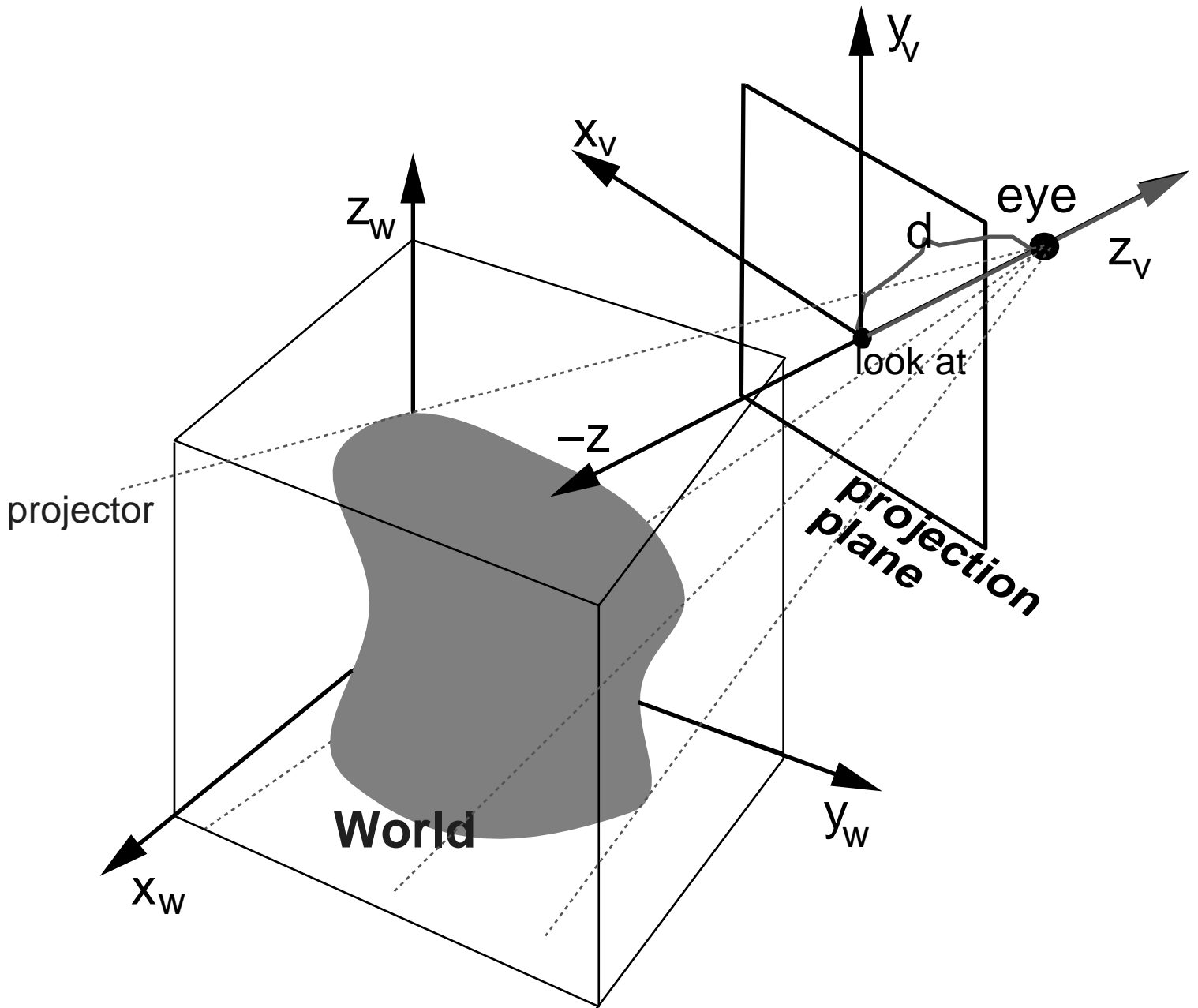
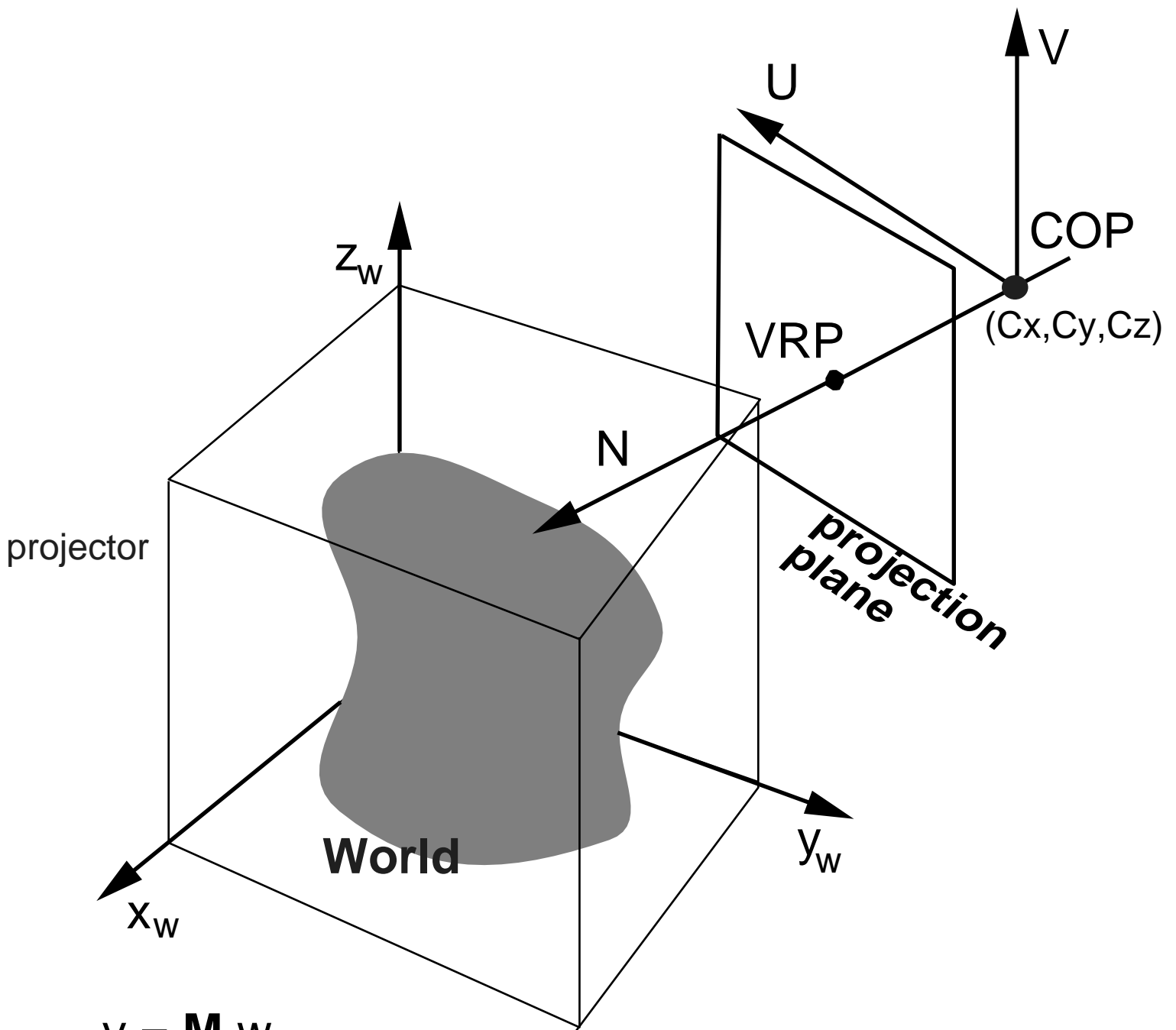


