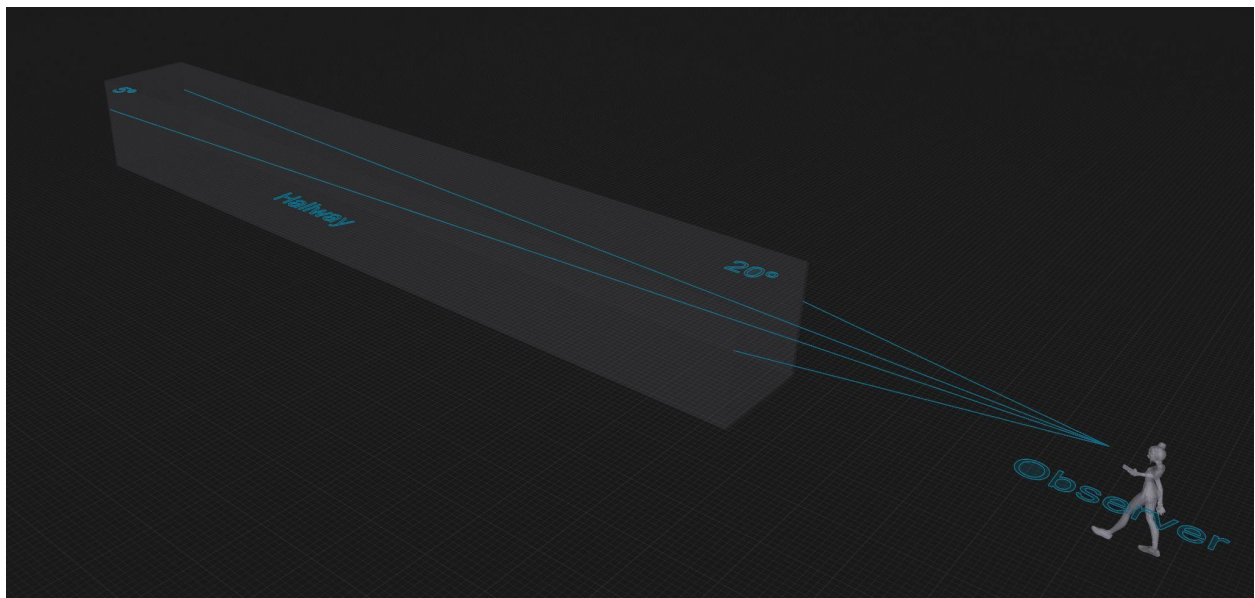


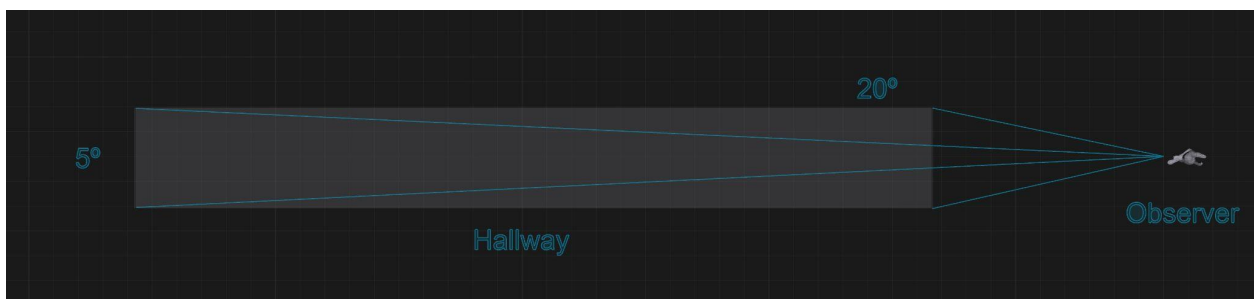
Perceptual Optics — 4. Perspective Vs. Orthographic Images.

