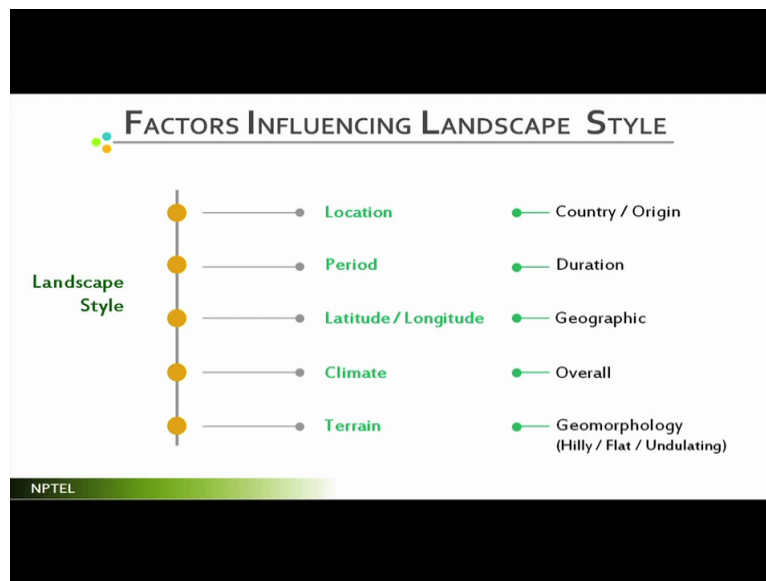


**Course on Landscape Architecture and Site Planning-Basic Fundamentals**  
**Professor Uttam Banerjee**  
**Department of Architecture and Regional Planning**  
**Indian Institute of Technology Kharagpur**  
**Lecture 07**  
**Module 2**  
**Introduction to History of Landscape Design (Continued)**

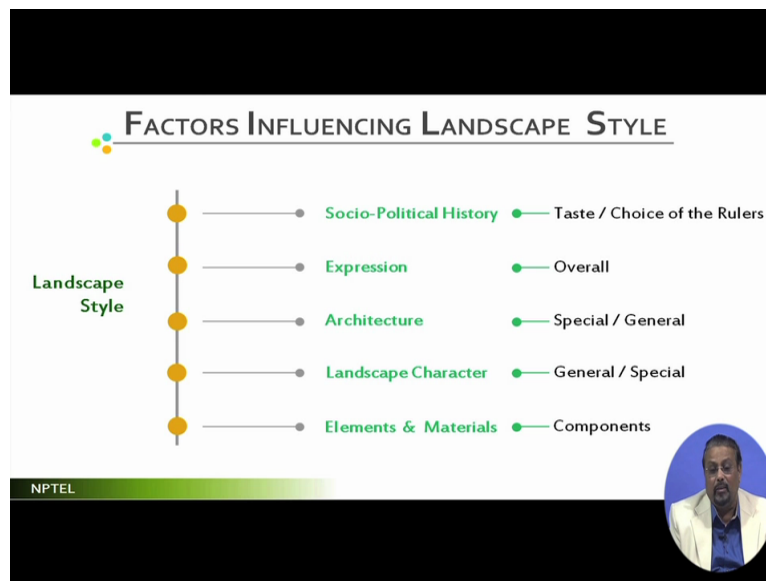
Hello friends, welcome welcome to this section again.

(Refer Slide Time: 0:38)



So far we have discussed about various characteristics of the landscapes categories of landscapes specially the historical one and just for your reference I am again rerunning this particular slide in which just to get an idea that what the landscape styles would be or how would it be analyze it by location which means country or origin, periods, duration, latitude / longitude that is geographic location, climate that is overall and the terrain that is the geomorphology whether it is hilly, flat, undulating.

