

Assalamu'Alaikum

Wa rahmatullahi wa barakatuhu

WELCOME TO OUR PRESENTATION

**OUR PRESENTATION TOPIC IS
ABOUT**

3D Display Methods

3D Display Methods

In this section, we focus on a subgoals of realistic picture. This co-ordinate reference defines the position and orientation for the plane of the camera, as shown in next slide. This plane must be used to display a view of the object; its description has to be transferred to the camera reference co-ordinates and projected onto the selected display plane. Then we can display object in wire frame form or we can apply lighting and surface rendering techniques to shade the visible surfaces.

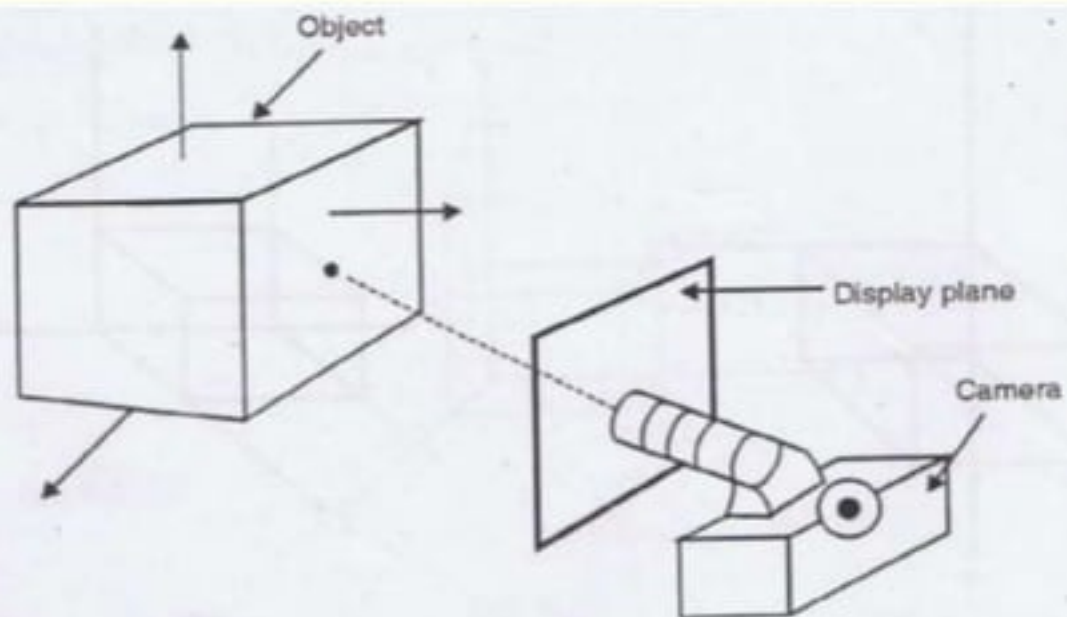


Fig. 4.3.1 : Setting a co-ordinate reference.

Parallel Projection

- In parallel projection, z co-ordinate is discarded and parallel lines from each vertex on the object are extended until they intersect the view plane.
- We connect the projected vertices by line segments which correspond to connections on the original object. As shown in next slide a parallel projection preserves relative proportions of objects but does not produce the realistic views