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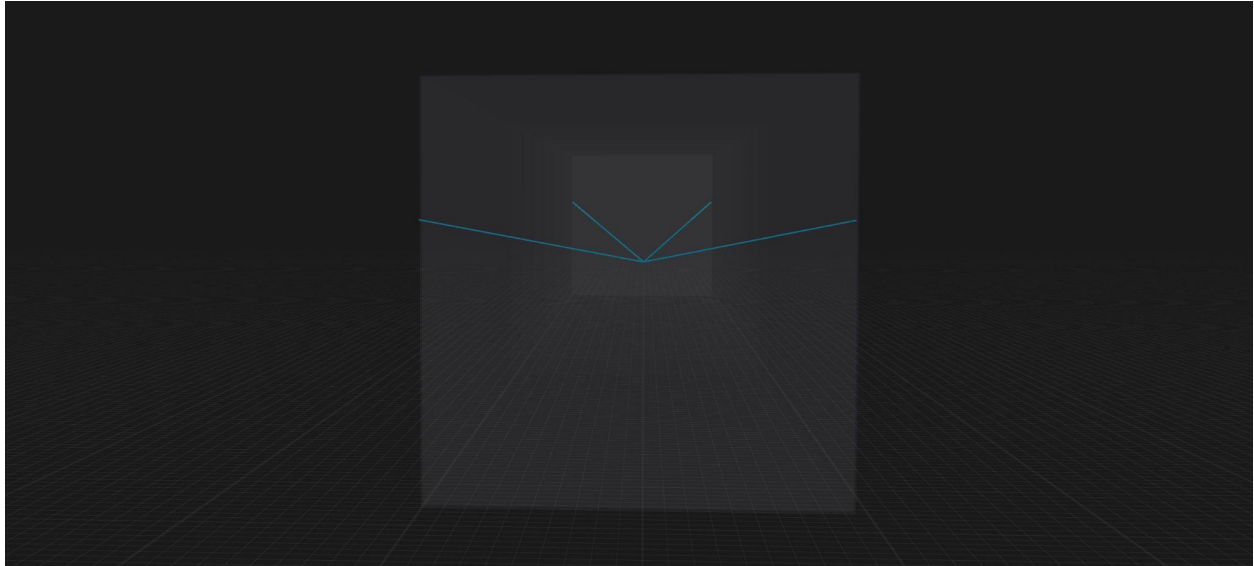
Perspective images are the ones we see everyday. They are the images our eyes see. They are the images our cameras take. They warp 3D space a certain specific way to make it fit onto a flat planar, or hemispheric-shell, 2D surface. The way they do this is to shrink more distant objects. If you imagine looking down a long hallway, at the far end of the hallway its width takes up less “theta” angular space than the width at its close end, even though you know it is the same width at both locations. Taking an image by geometrical fact requires this compression of the size of farther objects.



Let's examine this idea with the use of an orthographic image. **Orthographic images** are like you could place a 1D eye that just looks straight ahead at every pixel in the image. You get an image in which all the distances are true to life, but you can't see depth well. In the image below, an orthographic (“pure 2D”) image is taken of an observer looking down a long hallway. As you can see, to her, the front of the hallway looks wider (20° of theta) than the back (5° of theta!).



In the image below, you have a “point of view” perspective image of what the woman looking down the hall would see. As you notice, for visual perception and consciousness, *we never leave the perspective image!* The back end of the hall looks narrower, at least in terms of the angular theta width that it takes up in our perceptual space.



If we were able to make consciousness go into orthographic mode, then we'd see the hallway like below (note that the front and back of the hallway cannot be made out orthographically).



A set of architectural drawings usually includes both several orthographic drawings (elevation view, bird's eye view) as well as a perspective drawing on the front cover to show a real-life 3D angled perspective that shows depth as if you were there in real life. The orthographic drawings are good though, but are confined to a single 2D plane. Perspective images can reveal things at differing depths and give a sense of 3D. **Nevertheless, a perspective image is still fundamentally a 2D image.**