Landscape and Ecology

Lecture 3

Landscape Architecture

We will start with the definition of landscape architecture and the various types of project carried out by the landscape Architects. Next we will discuss about soft and hard landscape elements then we will discuss in detail about two landscape elements that is landform and water. We will discuss about the various characteristics of these two landscape elements and we will discuss how this can be used in landscape design. We will start with the definition of landscape architecture. Landscape architecture is the art and science of planning and designing the landscape for purpose for human use and the conservation of landscape resources. American Society of landscape Architects define landscape architecture in the form of following ways: It is the analysis planning design and management of the natural and built environment. So landscape architecture involves many types of activities that involves analysis planning design and Management. Over the years the field of landscape architecture has diversified its activities, in response to the needs of the changing world. Today the scope of landscape architecture, princess from large projects such as town planning and national parks to small projects such as residential projects that is landscape architecture covers huge spectrum of projects. That type of projects include: Residential projects parks playgrounds streetscapes, ecological restoration, campuses, Zoological Park, amusement parks, and much more. Does the profession of landscape architecture is diverse in its practice types it includes: Landscape design site planning, urban landscape design landscape planning. Environmental restoration. We discussed about landscape planning and environmental Restoration project in unit 1 we will discuss about site planning and urban landscape design projects later in this lecture series. Today we will focus on landscape design. What is landscape design? It is the conscious articulation of design or Open Spaces taken into account the functional, aesthetic and ecological parameters so as to obtain a meaningful balance between the site characteristics. So this is the process through which the specific quality is given to the diagrammatic spaces of the site plan. It involves the selection of design components materials and plants. So now we will discuss about the various elements of design. The elements in landscape design can be classified into two types. One is hard Landscape element and the other one is soft landscape elements. Hard landscape elements consists of all the built elements in the landscape. So there is a wide variety of landscape elements they include: Paving, retaining walls, Streetfurniture, pergolas, and gazebos. II type of landscape element is soft landscape element. This consists of all natural elements such as plants water and earth. Inthis we will discuss 3 important elements of landscape design. They are landforms, water and plant materials. In this lecture we will discuss about planned form and water. We will start with landform. Land as a solid part of the earth. Its three dimensional relief of the surface is known as topography or landform. It develops as ecological, cultural and technological forces operate overtime on the earth surface. So here you can see the forces of cultural and technological forces whereas here the natural force particularly wind has resulted in type of landform. At the regional scale it is referred as macro landforms. This includes Valleys Mountains rolling Hills and plains. Whereas at the site scale it is referred as micro landform. They include mounds, berms and

slopes. Landform is one of the common component of exterior environment, because all other design element at some point relate to the ground plane. They all rest on the ground plane. So landforms are used by the landscape Architects both as an architect and utilitarian element in design. Landform can be used as a thread that ties all the elements and spaces of the landscape together. This particular quality is lost in hilly areas because ridges and high points divide the lands into separate areas. Landforms serve as the base for all the activities. And it affects drainage microclimate views and definition and perception of space. As we can see you when the landform is above the eye level, it defines or encloses the space and it also abstracts the views. Landforms affect the organization of functions on a particular site. It also affects the aesthetic character of an area. How do we communicate landforms? As designers we use 2D graphic techniques to represent 3D forms at a reduced scale. Most common way of Representation Is contour plan. I hope you all remember reading a contour plan that you learnt in other courses such as site analysis and planning. I will just touch up on the basic. A contour line is a line that passes through points having the same elevation. So your all points along a contour line are at the same elevation. This shows its elevation of 600. Contour interval is the elevation change between adjacent contour lines. So in this case the contour interval is 10. With the help of contour maps slope analysis is carried out by the designer. Slope analysis systematically classifies various categories of slope. In this slope analysis diagram the categories are listed. Zero to 10%, 10 to 20, 20-30 and 30% above.30% above indicates steep areas. So this kind of analysis helps us to determine suitability for various times of uses.

Functional uses of Landforms

Landforms can be used in many ways. It can be used by the designer for special definition or to control views, to influence movements, to affect microclimate and for aesthetic purposes. We will look at each of these users now. The perception of space is influenced by 3 elements of landform. They are the base area of the space, steepness of the adjacent slopes and also the visible horizon line. All the three variables interact to affect one's special perception of space. Perception can be manipulated by changing these variables. For example here if we see a flatland there is no special definition. Whereasvisual definition can be created modifying the landforms or by using other kinds of landscape elements. When the landform is below the eye level, it either implies a space or defines a space. Whereas when it is about the eye level it gives a feeling of enclosure. Especially a sense of full special enclosure occurs when a landform mass fills a 45 degree cone of vision. The next use is to control views. The slopes can display interesting elements for an observer or landforms can be used to screen and undesirable views. In this case parking. Or landforms can be used to conceal partially attractive object in this case the interesting sculpture his hidden from the viewer and is only partially visible. This way a sense of anticipation can be created. Landforms can be used to control movement and effect microclimate. For example for using landforms barriers are created which controls movement in certain direction. It can also be used to deflect wind and Alter the microclimate. Now we will look at some of the uses of landform in landscape design. What we see here is a curved landform landform fulfills multiple functions. For example it encloses a garden or a play area or a multipurpose area. It creates a feeling of enclosure the same time it provides privacy. The circulation part is located on the other side in this way the visitor’s vision of this space is

