Indian Institute of Technology Kanpur
National Programme on Technology Enhanced Learning (NPTEL)
Course Title
Engineering Graphics

Lecture – 21
Perspective Views - 3

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So we have covered till now the basic perspective view and principles and how to draw a perspective view, few examples we have solved and concept also you have completed one of the example.

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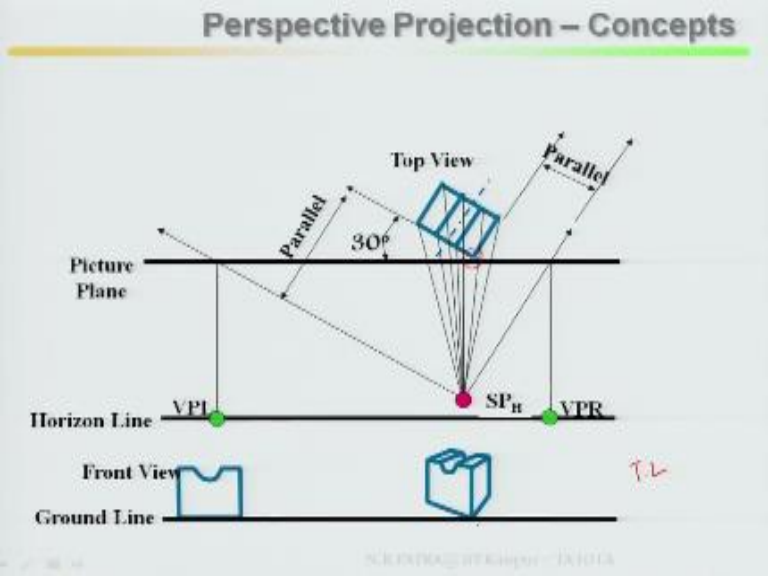

Last class where I have finished, first draw the ground line, then on the ground line draw your front view, then draw your picture plane, then with respect to picture plane draw the isometric view of your top view with an angle of 30 degree, then horizon line you draw, then locate your station point, so once you look at your station point from station point to draw parallel line of

two edges, one is your left edge other is your right edge, so draw a parallel line to the left edge where it intercept picture plane.

And similarly draw a parallel line from station point to right edge where it intersect the picture plane, from both these points draw intercept, vertical intercept where it got your horizon line that is your vanishing point left as well as vanishing point right. As this one of the edge of the top view touches the picture plane hence this will come as a true length, particularly this side will come as a true length, so draw from the edge vertical line where it cut your ground line, then from ground line front view draw the line, and this is you are in true length.

This is you are in true length TL or true length, then with respect to true length from there join your vanishing point left, join your vanishing point right we have joined it, and with this with respect to this end, with respect to this your left edge as well as right edge will continue, that must be the figure of your left hand side will be in this side, and will be in this side. Then from the station point look at the outer corner of the left edge, and the inner part of the left edge, then I finish it then go to the right part. So first I am looking the outer edge then project it back from station point to outer edge, looking at this draw a line where it intercept your picture plane from there draw a projector, where it cut your this line true length to your vanishing point left you mark it.

It has been marked, then finish it then draw take your inner point, these are all your inner point and there is a circle here and there is a centerline here, once there is a inner point mark this and draw it then draw it, then second inner point mark it and project it back, then draw it then taking into consideration this as a diameter draw your semi circle, then similarly go to your right hand side identify your outer edge, this is your outer edge, then once identify from outer edge to connect your vanishing point your left.

So it has been connected now finish it, then once that outer edge is finish right hand side, then from right hand side to here it is going and again in the left hand side, so whatever the points you are marking that has to be projected in the vanishing point towards your left hand side connected to your outer edge of your right hand side, then it has been marked, then it has been marked, then

you finish it off, if I take it out this is what your perspective view looks like, this is what we have covered up to last class.

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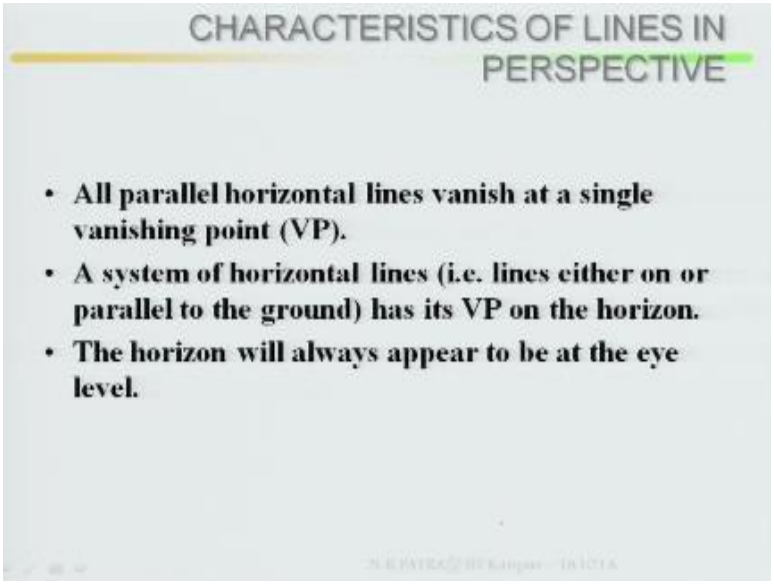

