Technical Arts 101
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Lecture – 14

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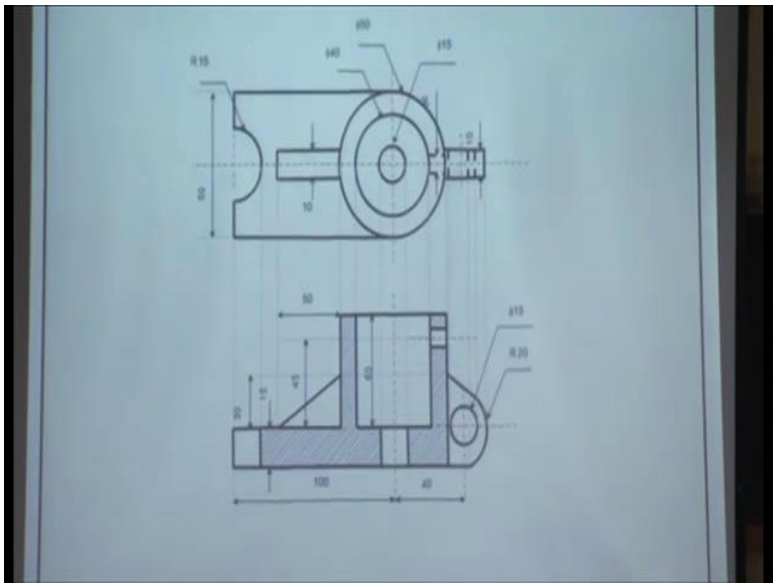

So, regard to solutions and this week's lab. Thank you, what did you say would you want to show a center line over here or not? Yes sir no sir why sir why not sir yes or no. So, those who are yes and those who are convinced raise your hands, those who are no and those who are convinced raise your hands. The number of hands do not match the decibel level of yes or no, may be will be the nice idea to show the center line over here may be may be because if you do not show the center line there. Then if you look at the top it gives the impression that you have a rectangular slot or trapezoidal slot in there, if you do not show the center line. So, that is one thing corrected figure from last lecture, so one of the ribs is smaller in dimension.

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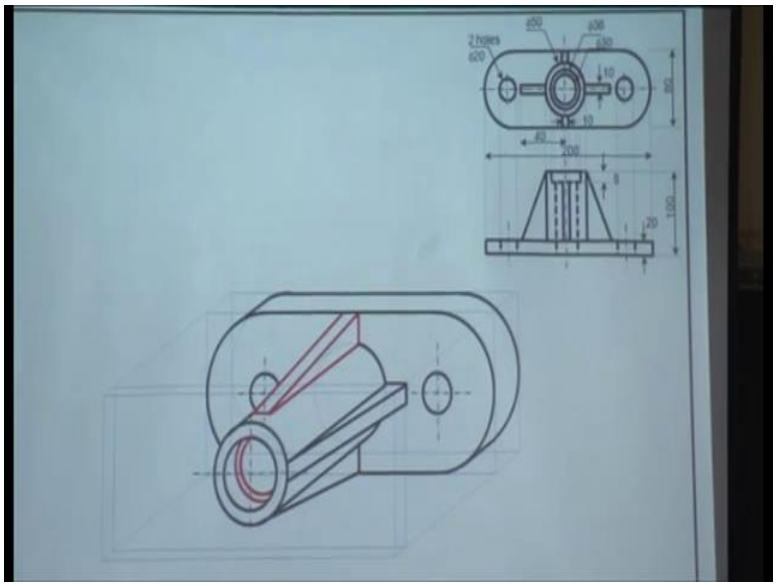

Then you see the fourth circle at the center.

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We will start a fresh with perspective views those are again a kind of pictorial views those who are into art will love the next three lectures and those who are not into art will become artist if you follow this. What those who are into art, well like these three lectures including today's and those who are not into art will become artist hopefully.

