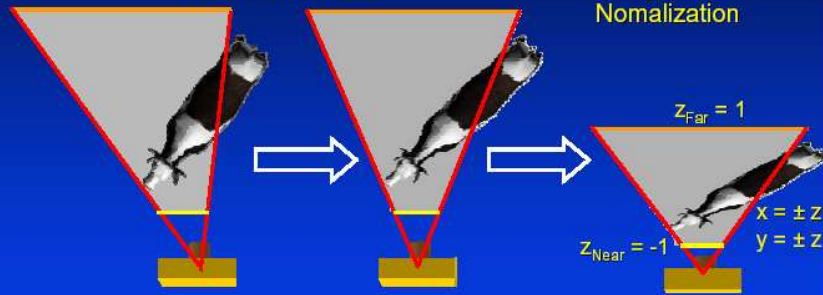


## Getting the Canonical Volume

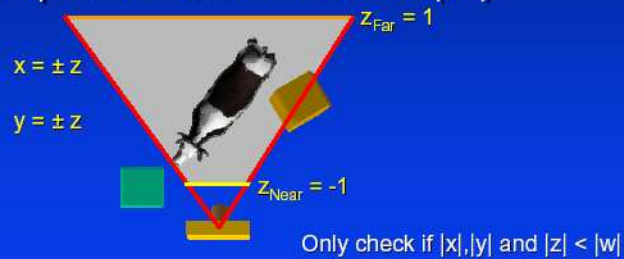
Shear the volume in X  
and Y directions

- Scale in X and Y and  
- Perspective  
Normalization



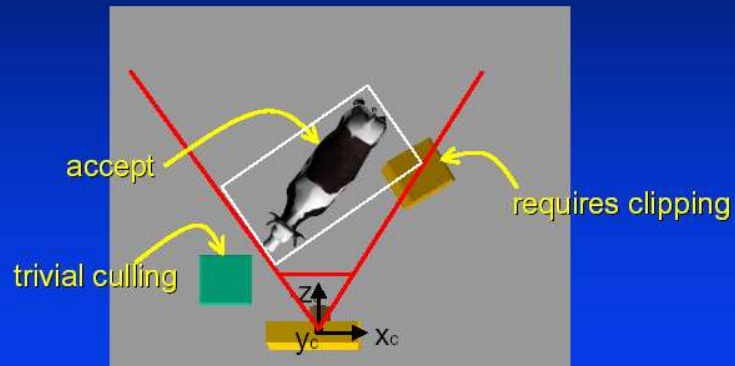
## The Canonical View Volume

- Symmetric,  $90^\circ$  field of view,  $z_{\text{near}} = -1$ ;  $z_{\text{far}} = 1$
- Also called *Normalized Perspective View Volume*
- Simplify clipper arithmetic
- Clip to a simple built-in set of boundaries (hw)



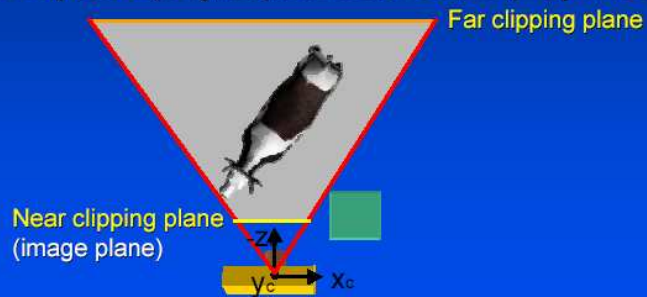
## The View Frustum

- Trivial accept/reject



## View Frustum in OpenGL

- `glFrustum(left, right, bottom, top, near, far)`
  - The frustum does not need to be symmetrical
- `gluPerspective(fovy, aspect ratio, near, far)` **symmetrical**



## Back Face Culling

- Removes polygons facing away from the viewer