Now in summary perspective view, all parallel horizontal lines vanish at a single vanishing point, all parallel horizontal lines vanish at a single vanishing point that is called vanishing point (VP). A system of horizontal lines that is a lines either on or parallel to ground has its VP on the horizon, a system of horizontal line has its VP or vanishing point on the horizon. The horizon will always appear to be at the eye level.

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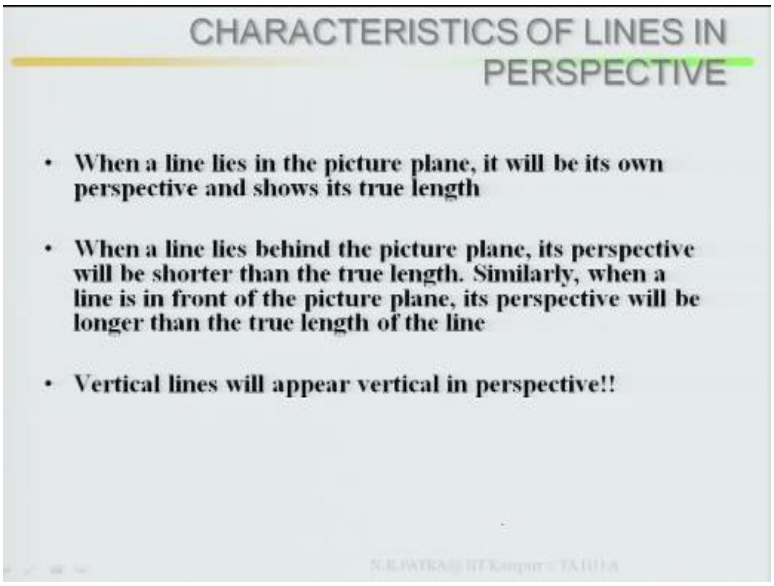

Then when a line lies in the picture plane remember this points, when a line lies in the picture plane it will be its own perspective and shows its true length, when a line lies in picture plane earlier I say which edge is lying in the picture plane, that means in perspective it shows its true length. When a line lies behind the picture plane its perspective will be shorter than the true length behind the picture plane, similarly when a line is in front of the picture plane its perspective will be longer than the true length of the line.

Vertical lines will appear vertical in perspective, these are all kind of principles and it will you have to remember all these things while drawing or plotting your perspective drawing, so that there will not be any further confusion.

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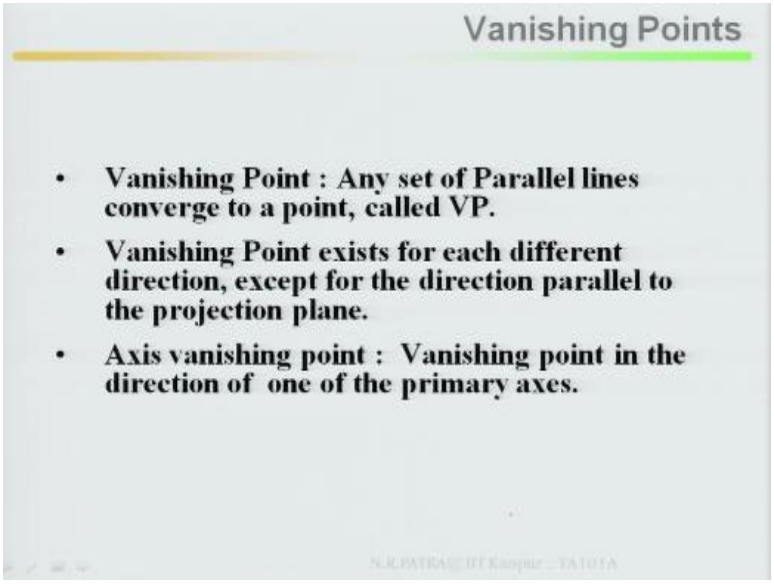

Vanishing point definition, what is the definition of vanishing point, vanishing point any set of parallel lines converge to a point called vanishing point, remember any set of parallel lines converge to a point called vanishing point. Vanishing point exists for each different direction; vanishing point exists for each different direction that means XY as well as Z except for the direction parallel to projection plane, except for the direction parallel to projection plane.