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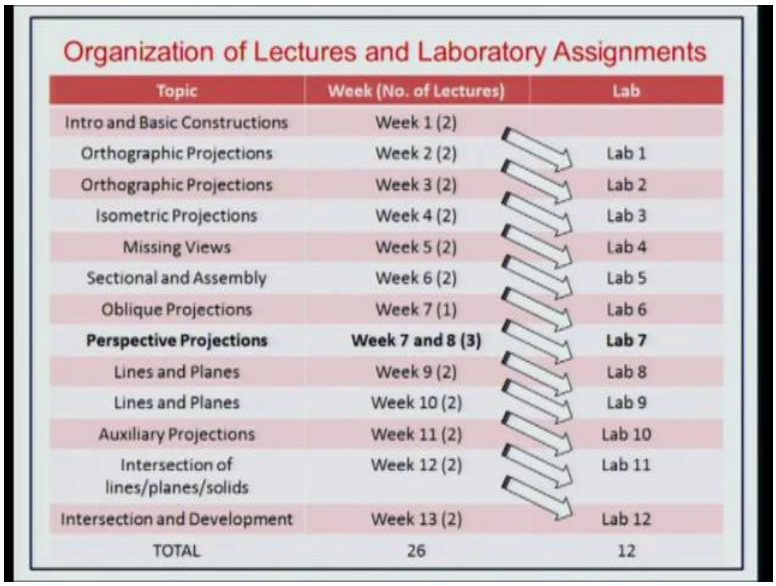

Stay with me.

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Some examples stay with me, spare your wow for some time some examples, what you reckon? Are these lines parallel to each other? yes sir, no sir, yes no. They are parallel to each other, but you get the impression, you get the impression by looking at this picture that they tend to converge to a single point they tend to converge.

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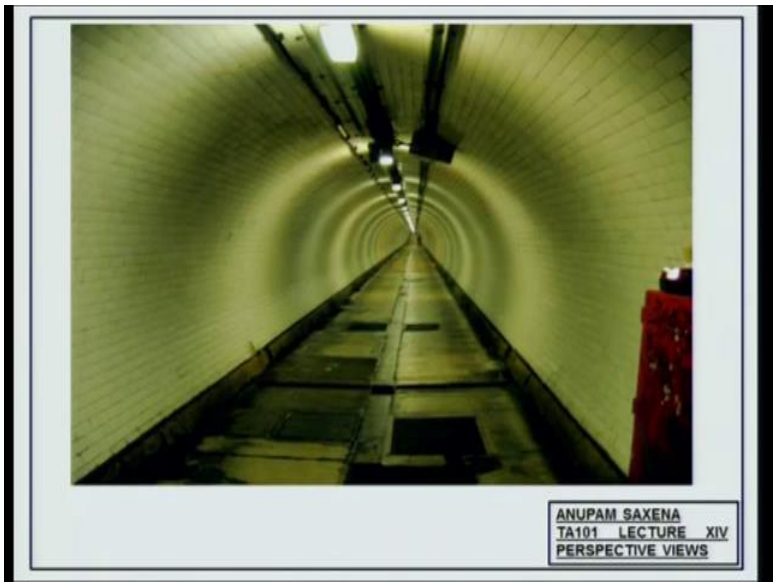

Are these lines parallel to each other? Again, you get the same impression that they tend to converge, this is art.

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Look at those rods on the roof are these parallel to each other, but the impression that you get is I will tell you a little story about this, I will tell you a little story about this. This is something that I worked down back in 1995 many of you guys were probably one year old toddlers essentially or may not have been born. Then I did not know how to

draw prospective view frankly, I did not know how to draw a prospective view, so this was just art of intuition, can you spot me?

Student: left most.

Left most? So, I do not want to you guys to have the same feeling. So, if you want to attempt some like this I would want a make sure that you guys know how to draw perspective views.

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This is a different example.