screened. It directs the visitor only in certain particular direction. You again the amounts are used it leads the visitor to the space that is located beyond. In this case it is a mango grove. This is a public Park and this particular Park is designed to accommodate diverse kinds of uses includes immigrants, children, office workers, and even the homeless. So you're the landforms are used to create zones. Different user groups use different spaces so that way it is possible to share a very small Park. Landforms can be used by purely for aesthetic purpose. And in this case it is earth's culture that is located in a square space of 90 Feet by 90 feet. What we see here is a wave field preparations naturally occurring wave patterns. And in different times of the day the shadows changes and creates interesting patterns. We look at the various uses of landforms and how it is applied in landscape designs. So this ability to understand effectively manipulate landform as part of design processes is an essential skill of the landscape designer. Next we will discuss about another interesting element in landscape designer pallet that is water. It is a basic component of nature .water is a medium within which life process occur. So it is essential to life in the landscape. It is important both as a resource and as a Process as a resource it is a limited one... So maybe the biggest challenge the society faces today is managing this Limited resource. As a Process we learn about hydrological cycle. We need to understand that the various elements of the water cycle are highly integrated. The different Parts or components of the hydrological cycle is interconnected not only with each other but also with other ecological system. Water can be used in landscape for both aesthetic as well as spatial elements. In addition it can also be used to modify microclimate to control sound for recreational purpose and of course it can be used for consumption and irrigation purposes. Water is considered as the most versatile tool because all the visible characteristics of water is directly dependent on exterior factors. For example visible characteristics such as plasticity, motion, sound, reflectivity all depends on exterior factors such as the container, the size, the shape, and roughness of the container determines many visible characteristics of water. Actually we can say that as a designer when we are designing with water it is actually designing the container. In addition to this other external factors such as temperature, wind, and light modify the visible characteristics of water. Water based on its movement can be divided into two types. One is static water and other is dynamic water. Static water is unchanging they are found in ponds and pools. Dynamic water has more energy and dynamic water can be made as Focal Point as it attracts our attention. Dynamic water can be again divided into three types. They are flowing water, falling water and Jets of water. What static water and flowing water can be used as a base plane element? This is the most interesting base plane element nature as well. This falling water can be used as a facial edge. Now we will discuss about each form of water starting with static water. Static water is found in ponds and pools the form it takes is defined by the container characteristics. Appoint me be used to create a feeling of response and tranquility in an outdoor space. It is peaceful relaxing shooting effect on human emotions. It also expresses a balance and equilibrium with forces of gravity. A pond can be used in landscape to link and unify different areas in a landscape as shown here. Lot of mystery and fascination can also be created by hiding the part of a pond behind a clump of trees or hill. In this case the entire point cannot be seen from 1point. That creates a sensation of mystery. As I said before all the characteristics of water depends on the container characteristics. As a base plate material static water body can be used both as a reflective medium and also as a transparent medium. In this case the characteristics such as the finish of the underwater surface

and the condition of water at the surface can be modified to get the decide characters. For example a dark lined pool and and undisturbed surface of water ontop act as a reflective medium as shown here in this case the container has a dark surface and the water is undisturbed. So here the water almost acts as a mirror reflecting all the other elements in its setting. When it is undisturbed the reflected images is precise. Where is when the surface of the water is disturbed or Ruffle by trees or some other external factors then the reflected image closes the preciseness. Again we can see here that it almost gains quality of impressionistic painting. A static water body with light color container and undisturbed water on the surface almost acts as a window. Here you can see the patterns of the container. So here water acts as the window. Another important consideration in designing of static water or any other water body is the edge of the container, the form and the material used along the edges defines the nature of interaction between the viewer and the water .in this case there is no defined edge and so the nature of interaction is very high. Depending on the edge characteristics. Interaction with water changes. Next we will move on to dynamic water. We will start with flowing water. Flowing water is created when, the channel and its bottom slopes, due to gravity water flows. Flowing water expresses movement direction and energy. Characteristics of flowing water depends on the volume of the water, steepness of the slope, channel size and the properties of the channel bottom and sides, what we see here is a smooth flow of water. This is achieved by the channel size. The channel size has equal with and dept. throughout and the channels sides are smooth. So this kind of flowing water is suitable in an environment where the environment is peaceful and casual. In such a setting water can act as an element. But this characteristics can be modified. Turbulence can be created by modifying the container size and also the surface material. We will see some more examples. Here in this case the water channel has boulders and rocks and as a result there is a white water and turbulence is created. Here is another example, here the slope and surface roughness creates white water and also sound. Both static water and flowing water can be used as a base plane element. As a best plane element it can be used to control circulation or to define a moment or to separate spaces. Here are some examples. Here a static water body is used to unify all the elements in the landscape. And at the same time it controls circulation and define space. But we can the visual continuity is maintained. This is another example where the water is used to demark the different areas of activity. This is an Atrium where large circulation happens between two sides of the building .for a static water body here helps in controlling the movement. Static water bodies can be used to divide spaces as we see here, the usable space and the circulation space can take control circulation and allows moment only in certain specific area. Static water bodies as a setting for other landscape in reaching elements such as sculpture. Flowing water can be linear system linking spaces or elements in a landscape. In this example linear water element links 2 urban squares. So in this case it conveys moment. The flowing water here again is an example as it adds spaces and control circulation in this case visual continuity is maintained.