Axis vanishing point, vanishing point in the direction of one of primary axis on so you say that axis vanishing point it is primarily the direction of one of the primary accesses, this is all about vanishing point.

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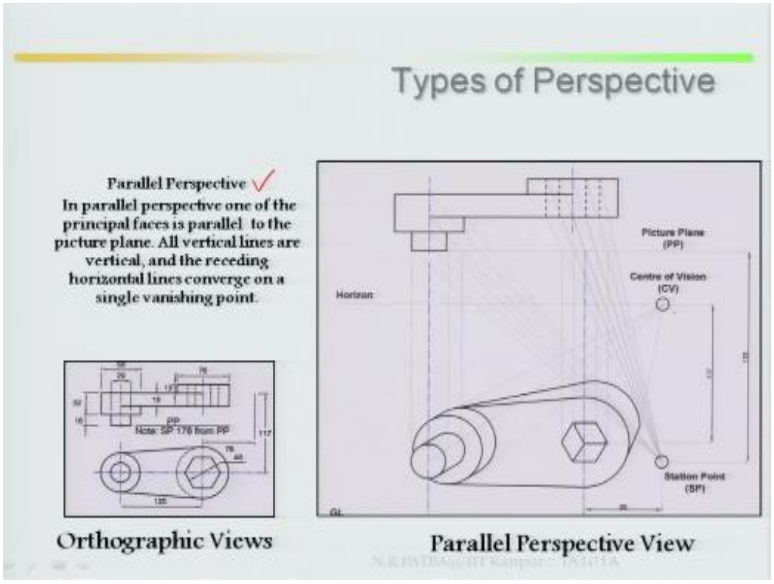

Now come to type of perspective, what are the different types of the perspective? Parallel perspective, number one is your parallel perspective, in parallel perspective one of the principal faces is parallel to the picture plane, remember this in parallel perspective one of the principal faces, principal faces means X Y as well as Z, one of the principal faces is parallel to picture plane. All vertical lines are vertical, and the receding horizontal lines converge on a single vanishing point, receding horizontal lines converge on a single vanishing point.

This is your parallel perspective that means one of the principal faces is parallel to your picture plane, if you look at here, one of the principal faces, if this is the top view one of the faces is parallel to your picture plane. Receding horizontal lines converge on a single vanishing point. It is converging on a single vanishing point.

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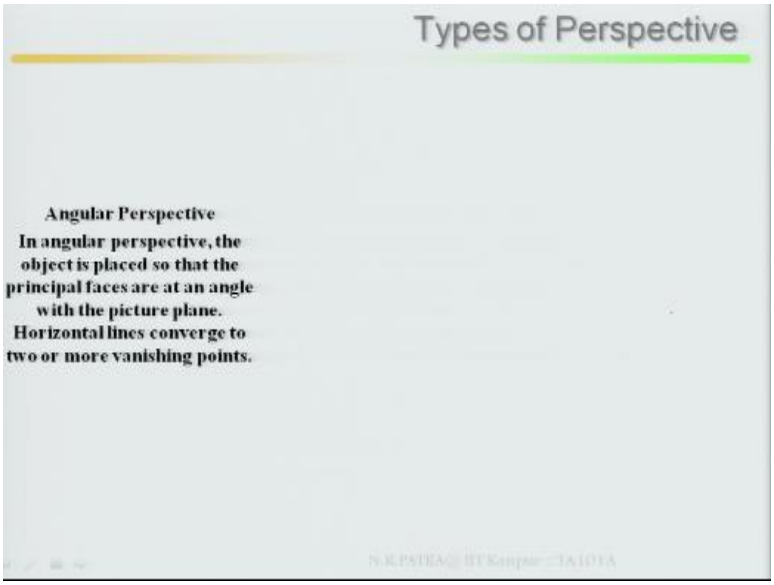

Second one is your angular perspective, in angular perspective the object is placed so that principle faces are at an angle with the picture plane, object should be placed so that principle faces are at an angle with your picture plane, means in the picture plane principal faces are at an angle, horizontal lines converge.