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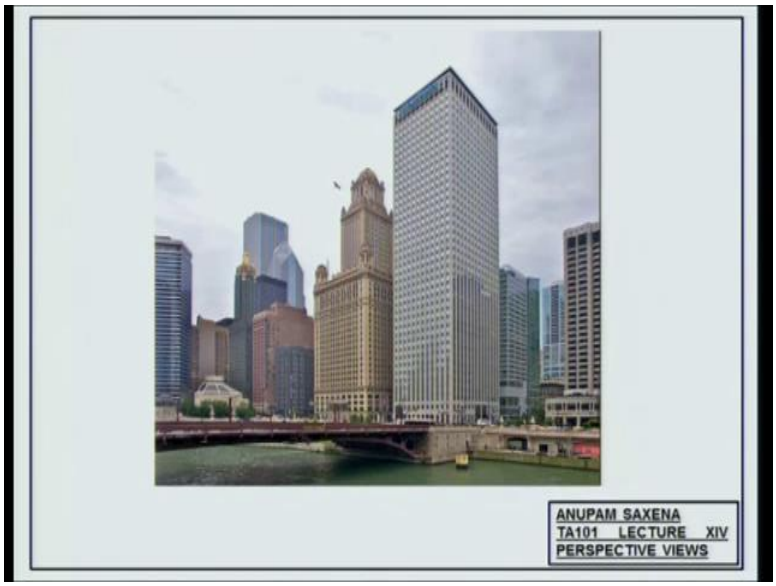

Yet another example.

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Let us go back to the first example look at these parallel lines, they tend to converge to a single point choose a line, they tend to converge to a single point.

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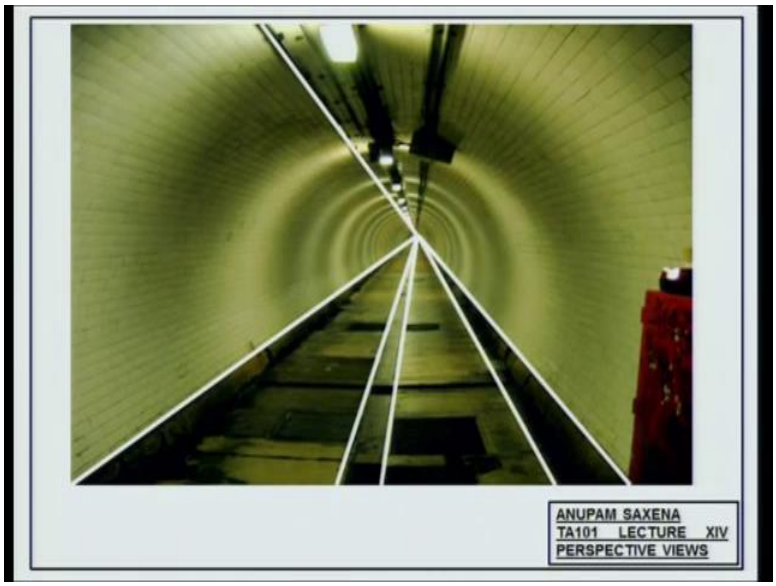

This example, choose a line again the same thing.

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Again the same thing.

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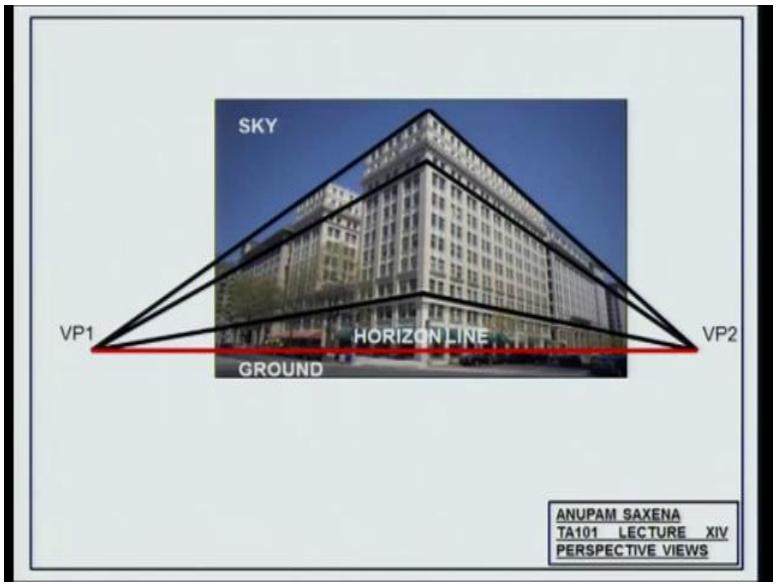