Falling Water

Next we will discuss about falling water. This is a third form of water in landscape. This occurs when there is a sudden drop in the elevation of channel. Falling water expresses the force of gravity dramatically than the flowing water. So it can be used as a focal point in landscape.

Falling water can be divided into three types free fall, obstructed fall, and sloped fall. Free fall occurs when the water falls without any interruption or obstructions. When a water falls and it is interrupted by other elements then obstructed occurs. In a slope for the water falls along a slope surface and the material and character of the slope can be different. It can be smooth or it can be rough and it changes the quality of water. Now we will see some of the examples of falling water. What we see here is a free fall. We see the water is almost like a transparent sheet. Unwrinkled transparent sheet and this is achieved by the edge over which the waterfalls. Here we can see that different edge conditions. What we saw had smooth edge. And this creates almost smooth glass like sheet, whereas when the edge condition changes when there is a plane the water is tripled and white water is created. So here the smooth edge creates a transparent sheet of water where as in this case the edge is intercepted. As a result a smooth sheet of water is converted into transparent bars. This is an example for obstructed fall. Here the volume of water along the edge over it falls and then these obstructions create white water. Such water also creates sound. This is an Example of sloped fall. In this case the sloping surface is stuff. As a result the smooth sheet of water breaks into small drops and these droplets reflects light. As a result we see whitewater. So falling water can be used as spatial edge. As a spatial edge it can act or it can be used for multiple purposes. In this Case this water edge acts as a barrier. Visually it screens the outside view. And the water enhances the quality and at the same time, through evaporation it cools the air. In hot climates this creates favorable thermal conditions. And it also creates white sound. This can be used to mask the noise undecidable noise from the outside. Here is an example where falling water is used to enclose the space and also to keep away undesirable element such as traffic and, noise. The last type and form of water, is jets of water. This occurs when large volume of water is allowed to flow through small openings. Vertical Jets of water usually attracts our attention which is dominant. Whereas non-vertical Jets of water leads eye from one point to another point .Here the water almost creates a mist and dramatic effects can be created at night with the help of lighting. This is another example for water mist. Herethe stainless steel poles are placed and around 20 feet of diameter spherical Mist is created at intervals. As we can see here, it increases the moisture content in the air. So we discussed about the different types of water and how it can be used in design they did not be used alone. They can be combined to create even more interesting. We will see some of the combination here. In this design Jets of water is used along with falling water. So different water elements, water features combined here. Water can be combined with other hard landscaping elements in the landscape. For example there is a sculpture here and water is added as sprays and splashes along very close to the hoofs of the horses. As a result the entire sculpture is animated. And at nights it is even more dramatic. And lighting can create interesting effects at night. Enlightening the water features at night. We discussed about water as spatial and visual element in landscape. It is also used to control microclimate. We saw some examples before. So we will just discussed once again when air is allowed to pass through water body, evaporative cooling occurs and in hot climates comfort is enhanced because of it. The same effect can be achieved when air is allowed to pass through a sheet of water or water spray. Even in this case evaporative cooling occurs and in hot climate comfort condition is enhanced. So we discussed about the various uses of water and how it can be used by the designer. So it is very clear that there is innumerable possibilities of use of water InDesign. But we need to be responsible designer because using water requires in

certain places huge amount of materials and resources. For example in water scarce region water elements are used throughout the year. It can consume lot of materials and resources. In such cases seasonal water bodies can be created or water body can be recycled. Seasonal water bodies can be made interesting too. For example in this case this particular channel drains the water during rainy season. And it looks interesting even without water. In this case the water is recycled and components of recycling elements are integrated into the landscape in an aesthetically pleasing way.