(Refer Slide Time: 1:10)



And again the next is socio-political history, the taste or the choice of the rulers, then expressions overall expressions what people think about it, what people felt about it and how it has been expressed in the history. Then architecture what is the kind of architecture that we have whether special or general and then landscape character general or special, elements and materials all components and their materials.

Now this all these together it brings us to a situation when we are in a position to discuss various examples. Historical examples in this lecture series we have divided into two parts, one is Oriental part another is European part. In the Oriental part we will be discussing about Spanish or Moorish, Chinese, Japanese and Mughal. And in the European parts we will be discussing about Italian, French, English. So it will come in different sequences.

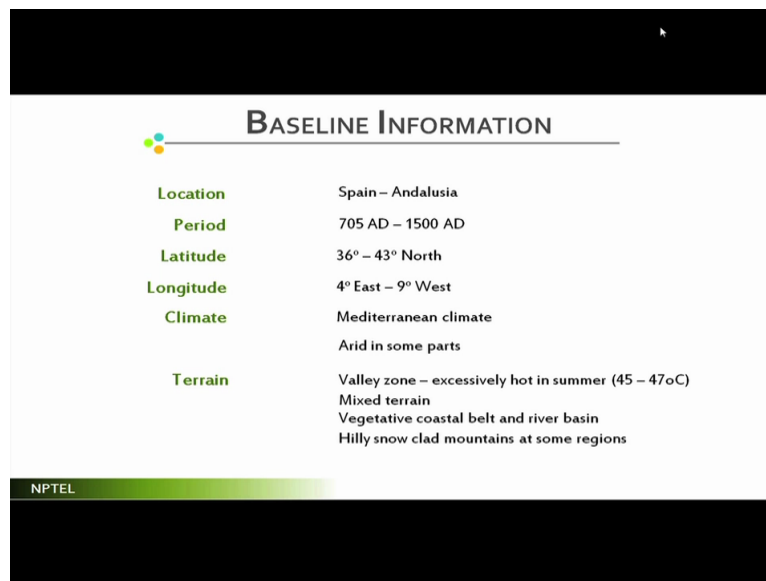
(Refer Slide Time: 2:44)



The first is just give me a minute ya, so now we discuss about various examples in this examples we will focus first on the oriental ones and then later on the European ones. In the oriental we will discuss about Spanish or Moorish landscape, then Chinese landscape, then Japanese landscape and then Mughal landscape. And in the European ones we will discuss about Italian, French and English landscape styles also at the end we will discuss about how the current scenario of landscape styles are means how it is being either being blended or it has been emulated, ok.

Now for the Spanish or Moorish, in the literature quite often you might find this confusion that some somebody is writing or somebody is referring this as a Spanish and some are referring as Moorish. So you take it for granted that it is the same thing, same landscape style.

(Refer Slide Time: 3:34)



BASELINE INFORMATION	
Location	Spain – Andalusia
Period	705 AD – 1500 AD
Latitude	36° – 43° North
Longitude	4° East – 9° West
Climate	Mediterranean climate Arid in some parts
Terrain	Valley zone – excessively hot in summer (45 – 47°C) Mixed terrain Vegetative coastal belt and river basin Hilly snow clad mountains at some regions

NPTEL

So the baseline information is now the location it is Spain-Andalusia, in this this location the entire Moorish landscape got developed. The period is 705 AD to 1500 AD, the latitude is 36 degree to 43 degree north and the longitude is 4 degree east to 9 degree west. This is the region if you recall that when in the earlier discussion I said that when you are talking about the geographic location of this it is basically a domain, a region which is guided by multiple such latitude / longitude that is why you have these variations 36 to 43, 4 east to 9 west that is how it is.

The climate the climate is Mediterranean in general and it is also arid in some parts of it. So this makes it very interesting that at some parts it is very warm, very hot, very dry and in some parts it is very terrain climates. The terrain in the terrain we have the valley zones excessively hot in summer ranges from it goes up to (45 – 47 degree Celsius) that is very hot, it has a mixed terrain so we have the Mediterranean builds as a lower regions and then ultimately the hills and cliffs, vegetative coastal belt and river basin.