Here, the story is little different focus on the lines on the right of this vertical edge focus on the lines on the right of this edge. And any line you choose and you extend they tend to converge to a point on the right likewise lines. On the left of that edge any lines you choose tend to converge to the point or to a point on the left. What is interesting is that this point here and that point over there they happen to lie on a horizontal.

That is for interesting, I call the point on the left as the vanishing point, point where all the edges tend to converge point on the right as another vanishing point. I call the horizontal line as the horizon line, line of horizon and it is this line that separates the sky from the ground.

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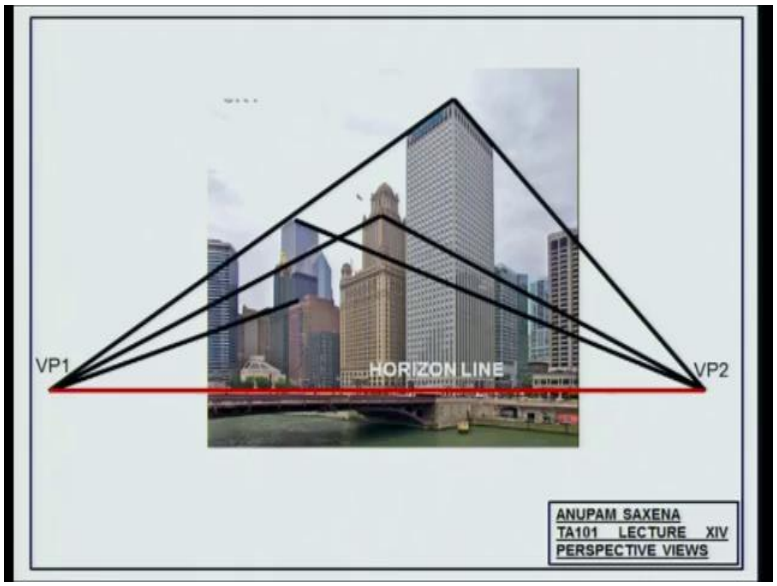

Something very similar, look at the edges on the right of this vertical edge and the edges on the left of that particular edge they tend to converge to two different respective points which lie on the horizontal. Again, the points are VP1 and VP2 vanishing point 1 and vanishing point 2 lines in where is the horizon line that separate the sky from the ground.

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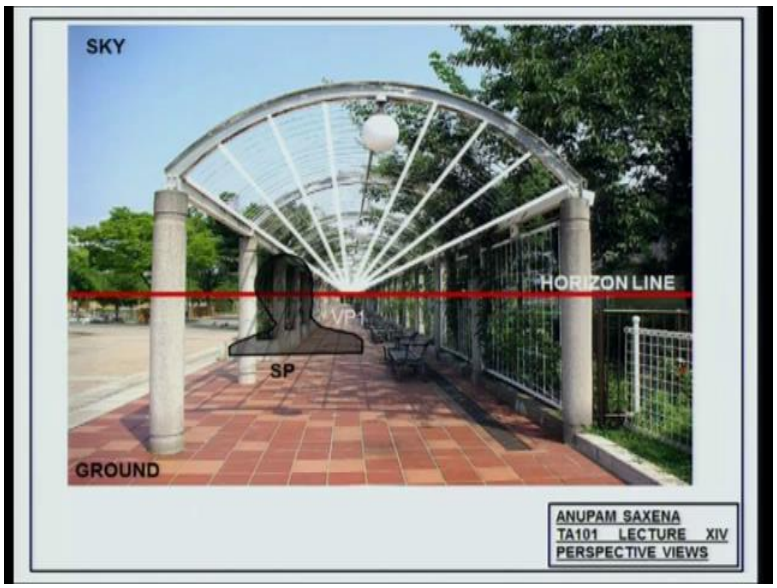