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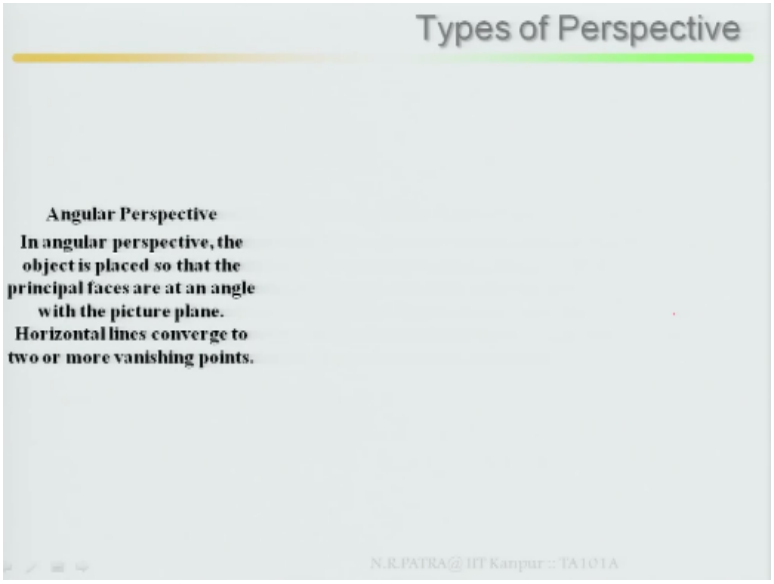

Two or more vanishing point, in previous case parallel perspective it will converge in one vanishing point, in angular perspective it will converge two or more vanishing points.

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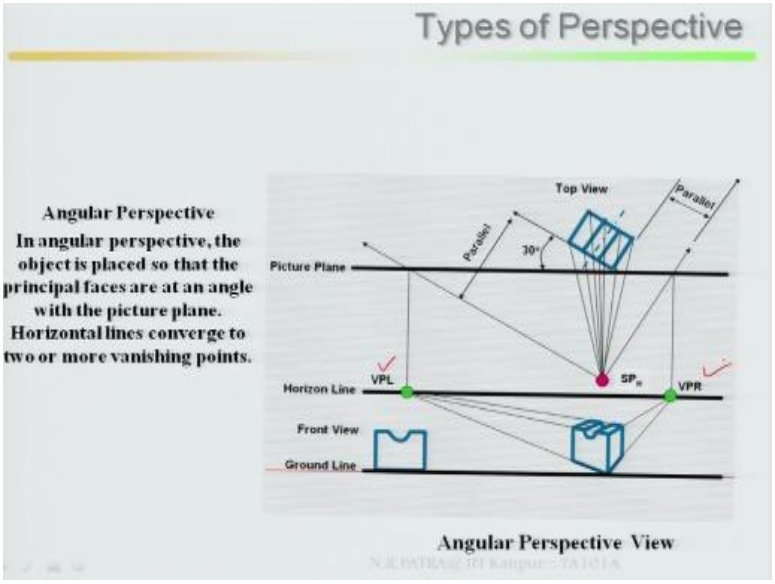

If you look at here, this is your top view and this object is placed at an angle this is your 30 degree, this is your 30 degree to your picture plane, at an angle to your picture plane. So horizontal lines converge to two or more vanishing point, in this case there are two vanishing points, one is your vanishing point left, other is your vanishing point right, so this is called angular perspective.

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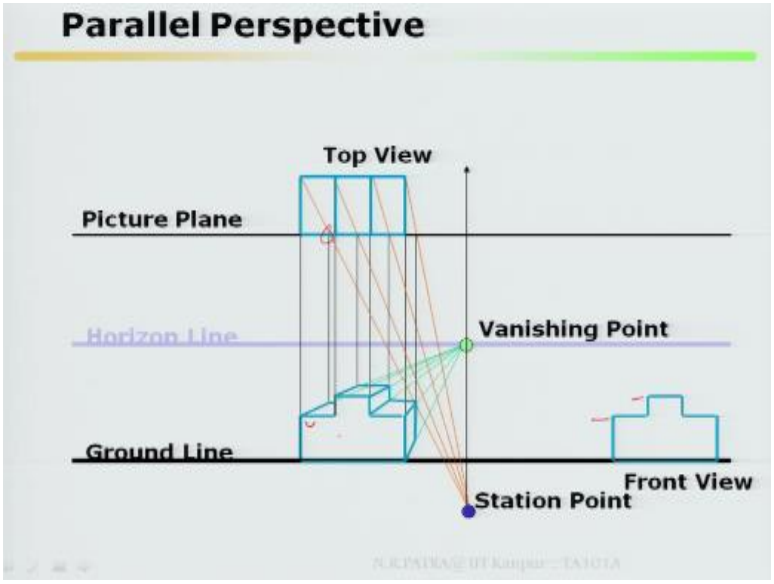

Now let us start with this parallel perspective one example, there are two cases I said one is your parallel other is your angular. Let us start with your parallel prospective, so draw the ground line, draw the horizon line, draw the picture plane and top view you draw it, so top view has been touch, it is touch to your picture plane means this part is touching your picture plane, that means this part will be in your true length, then take your station point as for the coordinates given, then draw your front view or side view in your ground line, in this case front view has been given draw the front view.