So these are all kind of terrain that you do have, also we have hilly snow clad mountains at some regions, that makes it very very varied. Now what they have done is they have very intelligently taken advantage of both the situations, different climate and ultimately develop this particular landscape that we will see through our examples.

But one good thing is about this particular area is they had sufficient amount of water, because that is very much important for landscapes and if there is hot arid then as you know through microclimatic study, that if it is hot arid then water fountain, or sprinklers, or flowing

water that makes a very good combination with the microclimatic creations so that they took the advantage of it.

(Refer Slide Time: 5:45)

The slide features a title 'BASELINE INFORMATION' at the top center. Below it is a table with two columns. The left column lists categories in green text, and the right column provides descriptions. At the bottom left, there is a green gradient bar with the text 'NPTEL'. At the bottom right, there is a circular inset video showing a man in a white jacket and blue shirt speaking.

BASELINE INFORMATION	
Socio-Political History	Originally Moors (Islamic) – later replaced by Christians
Expression	Introvert
Architecture	Symmetric individual Spaces with Non-Axial Layout
Landscape Character	Blended with Architecture
Elements and Materials	Water channels, Fountains, Vegetation

Then comes socio-political history, originally it was inhabited by Moors and they were of Islamic faiths. So the first example that we do see in fact we call this as the one of the oldest kind of example in Spain that is the Cordoba Mosque and in this particular Mosque they have very intelligently introduced a landscape concept which may not appear to you as a typical landscape but the concepts or the philosophies are there.

This particular area socio-politically were invaded the Moors were invaded Moors were driven out and there were lots of wars, Moors are driven out and the Christians they replaced this particular location and then what they have done is they have built they have continued with it. What is a kind of expression that you have, expression is general introvert. The Islam the Spanish garden style is generally introvert.

What is architecture like, symmetric individual spaces with non-axial layout this is very interesting to note. Architecturally as I said earlier that architecture and landscape they gets you know blended at different parts in Spanish architecture individual spaces are very geometric, very symmetrical, very modular but as soon as you go on combining all these spaces they become non-axial.

So this non-axiality means lot of variety to the expression of architecture and then landscape blended with it also became you know a very interesting outcome in this landscape styles. What is a landscape character then, it is blended with architecture as I said it very much

blends with architecture in fact landscape sits within the architecture spaces, that is interesting we will see through examples.

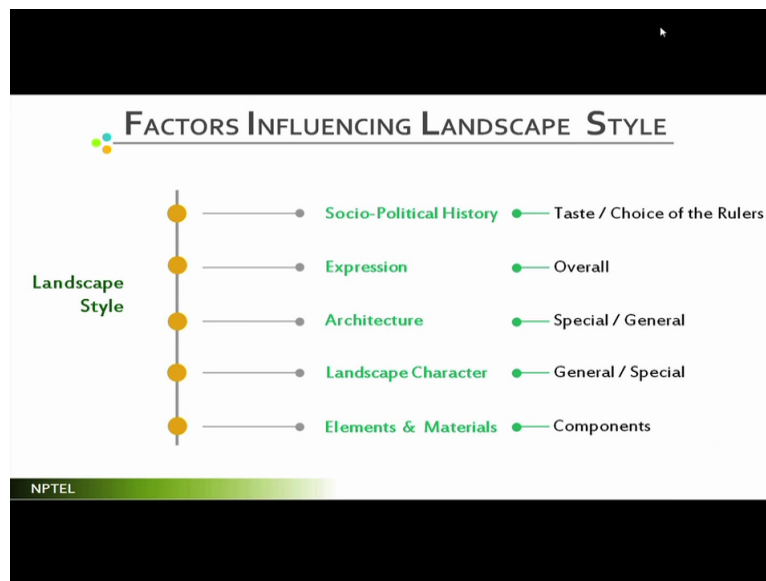
Then elements and materials, ok another thing let me explain. In this while blending with architecture this I should mention, you know other than Cordoba Mosque, the other examples like Generalife at Granada or Alhambra they are generally placed on the hills, on the edge of the hills. What this Spanish people or the Moorish people they have done is they have rather exploited the position of it.

