

# View Volume

- A view volume is a 3D shape, defined by six planes
- It is the room the eye point sees, anything outside the six planes is non-visible.

## View volume for parallel projection

- For parallel orthographic projection, the view volume is a cuboid (Quader auf deutsch)
- The cuboid is defined by a near plane (the projection plane) and a far plane which are the same size, as well as top, bottom, left and right planes.
- The near and far planes are orthogonal to the camera's F-axis (the one pointing at the near plane)

## View volume for perspective projection

- For perspective projection, the view volume is a frustum, a truncated pyramid.
- Near and far planes are orthogonal to the camera's F-axis but they're not the same size.

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### Summary of 3D viewing

- We can now summarise the steps of the viewing process
- 1. The modelling transformation arranges objects in our 3D world
- 2. The viewing transformation transforms the world to give the same view as if it were being photographed by a camera
- 3. The projection transformation performs a parallel/perspective projection within limits (the clip planes)
- 4. Those parts of the 3D world outside the clip planes are discarded
- 5. If it's a perspective view, the perspective division "flattens" the image
- 6. The viewport transformation maps the final image to a position in part of the display screen window.