Then from the station point top view has joined top view has touch your picture plane which part has been touched this part, draw the lines from the front view so that which part is touch it that is in your true length, mark it. I am drawing it back from here one by one, from here to here then from here to it has been projected back. So intersection so this part is your actual true length, this is your in true length.

So once it is in true length then one part is over, then from this station point draw the lines, from station point how do you get your vanishing point, from station point draw line parallel to your lines which is going like this, so here I am drawing a parallel lines with respect to one of the

faces where dit intercept your horizon line that is your vanishing point. In this case one vanishing point will be possible parallel perspective, then once you get the vanishing point, then join from the vanishing point to your different edges.

I join it, I join it, I join it, that means inter picture what is the region with respect to the vanishing point 1, 2 this edges has been joined here, here, here, here, and here it is joining your vanishing point, that means what will happen this edges have been joined inter picture will be lying from this to this, means with this your picture will be lying, the picture will not go beyond this, then from the vanishing station point check out this points outer as well as inner and project it back.

Then from there I am looking at from station point to outer edge here, then from here to here looking at where it intercept your picture plane here, and from there draw intercept where it cut your this line it cuts there, then mark it, second point second outer edge you join and intercept you draw it back and mark it where it comes out to be, then third one you draw it where it comes out to, where it once it intercepts here then you can join from here to here, it has been joined from here to here, then again from here to here, then similarly join it back, outer edge join it back, join it, then join it back, look at this object, how it looks, this is your object or perspective this is called parallel prospective.

In parallel perspective it is parallel to your picture plane, and it is one case where one of the face is on the picture plane that means this face will be or in your true length.

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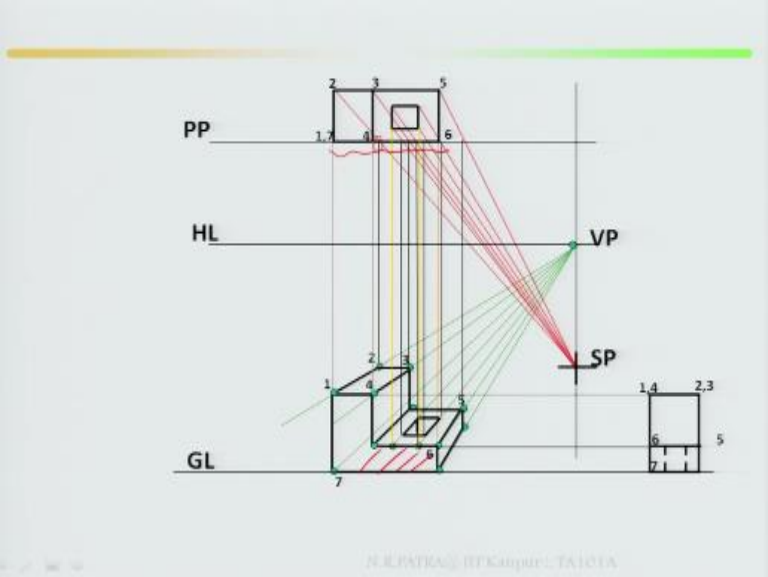

Then come to your second example, horizon line, vanishing point, station point, then I have named it the coordinate has been given, one of the face is touching your picture plane, then this is your ground line, then you join it back how it looks, you name it better to name it the coordinates 123456, here it is 123456 and backside will be seven, here it will be same, join it back name it 1,4 and from the vanishing point once because this part is joining or touching your picture plane that means what will happen this you will be your true length, this space will be on true length, then once you get the true length true shape then from there you join your vanishing points, that means inter figure will be narrowed down or will be within this region, then once you get it from station point take one by one outer edge as well as inner edge you mark it.

I mark it at a time I take it because I have explained one by one, then once you mark it where it cut it, then you project it back one-by-one. Look at here, station point to two parts has been marked, two intercept here, the line two to station point intercept picture plane here, from there you put it down. So basically it is joining 1, 2 now 1, 2 will be coming into picture. Similarly three point from station point to three has been joined where it intercepted, it has been marked then 5.

All the things you marked you one by one, if you look at, you start it point by point how is a perspective view it looks like, only these faces in, this is the face which is in true shape. Because this face is on the picture plane or touching this picture plane, this is in the true face. Now come to the second part of the example.

