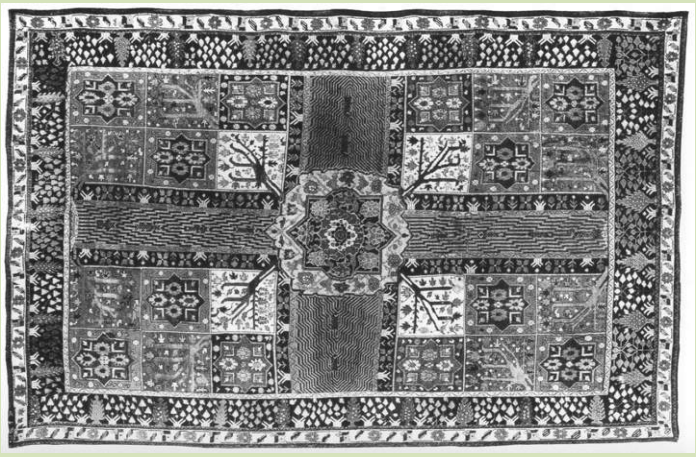
The Mughal Emperor Babur (r. 1526-30) about to oversee the laying out of a garden, using lines, from, London, Victoria & Albert Museum

In this painting below from ca 1825, trees and plants can be seen reinforcing the wall enclosure, but not replacing it.

Ganesha, Saraswati, and Jallandharnath, ca. 1825 - Opaque watercolor on paper - Attributed to Amardas
32 1/2 x 61" - Mehrangarh Museum Trust

In appreciating the use of plants as space-defining elements, it could be speculated, that there exists a relationship between the position of plants in our mind and the position of plants in space. It would, however, be possible to study the structural space-defining qualities of plants devoid of any meanings and contextual inferences and understand them purely in spatial terms. To do so, we will have to borrow heavily from the spatial vocabulary of architecture.

Box-up Note 3:



This is an example of the relationship between the position of plants in our mind and in space: A Persian carpet, woven about 1700 with a pattern that depicts a garden of chahar bagh type: the four water channels are often associated with the four rivers of Paradise, described in the Koran, which flow to the four quarters of Heaven or from them towards the centre. Fruit trees and Italian Cypress trees represent life and death respectively and are positioned in the garden accordingly.

Understanding plants in spatial terms

The basic spatial terms that are relevant in describing the space-defining qualities of plants include:

i) the vertical linear element

ii) the overhead plane

iii) the vertical plane

in accordance to the definitions by Francis D.K. Ching in his book "*Architecture: Form, Space & Order*". But first, let us answer the question "What is space?"

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What is space?

Space is the boundless, three-dimensional extent in which objects and events occur and have relative position and direction[ii]. We perceive space through the awareness of the relative positions of our own bodies vis-à-vis objects and events around us. Hence, where objects, including our own bodies, are perceived as masses in the void of space, they at the same time define the space that is experienced. Mass and void, object and space can be said to co-exist. Both mass and void is best appreciated through movement. This will be apparent in the explanations on the different space-defining qualities of plants that follows.

The vertical linear element

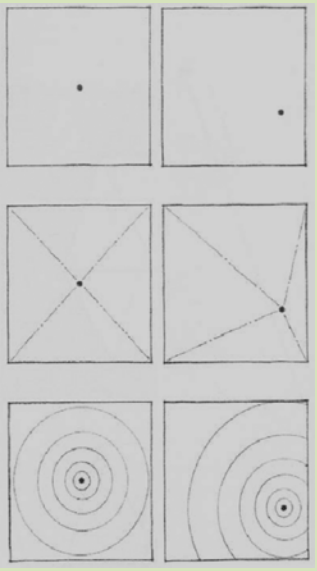
A vertical linear element in the landscape is an object within the landscape space that is very much higher then it is long or broad.

Examples of these include tall poles, obelisks, pillars, columns and other tall and linear structures.

In the natural landscape, the trunks of trees behave as vertical linear elements.

Figure 1 shows how the trunk of a palm tree behave as a vertical linear element in space, experienced through the observer's movements.

Box-up Note 4:
On plan, the vertical linear element is represented by a point. A point represents a position in space. A true point is invisible to the naked eye because it has no dimension. Any visible point is in effect a circular plane.



images from Francis D.K.Chng's Form, Space and Architecture

Figure 1 : The trunk of a palm as a vertical linear element in the landscape

The overhead plane

An overhead plane is an object within the landscape space that is above the head with dimensions, i.e. length and breath that are generally more then the length of our body. Any forms of roofs are therefore experienced as an overhead plane. The underside of a rain tree's canopy also acts like an overhead plane.