In this case, you have a single vanishing point single point were all lines they tend to converge lies on the horizontal which separates the sky from the ground. This point here I call it VP1 this is again horizon line this is where possibly you are stationed as an

observer and I call that or I call your position as a station point ok. Now, let us try to apply those rules in prospective projections apply those observations and prospective projections. Of course, you know about use front view, top view profile view. So, this would what the scenario and top view lets you got a picture plane just behind it. Let us say you have a cube placed in the top view again this is where you are stationed, mind you we are working with top view, so this is why you are stationed.

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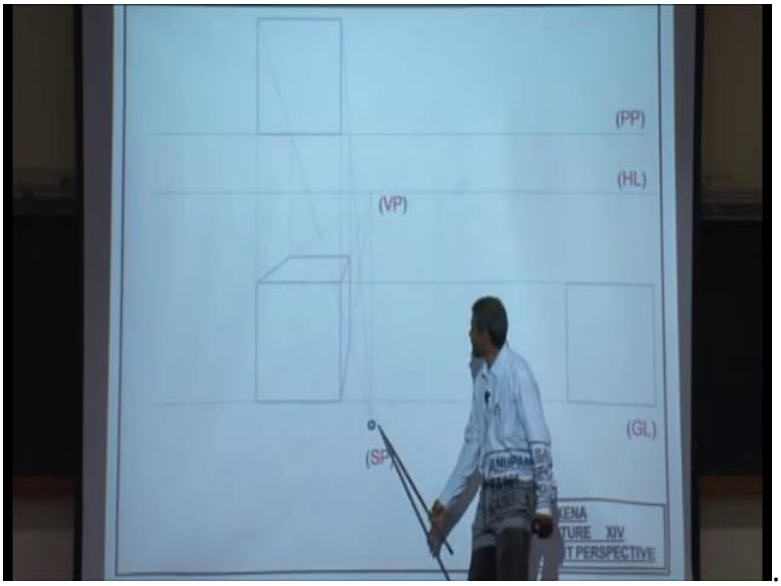

So, imagine if a bird is looking at you as well as the object over there, so this is what the bird is going to be observing that you are looking at four vertices of the object like this. So, those rays from the vertices will hit your eye in these directions from the top. So, in a sense you happen to get the sight information from the top view once again you happen to get the sight information from the top view.

Now, let us switch back to the front view or the profile view I am standing on some line you are standing on some line that is call the ground line reference line. Let us imagine that the object is on the same line as where I am standing and of course this is true height of the object.

Now, notice something important that this point over there is the station point which actually belongs to top view not the front view, but top view in a sense in the front view you will be stationed here on the ground line this guide belong to the top view. That is something that you need to keep in mind get the height in the front view what would be

horizon line for me, what would be the line of horizon for me in the front view? I am standing here this my ground line the line that separates the sky from the ground over that view would that be below my eye above my eye or at the level of my eye level of my eye.

So, in the front view my eye will be here on this line right about this station point and if I look very far off I will be seeing the vanishing points on this line left or on the right. Any vanishing point has to be on the horizon line in the front view or the profile view you get the height information. Now, what you want to do is you would want to combine both views together, so you have components from the top view, the object in the top view. The picture plane this front view belongs to the profile view of the front view, ground line to the profile view of the front view.

This stationary point belongs to top view, so what you are done is you are combined information from both views and they send together ok. Now, stay with me here if I look at an object in the front view parallel to this edge where my vanishing point to be would once again if I look at an object very far away from me, but along this direction, where would my vanishing point to be?

Student: **((Refer Time:** 14:48))

Where would that be?

Student: bottom right.

Bottom right, I am looking, I am looking straight, I am looking straight and parallel to may be one of those edges. Of course my vanishing point will be on the horizon line and along this direction which going be where here that is my vanishing point. So, to draw perspective in summary you have to identify the picture plane you have to identify how the object is placed respective.