So they always place the palaces and all that on the edges or at the top. And then the whole architectural thing that they have arranged in such a manner that from each of these spaces we can look outside, so they always enjoyed the nature bounty of nature which is surrounding the palaces but inside they have created good landscape. Here this blending which they have done especially this blending is very interesting, they have exploited that ok they should have the windows on the external surfaces and they would look beyond and see the hills, meadows, fields and everything.

When they are indoor they have again landscapes which are not very extensively large in scale. So here in this case you will find that in the Spanish landscape architecture the scale of vegetation, or scale of landscaping is quite very intimate so it is not grand, it is not very very large but it blended with architecture. What are the elements and materials, elements or materials are like say water channels, water they have used very very intelligently and that is for essentially to create a microclimatic conditions which suits in such kind of climates, even at the higher altitudes the temperature is too Mediterranean.

So the thing is the temperature activity reduced. So they had always the water channels, the means the water is to run and they have also used fountains. What we have seen through our research of other landscape styles is this particular kind of style have been used later by many. But hardly any people know that this was originally in their (( ))(9:45), ok. So water channels, fountains, vegetations.

(Refer Slide Time: 9:51)



The landscape styles was through socio-political history it was taste or the choice of the rulers. So essentially what happened is in the locations where we had Generalife or Alhambra, the rulers they decided what will be where. So socio-politically it was the taste or the choice or reflection or taste or the choice of the rulers. Common people had no access to it and common people neither created this nor they have enjoyed it.

Expression was overall in this case. Architecture was very much special in these cases. And landscape character was very much special in these cases and elements and materials were various components in it.

(Refer Slide Time: 10:32)



It was a varying urban silhouettes that they had, it was rich in palaces and gardens, it was also irregular building line, interestingly all the buildings that is placed other than Cordoba Mosque they were all having irregular building lines.

It had dominated arch pattern, in the architecture and it had shaded paths this they have created this shaded paths itself began an component in our landscape.

(Refer Slide Time: 11:04)



So if you look at the elements, let us focus at this this is a kind of paths that they have created, shaded paths, this kind of spaces that they have created through shades. What they have done is they used low height trees to create shading (( ))(11:21) and they also had the green shrubs at the base and creating this particular path.

So it was sheltering from the intense summer and it also had celebrating water, they created this kind of water bodies where they have the fountains. And this is the area the flowing water that always cool the entire environment and small small spouts or the fountains they used to break into small small droplets and that used to get the air temperature reduced. So that is a kind of angles that they had.

So they never had a very chilly or very cool areas but they had fairly cooler that particular zones, so dribbling fountains offering a trickle of water for a feeling of relief from the heat that is what it is the kind of thing that they had created.

They have also created enclosure in which these are small small fountains with an enclosure that means these enclosures which are here they have created in small shrubs, if you watch