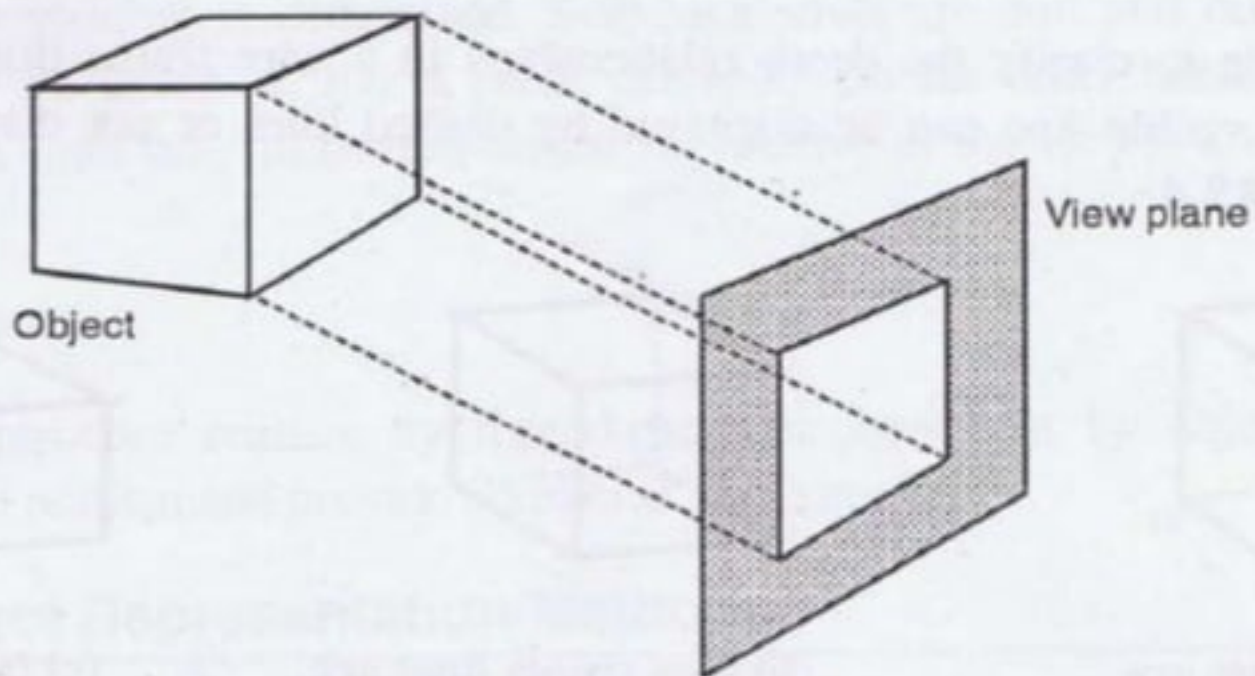


Fig. 4.3.2 : Parallel projection of an object to the view plane

Perspective Projection

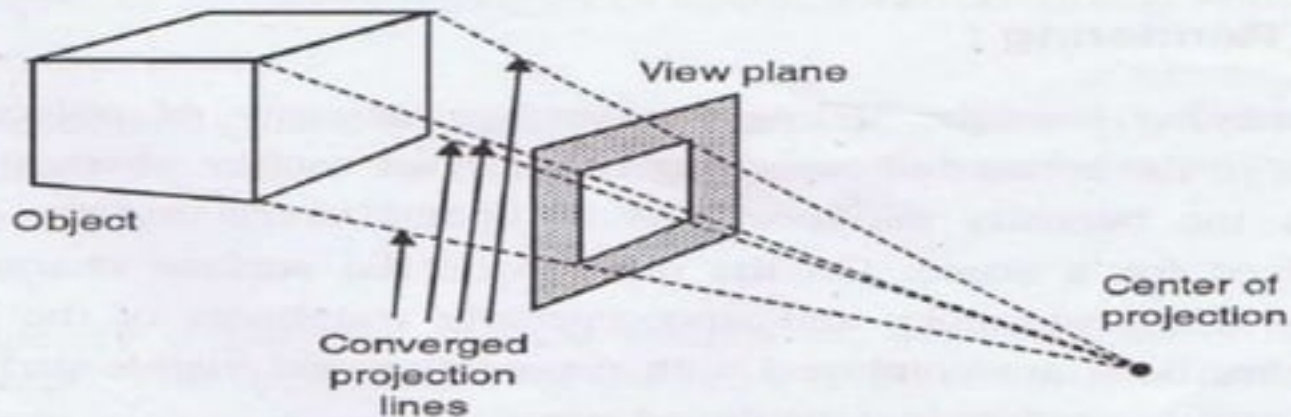


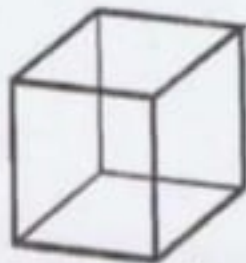
Fig. 4.3.3 : Perspective projection of an object to the view plane

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- The perspective projection, on the other hand, produces realistic views but does not preserve relative proportions. In perspective projection, the lines of projection are not parallel.

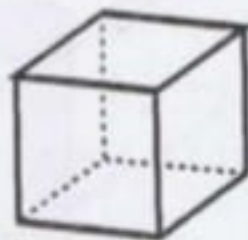
Depth Cueing

- To create realistic image, the depth information is important so that we can easily identify, for a particular viewing direction, which is the front and which is the back of displayed objects. The depth of an object can be represented by the intensity of the image. The parts of the objects closest to the viewing position are displayed with the highest intensities and objects farther away are displayed with decreasing intensities. This effect is known as 'depth cueing'.

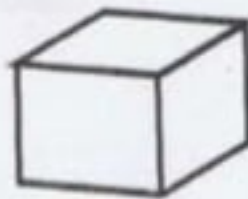
Visible Line Identification



(a) visible lines are highlighted



(b) Non visible lines are shown by dashed lines



(c) Nonvisible lines are not shown

Fig. 4.3.4

Visible Surface Identification

- The visible surface identification can be done with visible surface algorithms. They establish visibility pixel by pixel across the viewing plane or determine surfaces for object as a whole. Once the visible surfaces are identified we can apply surface rendering techniques on them to obscure the hidden surfaces

Surface Rendering

- Surface rendering involves setting the surface intensity of objects according to the lighting conditions in the scene and according to assigned surface characteristics. The lighting conditions specify the intensity and positions of light sources and the general background illumination required for a scene. On the other hand the surface characteristics of objects specify the degree of transparency and smoothness or roughness of the surface; usually the surface rendering methods are combined with perspective and visible-surface identification to generate a high degree of realism in a displayed scene.

Material Properties & Shadows

- Some materials are shiny and reflect light only in certain directions relative to the viewer and light source, like a mirror.
- We can introduce realism by reproducing shadows cast by objects on one another. Shadows enhance realism and provide additional depth cues.

Thank
you