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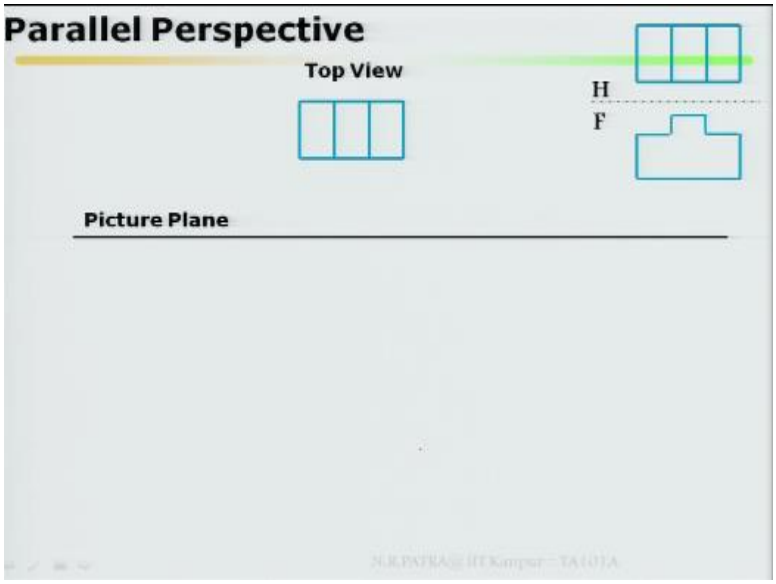

Suppose there is a parallel perspective, in the parallel perspective it may possible the picture at the top view it is not touching your picture plane.

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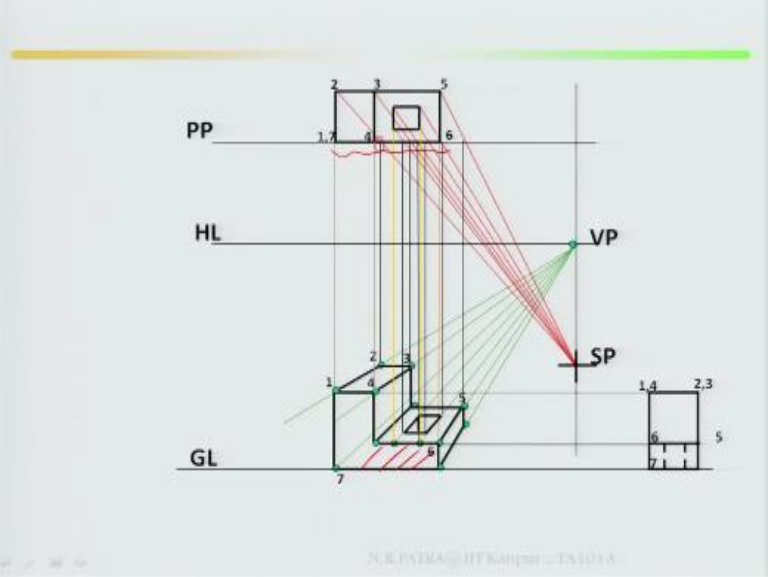

Earlier if you look at here, earlier it was touching your picture plane, one of the face or one of the edge.

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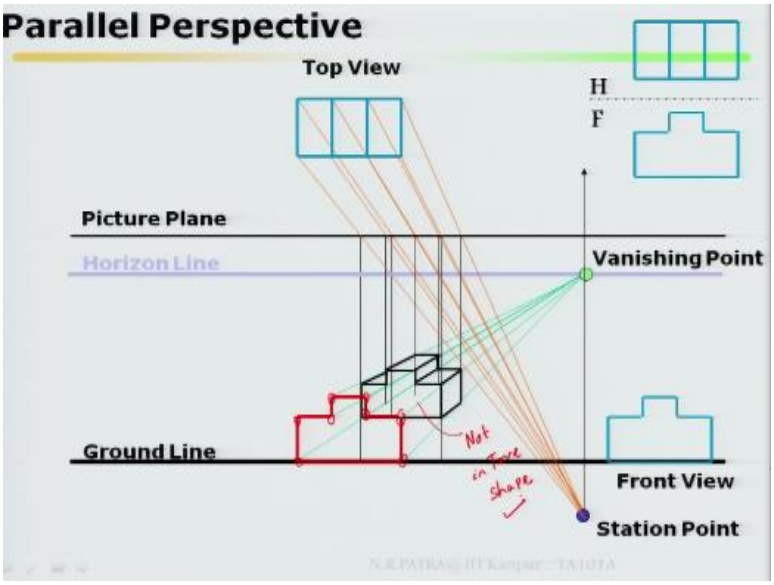

In this case it is not touching your picture plane, if you look at your top view it is far away from your picture plane. So in this case mark your station point based on the coordinates, draw the ground line, draw the horizon line based on the coordinates available, from station point draw a line parallel to one of the faces identify your vanishing point, this is your vanishing point, then draw your front view on the ground line, this your front view on the ground line. Remember here front view is touching in your ground line.