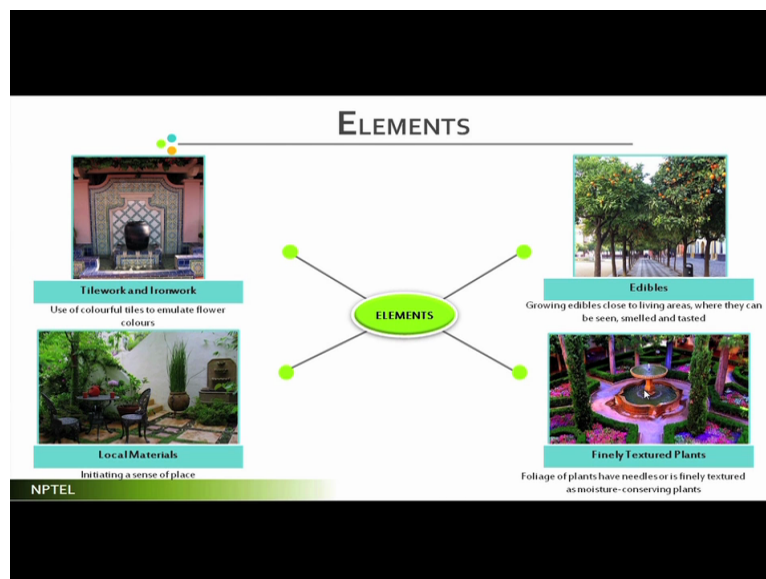


this very carefully you will find that they are landscaping in which the vegetation that they have used, they are very subdued.

In Spanish landscape style they did not use extensive vegetation, it is always subdued, low height just enough. So high wall gardens for protection and relief from other elements external elements and then they created leaving outdoors, basically what they have done is all those indoor spaces floor out to the outdoors but everything was introvert if you recall that we have said it is introvert because see the whole structure was having the surrounding walls in between they created small small small gardens or landscape courts and that looked introvertly so it converged.

So it is a well-planned garden with natural trees and shades working as a (( ))(13:19). So this is where we personally feel specially through our research we are finding that whenever we are talking about landscape use of landscaping for microclimatic creation, probably the Spanish garden is the first pioneering one which has thought us this or given such examples.

(Refer Slide Time: 13:41)



Other elements tileworks and ironworks they were the architectural paths that also blended with landscape because here the landscape and architecture they are almost side by side. So it never became an independent entity that you look at the landscape and you look at the architecture, it almost began you know integral. This is what is again the culture of today's landscape styles.

In the current landscape styles we are also doing the same thing, we are blending the architectural elements to such degree with artistic features or creative features which can be

now blended with landscape. So what happens is we in today's current scenario we are trying to blend in such a way that we failed to understand that when the architecture blended with landscape and or landscape got created with architecture, this is interesting and Spanish landscape thought us that.

Then also they had different plantations with you know like with edibles like oranges. So they have this kind of gardens, this brings us to the belief that all these ideas of fruit orchards as a component of landscape we have borrowed it from Spanish landscape, they have shown us this, in fact in reality I will tell you Spanish landscape is the only one where we have seen this has been very curiously used.

In other landscapes they might have had some parts somewhere, but they have never been really planned for. So if you really see all these aspects of landscape components then we have to believe that Spanish landscape is our pioneering one. That is why it is being discussed first. Then they have used local materials stones and other materials that they have used which they have used for paths and other things, of course these materials we use for buildings but the thing is for landscapes, the pavements and all these things were done by this kind of local stones.

So whenever they use the stones and other local materials people felt at least and they thought that is ok it is our place so basically what happens is this gives you know a kind of originality to any kind of landscape that they create. You know what we are even trying nowadays that whenever we are trying to take or use elements, we are trying to do it in such a manner that we consider that this is our local materials not borrowed materials, neither synthetic or not brought from somewhere else. So this gives a kind of identity to that kind of landscape and then the finally textured plants, these are the kind of examples that we do have.

(Refer Slide Time: 16:21)



Let us go to an example the Mosque of Abdurrahman-1 at Cordoba, this is a very interesting example. Apparently this will not look like a landscape example, no it will not but I will if I really elaborate then you will find how much respect they had for the nature, they were in fact you know limited or constraint with the development.

So all these areas were developed but they created this Mosque here in which they have saved the area. So this is the (( ))(16:58) a walled rectangle the dimension is 570 to 425 feet, this is what is a Mosque domain within which one third of the area they they have reserved for the nature and the two third that they have used for their sanctuary. Now this one third that they have reserved, this one third is very methodically planned and very geometrically planned, but that should not give us an idea or we should not conclude from here that the Spanish garden is highly geometric, no.