The picture plane where you are stationed in the top view in the front view you have to identify the ground line you have to get the profile view of the object. You have to identify the horizon line and you have to identify either one or two or three vanishing points. So, once you have done that you are ready to a draw perspective view let us see how.

One thing that I would want to tell you is whatever feature is there on the picture plane will appear in two dimensions in your prospective view. For example, this phase of cube is right on the projection plane of the picture planes so that will appear in two dimensions that is something that you need to keep in mind. Draw two projections vertically downward get the height and this is what you will see in your prospective view this phase front view like. Now, things become little interesting if you look at this edge where would it vanish. If you look at this edge the corresponding image in the prospective view would be like, so if you look at far away.

If you look at an object far away along this edge that would be vanishing over here like wise look at this edge is start from here and objects far away along this edge they will be vanishing, they will be vanishing there. If you look at the bottom edge if you start from here if you look at the bottom edge, edge below this that will be vanishing again along this direction. So, in a sense what you have done is you have identified the three directions along with the edges are going to be vanishing or the object are going to be vanishing along those edges.

Now, follow this very carefully in the top view this is what my sight ray is that allows me to see that vertex. This ray intersect the projection plane or the picture plane here I take the vertical projection to get the corresponding image of that intersection in the front view. So, the corresponding image of this vertex on this edge on the top edge of the cube will be here. Likewise if I look at this vertex here, this ray intersects the picture plane over here at this point I draw the vertical projection and this is the corresponding image of that vertex in the perspective view.

What is this edge the back edge, this edge, the edge on left, this one the edge on the right, but on the top phase. This guy here the bottom edge, the edge on the right, but correspond to bottom phase and this.

Student: **((Refer Time:** 20:36))

So, I tell you about that, so this is the one point perspective, so I will tell about two points and three points may be later. So, what I have drawn is a single point perspective by that I mean that you have a single vanishing point and to draw that you have to keep two things in mind.

Number one that at least one phase of the object that should be co incident with the picture plane or the projection plane not a vertex, but a single line or single phase in the top view of course you have to have one vanishing point. So, if you are here, if you look at the object along one of the line, which is perpendicular to this, perpendicular to projection plane. That ray is going to be hitting the horizon line over here that would be your vanishing point, single vanishing point.

Student: ((Refer Time: 21:54))

How do you take the stationary point that is a choice for example, for example I am stationed here I am looking at the entire class I will get one view I am stationed at a different position. Now, I am looking at again the entire class I will get a slightly different view and if I get stationed here I will get a different view and do not ask me to go out. So, station point is like parameter, so it is usually specified another one is a choice should I go over this, once again start with the blank sheet stay with me and be alert start with a blank sheet.

Student: **(**(Refer Time: 23:30))

Do not worry about that, maybe it will be a nice idea to work on your sketch planes or sketch books.

Student: **(**(Refer Time: 23:51))

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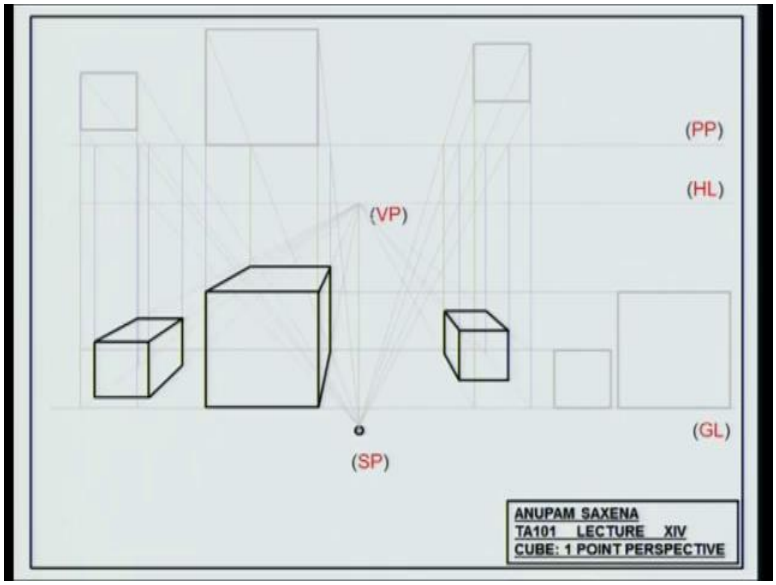

