

# OPENGL - VIEWING

## 2.6 Viewing

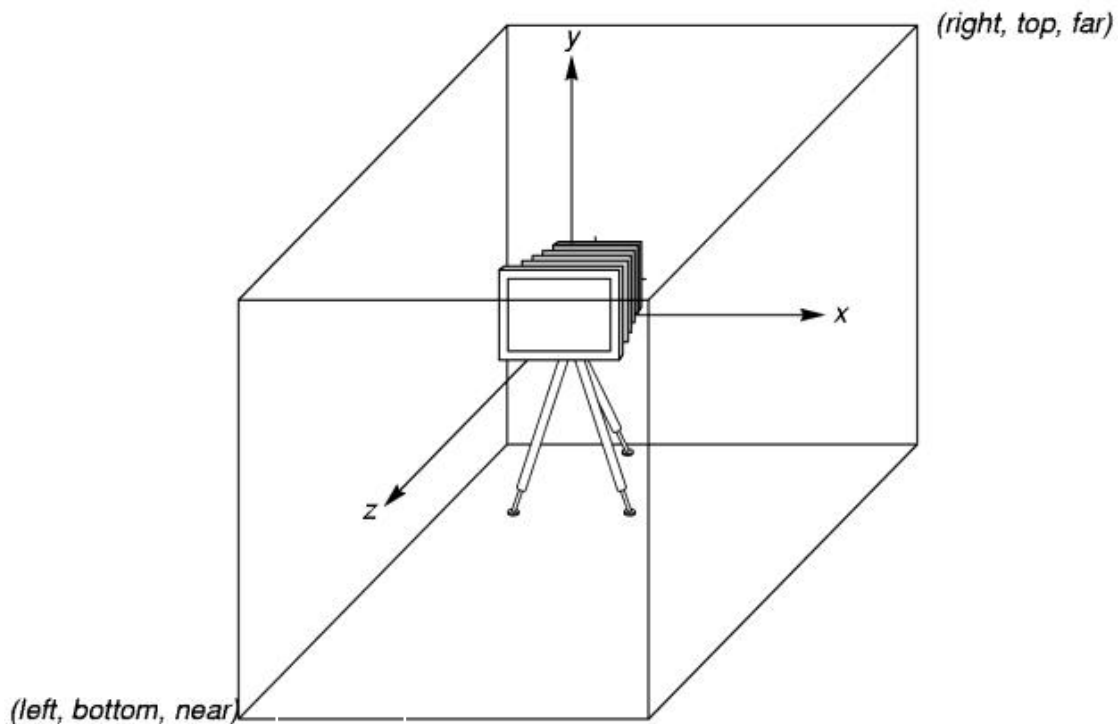
The default viewing conditions in computer image formation are similar to the settings on a basic camera with a fixed lens

The Orthographic view

- Direction of Projection : When image plane is fixed and the camera is moved far from the plane, the projectors become parallel and the COP becomes “direction of projection”

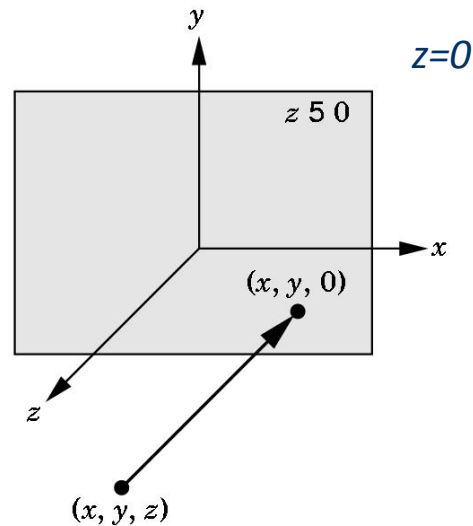
### OpenGL Camera

- OpenGL places a camera at the origin in object space pointing in the negative  $z$  direction
- The default viewing volume is a box centered at the origin with a side of length 2



### Orthographic view

In the default orthographic view, points are projected forward along the  $z$  axis onto the plane



## Transformations and Viewing

- The pipeline architecture depends on multiplying together a number of transformation matrices to achieve the desired image of a primitive.
- Two important matrices :
  - Model-view
  - Projection
- The values of these matrices are part of the state of the system.

In OpenGL, projection is carried out by a projection matrix (transformation)

There is only one set of transformation functions so we must set the matrix mode first

### **glMatrixMode (GL\_PROJECTION)**

Transformation functions are incremental so we start with an identity matrix and alter it with a projection matrix that gives the view volume

**glLoadIdentity();**

**glOrtho(-1.0, 1.0, -1.0, 1.0, -1.0, 1.0);**

Source : <http://elearningatria.files.wordpress.com/2013/10/cse-vi-computer-graphics-and-visualization-10cs65-notes.pdf>