

STEVE CAPLIN'S **A** TO **Z** OF DESIGN

P: Perspective

Steve Caplin walks us alphabetically through the concepts essential to success for any jobbing or aspiring designer.



ABOUT THE AUTHOR

Steve Caplin is a designer and illustrator working for a range of national newspapers. His best-selling *How to Cheat in Photoshop*, now in its fourth edition, is published by Focal Press.
<http://books.macuser.co.uk/caplin>

Whether you're drawing illustrations from scratch in Illustrator or Freehand, or creating montages in Photoshop, you need an understanding of how perspective works in order to make your creations look convincing. Incorrect perspective is the single factor that, more than any other, makes illustrations look wrong: and yet it's easy enough to get it right, as long as you follow a few basic rules.

There's one essential rule that always holds: the horizon is always at the same level as the viewer's eyes. No matter whether you're sitting or standing, lying on the beach or gazing out of a high window, you'll always look straight ahead to see the horizon. It's perhaps a surprising rule, and you may need to try it for yourself before you believe it. But it's the bedrock upon which the whole of perspective depends.

What the horizon means, in practice, is that if you're populating a landscape or a room with figures drawn from a variety of

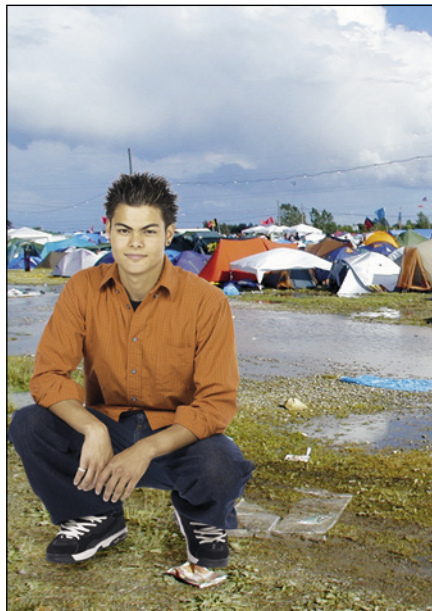
sources, then one way of guaranteeing that they all look as if they occupy the same space is to ensure that the eye height of all the characters also lines up with the horizon. The distance the people are from the viewer is then determined by the position of their feet, rather than their heads.

Clearly, there are exceptions: children will be below this line, as will Oompa Loompas and other people of diminutive stature; the eight-foot swamp monster from the planet Zog will tower above it. We can also change the emphasis by placing our subjects above the horizon line, which will mean we're looking up to them (a technique favoured by Mussolini, for example) or below the horizon, so we're looking down from a height (Princess Diana was often photographed this way to make her appear shorter and more feminine).

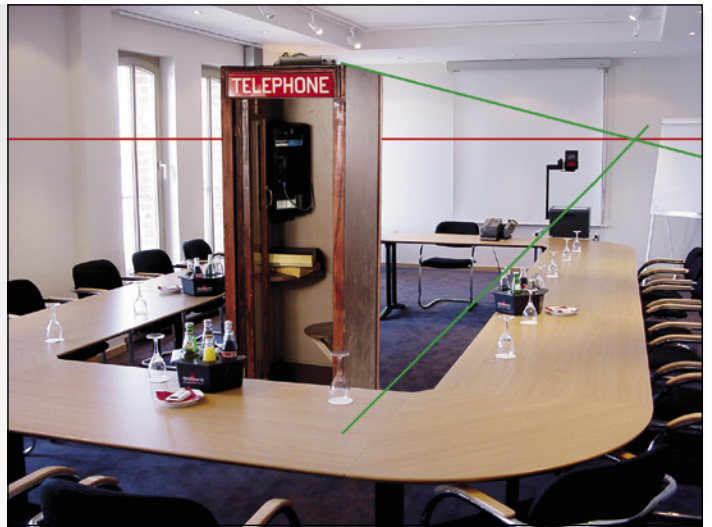
We can establish the horizon line in an existing photograph, even if no horizon is on view. All you need is an image that shows clear horizontals receding in the z-axis – that is, lines which are parallel to the ground, but which recede into the distance. In Photoshop, make a new layer; with the Shapes tool set to draw straight lines, drag a line that follows any of the lines along this axis, but which continues past it into the distance.

Repeat this procedure with another line in the picture, preferably one far away from the original. Where these two lines meet is the vanishing point, which always sits on the horizon. If you now continue this procedure with other z-axis lines in the image, you'll find that they all meet at the vanishing point. Draw a new horizontal line

◀ **Whether we're standing or sitting, the horizon is always on our eyeline. This is true even when we're on the top of a tall building.**



► By drawing vanishing point lines attached to an already-photographed object, we can position it correctly within our scene by coinciding the two vanishing points.



through this point, and your horizon will be clearly defined.

Now, when you place people into the scene, arrange them so their eyelines are on the horizon, and they'll look as if they fit within the scene. This is the simplest way to position people, whether indoors or outside: it makes the business of getting the scale correct much easier.

We can also use the vanishing point for drawing new objects in our scene. To make a simple box, draw lines from the vanishing point first, to give you a readymade perspective onto which to place your top and sides. We can also use the vanishing point when placing already-photographed items into the scene. One way of doing this is to draw vanishing lines from the object in question on a new layer and linked to it; then drag the whole assembly until the vanishing point on the object meets that of the scene, and the object will be in perfect perspective.

So far, we've been looking at one-point perspective, where all the vanishing lines meet at a point. This is mainly used for

interior views, when the rear wall is head-on and directly facing the viewer. The perspective lines on the side walls will all meet at the vanishing point.

If we're looking at the outside of a building, then the two walls adjacent to the corner facing us will point in different directions. Each wall will tend to a different vanishing point: this is known as two-point perspective, and is by far the most common in everyday use. There's an excellent Java model showing how two-point perspective works at tinyurl.com/bjr74. When verticals in the scene aren't directly vertical in the picture, you'll need to look at three point-perspective – which further complicates the process.

When drawing perspective lines to the vanishing point, you'll frequently find that it's out of the side of the frame. There are two solutions to this: the first is to increase the canvas size of the image, so the vanishing point is included. The second method is to use the Shapes tool set to drawing Paths, and to zoom out so that the grey background outside the current

image area is visible in Photoshop. The paths will show up on the background, allowing you to set the vanishing point without increasing the image size.

A lot of perspective in Photoshop and Illustrator can be faked, using the Free Transform tool. When holding the Command key to drag a corner handle, and so freely distort a layer or selection, the contents will automatically be distorted as if they were being viewed in perspective. So to add black and white tiles to a floor, for example, first make a black and white pattern. Then enter Free Transform, and hold Command as you drag each corner to its correct position within the scene: the tiles will be distorted to follow the perspective of the scene with almost no effort on your part. ☒

▼ A We can read the perspective out of this scene by drawing lines along the z-axis – the top of the left wall, the sides of the table. Where they meet is the vanishing point; the horizon line (in red) passes through this.

▼ B We can use the horizon to correctly position figures within the scene. Because their eyelines match the horizon, they all fit the scale and perspective of the image.

