Summary - Perspective Images of Orthogonals

Assume:

- Viewer: looking at the picture plane with eye on the (neg.) z-axis.
- Origin: point on the picture plane that the viewer looks directly at.
- Picture plane (p.p.) $= xy$-plane.
- Viewer: looks at a point on a line orthogonal (i.e. $\perp$) to picture plane

In this situation:

- Viewer's line of sight is **not** orthogonal ($\perp$) to the picture-plane.
- Looking farther out along orth $\leftrightarrow$ line of sight closer to orth to p.p.
- Looking at pt "infinitely far" on the orth $\leftrightarrow$ line of sight orth to pp
- Looking "∞-ly far" on the orth $\leftrightarrow$ line of sight intersects pp at $(0, 0)$.
- Perspective image of an **orthogonal** can not extend beyond the origin.

Vanishing Point Theorem, Part 1 (Orthogonals): The perspective images of **all** lines orthogonal to the picture plane have *vanishing point* at the origin, i.e. directly opposite the viewer's eye