3D Viewing

1. Define a view space
2. Projections
3. Clipping
4. Hidden surfaces removal



- view point (COP)
- view direction (VPN)
- view reference point (VRP)
- view plane
- a view volume



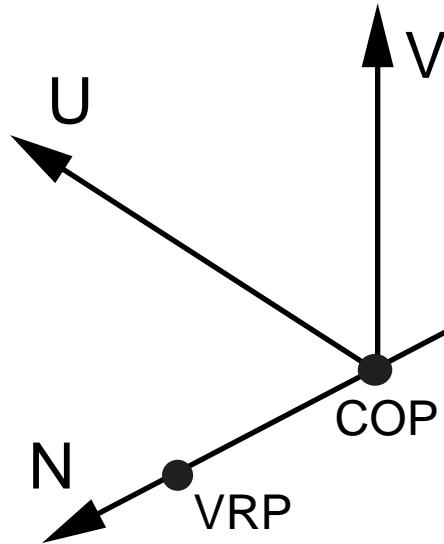
$$v = M w$$

$$M = RT$$

$$T = \begin{bmatrix} 1 & 0 & 0 & -C_x \\ 0 & 1 & 0 & -C_y \\ 0 & 0 & 1 & -C_z \\ 0 & 0 & 0 & 1 \end{bmatrix}$$

$$R = \begin{bmatrix} U_x & U_y & U_z & 0 \\ V_x & V_y & V_z & 0 \\ N_x & N_y & N_z & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}$$

Given COP and VRP, how to set up a view coordinate system?



C is known

$$N = \text{VRP} - \text{COP}$$

$$V = V' - (V' \cdot N) N$$

$$U = N \times V$$