Going to this once again that is a top view this is a profile view profile view are the front view because the height is going to be same both. Missing, this is the pictorial view that you are drawing this something very similar isometric drawing pictorial view just single view. So, given all these parameters how would be object look like to you in three dimensions are you not missing one

Student: **((Refer Time:** 24:43))

No you just keep the sight information from the top view and the height information from the profile view, so essentially you have you get the three coordinates ready here we go start with the picture plain PP place a cube in top view. In such a way that one of the edges is lying over the picture plain is co incident with the picture plain. Step 1, step 2 figure out where you are stationed in the top view just choose any random point set 3 in the front view or the profile view choose the ground line. It could be either above this station point or below the station point does not really matter for, now let us say it above the station point.

So, once again the station point is the one that you see in the top view, so keep that in mind draw the profile view of the object on the ground line. Single queue figure out what your height is 5 6, 5 7, 5 8 if you are standing here this is where your horizon line should be. The line of the eye once you have the horizon line you are ready to start making the prospective view.

Once again keep in mind that any feature of the object in top view that is lying on the picture plain will appear in two dimension in the prospective view keep that in mind.

Student: **(**(Refer Time: 26:53))

What is your height what is your height 6 2 sure ok, so if you stationed here and if you not scaling your height your horizon going to be 6 2 minus whatever your dimension whatever this dimension is all right. Let us draw the front page because we know that going to be in two dimensions that is the vanishing point once again if you look at an object far away along this direction. So, this ray which is parallel to this edge over here of the object will be hitting the horizon line over here and that will become you vanishing point.

So get the true shape stay with me, stay with me get this phase into true shape extend ray from this vertex towards a vanishing point extend another ray from this vertex towards a vanishing point. The third ray from this vertex towards a vanishing point, so in a sense, the three edges of this cube are going to be vanishing point. Along these directions and they are going to be converging towards a vanishing point.

Let us use the sight information look at the vertex in top left in top view this ray is going to be intersecting the feature plane over here take the projection of this intersection on this edge. So, this is the image of this vertex and the perspective view likewise the vertex on top right this ray intersect the picture plane here get the projection of this. This point is the image of this vertex in the perspective view and this point is the image of that vertex on the bottom edge of the cube and finishes the cube.

Let say you have another cube, let us say you have a another cube, Mishraji do you need some water double up double up you know it is not your fault I must be reminds me of my CS 101 one days. When I was checking the first year course in Computer Science, I was taking this course one CS 101 and one I guess I was being thought Fortran by professor D M Dhandere and it was not very nice day, quite hot and we were actually sitting in the B C Saxena auditorium. We have this nice auditorium in there and I was in the second bench, and usually that is never happened with me except for that one incident.

Where my eyes felt heavy and I was like and when the class was over and you know Professor D M Dhandere was just here and he could have a very nice view of me and I was like and after the class ended. I was still like this and when somebody with this to me I woke up and I fell the stair, so it happens, so I do not blame you guys. So, imagine that we have another cube imagine that we have another cube a which the phase is slightly behind the picture plane not on the picture plane, but slightly behind the picture plane, what you do, how do you get the height information?

Student: ((Refer Time: 32:31))

So, what you do is project that phase of the edge on the picture plane you know that, that will be in 2 dimensions. You see that profile view on the right get that phase in two dimensions let the three edges of this cube vanish and converge at VP. Use this sight information use this sight information this guy intersect over here take the projection

down. That would be hitting for those edges over there like wise use this sight information see this vertex from the station point. Get the intersection point project that downward and that would be hitting over here and this phase would actually be your perspective phase corresponding that object once again.