Because it was the first one that they have done and this is this particular example is being sited all over by the historians of landscape for the reason that were an area where people are going to conjugate they are going to come here, they required shaded zones, they cannot be covered or they cannot be sheltered in the entire structure. So the idea was even if there are open spaces let there be shades.

So for which they have created this one third of this area which is a Naranjos that they have created. So this is the area and where the trees are not very large and it the height which is just above the human beings. So what happens is when people come here for prayers, weekly prayers or even daily prayers when they come here they have a shaded zone so its nature.

After that they are entering the structure so this concept is an excellent one or it is noteworthy and we should do it everywhere.

(Refer Slide Time: 18:26)



In which we have what you call as Patio de los Naranjos that is court of oranges, so this is that orchards that they have created highly geometric no doubt about it but its green. So it has two purposes one is it shades provides shades to people who are standing below, another is it is also (( ))(18:46) in the solar radiation, the solar radiation is not falling on these surfaces so reflect to radiation is now reduced.

So basically if you look at this picture again, then what you will find is in this particular picture say about let me roughly say about 60 percent of the area is covered by the bush so the surroundings are intercepted by this bush or the foliage and the raw portion remains shaded. The portion which is remain shaded does not get the solar radiation so there is no chance of heat being radiated back and the other portions which are they are also less significant compared to the other spaces.

So basically you can take this as a sought of you know sporadic green cover, that reduces the reflect of radiation makes a whole area cool. Because most often in this kind of plazas or you know (( ))(19:32) the problem of reflected radiation is more than the direct radiation, now direct radiation comes and hit the surfaces and that reflected radiation now remains therefore sometimes and just you know direct radiation hits your body and the reflected radiation makes the air temperature hotter and that makes it very very uncomfortable.

So this is what they have solved here, so it is a grid of 98 orange trees planted here in rows. So think about it in 18th century they have done it, ok. A designer's perception of transforming is the necessity to irrigation as an artwork, what they have done you know in this particular landscape at the base they have created small small channels.

And those channels now a days we are talking about drip irrigation, ofcourse we have a pipe, we have a tap through which we can control the water, what they have done at that point of time is they have small narrow channels and those channels used to have a flow of water, that flow of water used to pass through the root structure or the root corner of every tree and when the water is to pass through this there is a gradual humidification or adding water to this each of these plants, it is not flooding additionally what happens is this water which is irrigating each and every plant because it goes touching each and every plants base Number 1.

Number 2 is these channels having the water you know it is also evaporating the water, because of whatever solar radiation falls on this so whatever temperature ambient temperature that it has created it evaporates very quietly. So this evaporation you know cools up the surface area upto a certain height and that generally matches with the human height.

So what happens is if you are there, you find that ok at in one place this channels are watering the trees at the same time it is also making a evaporative cooling affect for the human being, that is the kind of thing which we have learned from this and nowadays people are using it. In fact this particular concept has also been used in the Mughal garden, I will explain to you later. If you look at this picture these are the small small channels which are you know flowing through like this, it keeps on flowing in this this form. And ultimately touches each and every plant here so these surfaces are being cooled automatically.

(Refer Slide Time: 21:58)

**EXAMPLE OF SPANISH GARDEN**

**The Generalife at Granada (1302 - 1309)**

- Summer residence of the Moorish Kings
- Located high on the steep, well-watered slopes of the Cerro del
- Folding along the edge of mountain is solely for the enjoyment of landscape
- Traditional patio garden, sensitively placed along the contours
- The central canal with fountains, at ground level, serves as the ablution tank for the small mosque

NPTEL

In fact in one of the examples that I have seen in Germany when I visited I found there are some places in the housing areas people have deliberately done it, it appear to be very interesting and it was very encouraging that people have realized the meaning of these kind of channels. And I will show you the pictures later when it will discuss about those.