Here in this case, the picture is not touching in your picture plane that means whatever you are going to project it here it is not going to be in true set. So now from station point from the top view, bottom part you project it back so that you can join it back, I have join it back as if it is touching, as if it is touching to your picture plane, so this is the shape, true shape I put it here, then after taking it back raise has been from vanishing point this true shape, they connected all the edges, this edge, this edge, this edge, this edge, this edge, this edge all has been joined together.

Then once it has been joined then from station point, station point look at the top view outer edge, because this part assuming first part joining, assuming this as if it is touching your picture

plane this drawing is there. If I do not assume, in this case it is far away so from station point to look at the outer edge, then it intercept here, draw a line then similarly second point intercept here draw a line, third draw a line, fourth draw a line, then once you draw a line then similarly outer you draw a line, draw a line, draw a line, outer you draw a line.

So look at this, how it has been shifted from here to here, so in this case it is supposed to be true length if it is touching, if it has not touch it is not suppose to be a true length, not in true shape.

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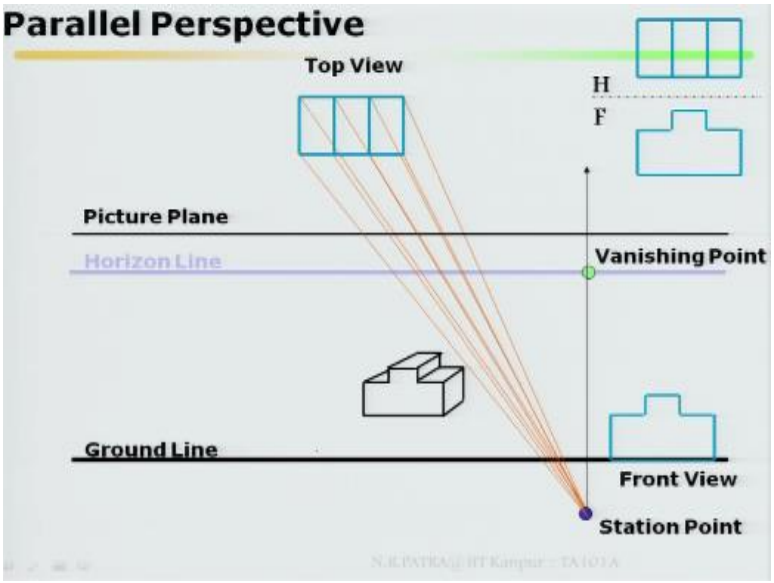

Now look at how the perspective drawing looks like, earlier how it looks, earlier I find it out the range how it goes because it is not touching the picture plane it sit there, now how it looks, it looks this way station point, this way of your perspective. So there are two cases, parallel perspective, in parallel perspective there are two cases, one is your touching your picture plane either H or may be the face, other is not touching your picture plane, this is how your object looks like perspective view.

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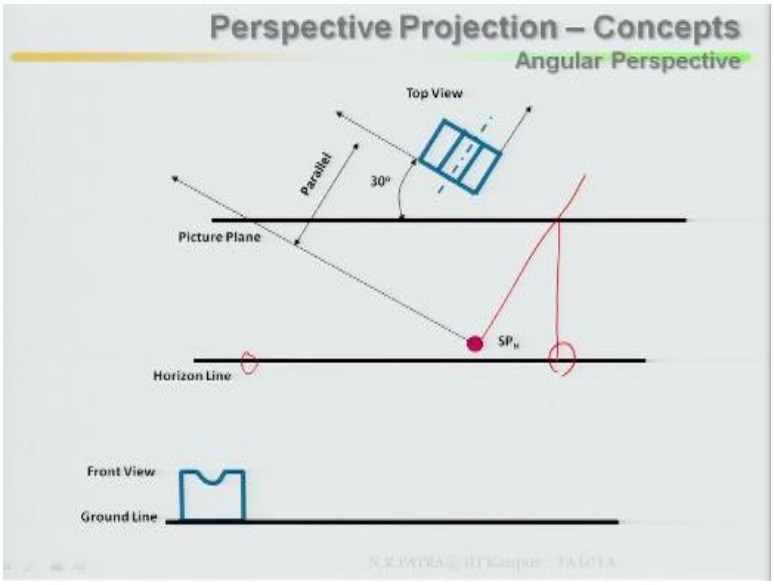

Then come to your perspective projections, concept of your angular perspective, look at the top view, it makes at certain angle 30 degree with your picture plane, then there is station point is located, then there is a ground line, there is a front view, then there is a horizon line is there, from there there is a line from station point as I said this is angular projections, from station point draw parallel to one of your face, and where it intercept your picture plane from there draw a vertical line where it cuts your, that is your left vanishing point, from station point draw a line parallel to your right face like this, where it intercept draw it back, this is your right vanishing point.