If the features of an object are not on the picture plane to get the height information project the feature of the object on the picture plane like, so you know that this phase is going to be in two shape. It is going to be having 2 dimensions get the verticals down get the height information from the right draw that phase in two dimensions. Draw this phase in 2 dimensions let the 3 edges of that cube vanish at the vanishing point or towards the vanishing point. You would know that these two vertices they will have to lie on this two rays, once you know that start working with this sight information use the top view look at this vertex.

This ray is going to be hitting the picture plane over here takes that projection come down. This is the image this point is the image of this vertex here like wise look at this vertex get the intersection point take the projection downward this point is the image of this point in the perspective. Once you have this point, this point you would have the corresponding points on the bottom two edges you complete the phase.

Student: ((Refer Time: 35:43))

We can fine stay with me stay with me and the rest is straight forward rest is straight forward. Look at that vertex on the left get its projection down look at this vertex from the left get intersection point get its projection down and complete this cube like this straight forward. Once you understand how to construct straight forward it is not very difficult another example. So, this how the perspective of this cube looks this how the perspective of that cube looks. If you observe all these edges, all these edges they tend to converge to a single vanishing point there how about from the right a cube a little far away from the projection plane give the same thing project for the phases on to the picture plane.

Get the two phase of this cube draw edges that converge towards the vanishing point. Use this sight information project the intersection points get the perspective of the phase of this phase of the cube and follow the same procedure and finish the cube. Art is boring

is not it a maybe not, so once you practice you will you will probably get little more questions.

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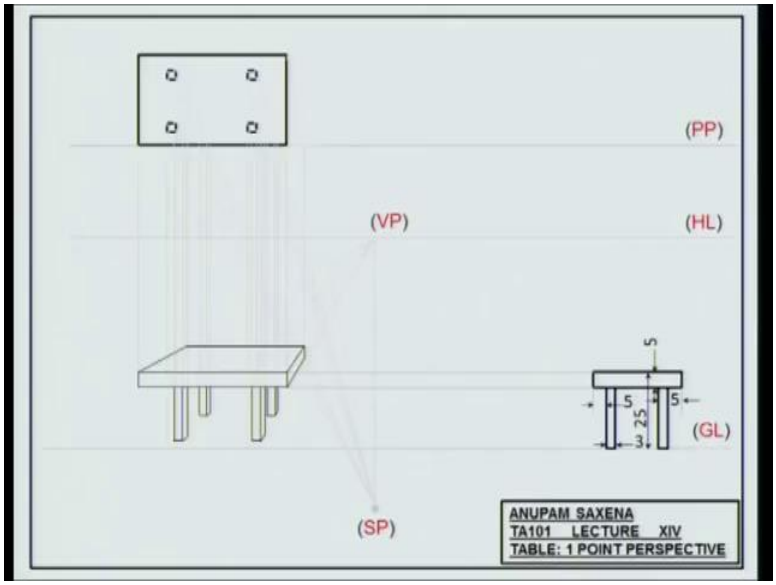

How many of you guys are with me? So, let us draw a table let us draw a table in one point perspective. The top view is given the profile view is given stay with me stay with me and some dimensions are given, so do not worry about the dimensions. Once you have this information let us start I was just want you to observe I will go mute I just want to guys to observe I will go slow.

Shall I may I before I go mute I will also explain why this is the vanishing point. Again, if I am stationed over here, if I am stationed over here, and if I am looking at an object far away along this direction, so this point would be my vanishing point on the horizon line and this ray from the station point. Again, top view will be parallel to that edge of the object. Single point perspective of a table keep your eyes on the screen here we go once again.

Student: ((Refer Time: 42:42))

Come after the mid sem exam is this art not yet not yet, but is this going is this giving you a realistic view of a table. This is not isometric definitely are you getting the realistic view, so just follow those little guide lines to draw a single point perspective view and practice any hostel rooms. Before you leave wait before you leave in a single point

perspective of course you have a single vanishing point. Make sure that you have at least one phase of the object parallel to the projection plane. One phase of the object parallel to the projection plane in the top view otherwise you would not get it right. So, this guy has to be parallel to the projection plane of the picture plane, so if you have questions I am here otherwise.