The next example is a Generalife at Granada it was built between 1302 to 1309 at that time, if you look at this the Granada the Generalife was placed on the edge of the hill, the idea was two (22:36) one is have exposure to the mutual exposure to the surrounding at the same time you have multiple such levels (22:44) section through this. It was a summer residence it is just like as we do see in India that in many places all those areas where they have hot summer regions.

So all the prime buildings are placed at the higher altitudes, similar things that they have followed long back and in fact we are emulating it, I am very happy to say that we are emulating it is good it is a best practice that they have done. So all summer residencies the are higher altitudes and it is located at the high steep well-watered slopes of the Cerro del.

So what used to happen is the slope land mountains when it is used to you know have a snow molten and that particular water used to come down to this level. So naturally nobody had to raise the water up and then flow down which has been done in some other styles of landscape here the idea is ok natural water is flowing down to this and when it is flowing down to this then naturally by the cycle affects all those fountains become active.

So you do not have to really energies the fountains for its spouting which we generally do in our modern day landscapes with pumps and motors, their they use the gravity principle and they have used it very very intelligently. These are to be learned this system that they have used if really go in to this in details and start analyzing each and every aspects of this you will find that yes they were not technically as advanced as us, today but the thing they have used the techniques and the signs, technology and the signs available at that point of time and size is eternal, ok.

Then this particular site is folding along the edges around the mountains so they always enjoyed the surrounding landscapes. So as I said earlier that whatever they have built first they began introvert convergent but they also never ignored or being deprived of the surrounding landscapes.

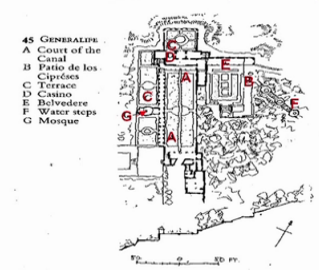
This is one such picture in which you will see that this is on the left hand side it is down the hill and this is the place where the ruler used to stay or sit and behind this is the ladies area, Harem and this is area where we have channel of water which is flowing and they have a Mosque on this side and the higher altitude things is on the right hand side. So it was traditional patio garden and very sensitively placed along the contours.

The central canal with the fountains that used to have the cooling affects and it had the ground you know at this level and this is to be used as a additional tanks for the Mosques which is on other sides. So basically what happened is ablution tank was necessary, so they used that canal or say central canal for microclimatic reasons, evaporated for evaporative cooling and the same time that works as a ablution tanks this is how they have done it.

(Refer Slide Time: 25:49)

### EXAMPLE OF SPANISH GARDEN

The Generalife at Granada (1302 - 1309)



45 GENERALIFE  
A Canal  
B Patio de los Ciprésos  
C Terrace  
D Casino  
E Balvedere  
F Water steps  
G Mosque

Landscape Character

NPTEL


### EXAMPLE OF SPANISH GARDEN

The Generalife at Granada (1302 - 1309)

Summer residence of the Moorish Kings

Located high on the steep, well-watered slopes of the Cerrodel

Folding along the edge of mountain is solely for the enjoyment of landscape



- Traditional patio garden, sensitively placed along the contours
- The central canal with fountains, at ground level, serves as the ablution tank for the small mosque

NPTEL



If you look at the plan of this let me explain in this particular drawing here see this picture that you have seen just now this particular portion is here, ok. This is the central canal and this is the Mosque here and this particular portion which is C is the terrace that is landscape and then D is the casino that they have and F is the water steps we have the water steps here I will explain this more and we have a picture of this as well.

Now the frontal portion is for the rulers and this is the portion which is for the essentially for ladies. So as they had by their social custom the ladies used to be generally separated from the male members, all the guest also (( ))(26:38) and all that, so what they have done is they have created a male zone and they have created a female zone, ok. I will come to this furtherer, thank you.