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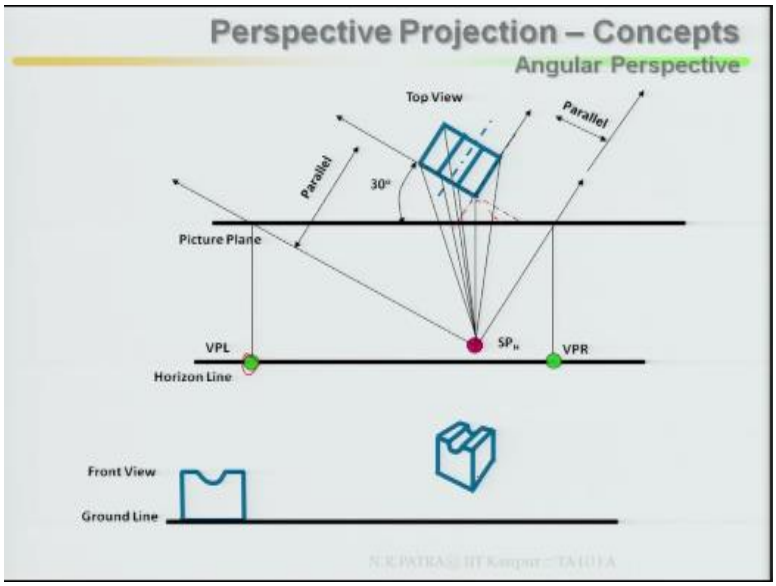

This is your right vanishing point, right vanishing point, right vanishing point left then, then from this you extend it so that it can be join, it can be joined to your picture plane it has been extended back, so it has been joined to picture plane, so put it with this as if it is joined then take the front view and join the lines, this is your line from your vanishing point right, this line vanishing point left particularly your object will be lying from here as well as from here, then draw the middle point and this is your actual side or the face of this.

So then once it is over then from station point mark your left face, from station point mark your right face, I have marked your left face, draw this, right face has been marked, mark it right face, draw it, then draw it, then circle has been plotted, then drawing it look at how it looks like. So this is your angular projections or angular perspective. In this case left face and right face make an angle to your left hand side as well as right hand side, and neither face nor edges touching your picture plane.

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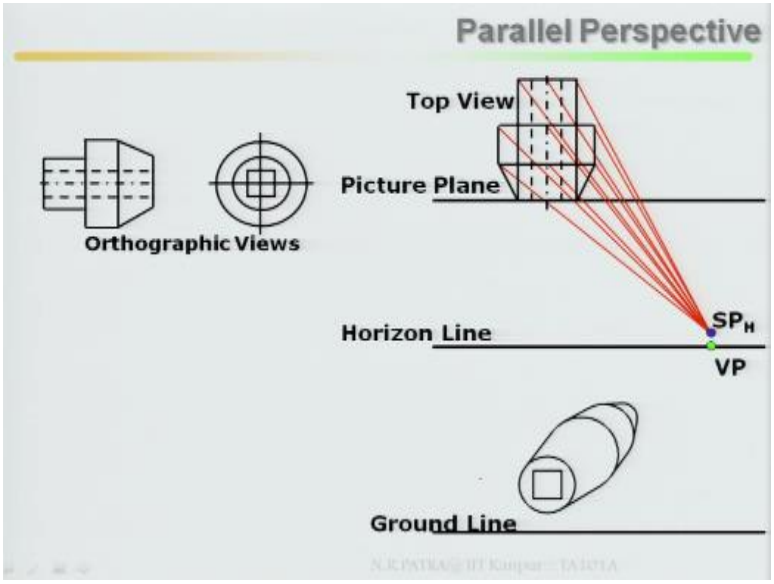

One more may example, I will go more detail, next class one more example parallel perspective, orthographic views has been given, ground line, horizon line, picture plane, top view is touching, top view is touching to your picture plane, so in this case it is a parallel perspective, so one vanishing point will be there station point identify, then vanishing point will be there, then from the ground line draw this and from there join your vanishing point from station point, make it one by one, you finish this object upto this. I will stop it here, next class I will start different circles and different parts to you, and different other complicated examples in perspective view. Thank you.

Acknowledgement
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