

Our Mathematical Senses

The Geometry Vision

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Lecture - 04

Video 1C: why do some lines share a vanishing point?

Why do certain lines share a vanishing point? Okay, so now let's answer the question of why certain lines will actually share a vanishing point in the picture plane. So, let's return to our picture once again. And the question is why do certain lines in space end up having images which share a vanishing point on the picture plane? Namely this line and this line. So, let's take a look down the other side rail. So, all this time we've been looking down this side rail. Now let's look down this other side rail.

And when we do that, we will again look further and further along it. So we go from, and as we do that we're going to paint out an image on the picture plane. So, as we look further and further and further and further along it, once again we end up at a limiting sight line which is parallel to that other side rail. Except this other side rail is parallel to our original side rail.

So, we actually end up with the same sight line that we reached the first time around when we looked down our original side rail. And in this way these two parallel lines share a vanishing point. And in fact, what is that vanishing point? Well, it's the unique, it's because that limiting sight line is the unique line through your eye which is parallel to the side rail. In that family of parallel lines, there's only one line that goes through your eye which is parallel to that family. If you remember your Euclidean geometry, given any line at a point not on the line, there's a unique line that is parallel to your original line running through that point.

So, as a result the entire family will share that single vanishing point. .