Figure 2 : This entry porch is a good example of an overhead plane, with the columns behaving as vertical linear elements in this landscape.

Figure 3 : The rain tree canopy extends its cover like a shelter, defining the space below with an overhead plane.

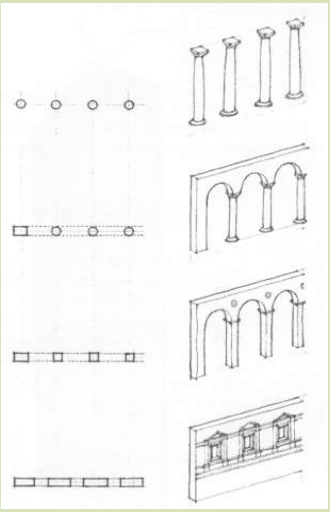
The vertical plane

A vertical plane is an object within the landscape space with its length and height influencing our spatial perception prominently. A wall is a typical example of a vertical plane, but so is a tall hedge along a footpath. A vertical plane can sometimes be porous, such as a fence or a row of columns. Perceived as a group, a row of columns assumes the spatial qualities of a very porous wall. Hence, a row of trees behaves similarly. When a vertical plane defines space, it has direction and orientation vis-à-vis the space. Its porosity will determine the visual as well as physical connection between the spaces it connects. In other words, whether or not one can see through or walk through the vertical plane.

Figure 4 : Here, an opening was created in a vertical plane formed by weaved plant material and climbers. The opening allows visual as well as physical connectivity and serve as a gateway.

Box-up Note 4:

Variations of a vertical plane with different "porosities"



images from Francis D.K.Chng's Form, space and Architecture

The effect of the height of the element on spatial quality

The three basic spatial defining qualities of plants can be interpreted by: the vertical linear element (the trunks of trees), the overhead plane (a tree's canopy), as well as the vertical plane (a row of trees, shrubs or hedge). Different heights of these elements affect the quality of the space they define through their visual and physical relationship to our body.

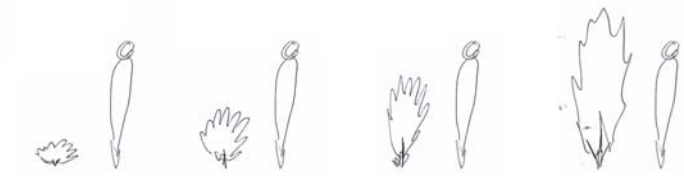


Figure 5 : The height of the space forming elements relative to the human height influences the visual and physical connectivity of the spatial quality.

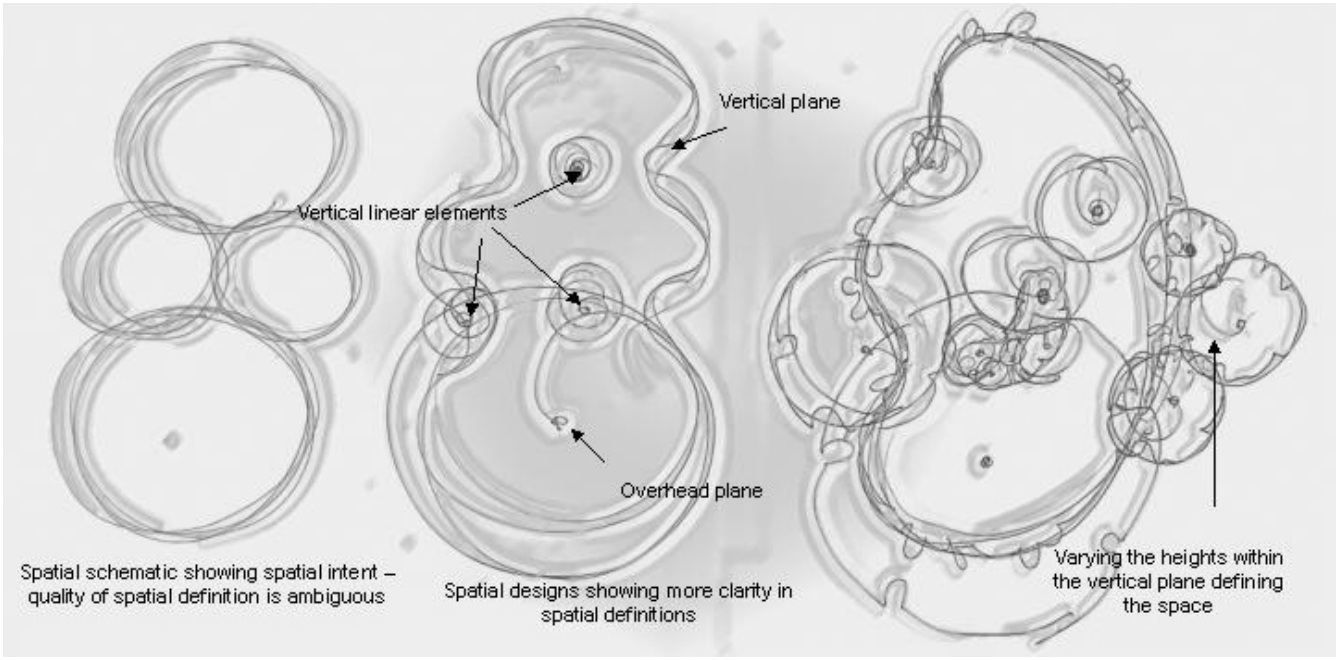
Box-up Note 5:

The path here is spatially defined by multiple layers of vertical planes, a porous one formed by the palms and a less porous one made of thick vegetation.

Designing and representing plant-defined spaces on plan

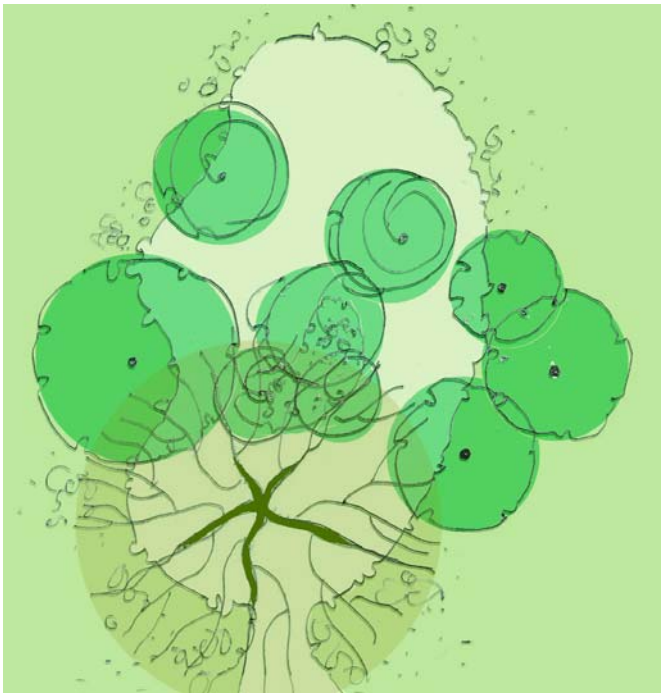
Figure 6 outlines diagrams commonly used by landscape designers in the design process during spatial considerations. Often, an initial idea of the space is represented in a spatial schematic expressing the relative size and position of spaces desired. Next, the designer will decide more specifically how he wants to describe the spaces using a combination of the three basic spatial definition techniques. Adjusting the heights of these elements will further fine-tune the spatial quality.

Figure 6 : Sketches showing the progress during the design of space using plants as space defining elements



The final design can then consider the different textural and visual quality of the plant material used to define the space. The drawing on the right, Figure 7, shows how the design begins to give more details in terms of how plants of different textural and visual qualities are used.

Figure 7 : Planting layout following concept sketches in figure 6



Conclusion

Understanding the three basic definitions of space using plants enable a conscious and deliberate spatial treatment during garden and landscape designs. Further techniques that can be adopted include spatial organisations and spatial ordering using plants. These will be shared in "Plants as space defining elements (Part Two).

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[i] **materiality (architecture)** (2009). In Wikipedia. Retrieved October 16, 2009, from Wikipedia: http://en.wikipedia.org/wiki/Materiality_(architecture)

[ii] **space**. (2009). In *Encyclopædia Britannica*. Retrieved November 10, 2009, from Encyclopædia Britannica Online: http://www.britannica.com/EBchecked/topic/879393/space