Up direction

θ_w

Look direction

θ_h

Location

n

f

Viewing volume

Frustum

f

n

Look vector

Far clip plane

w

h

Near clip plane

Aspect ratio $= \dfrac{w}{h}$

Figure 13.4: The distances to the near and far planes are measured along the look direction.
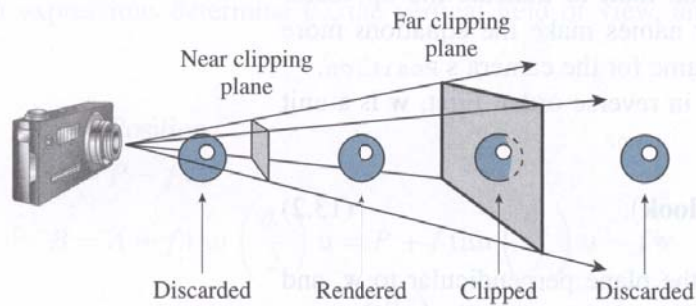

Near clipping plane

Far clipping plane

Discarded   Rendered   Clipped   Discarded

Figure 13.5: Objects outside the view frustum will not be rendered.

v

Far plane
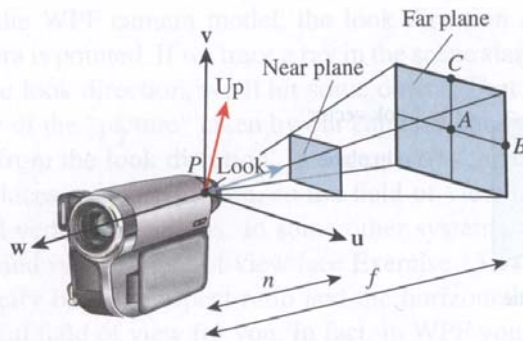
Up

Near plane

C

A

P   Look

B

w

u

n

f

Figure 13.6: The **uvw** frame for a camera, the **look** and **vup** vectors, and the points $P, A, B,$ and C.
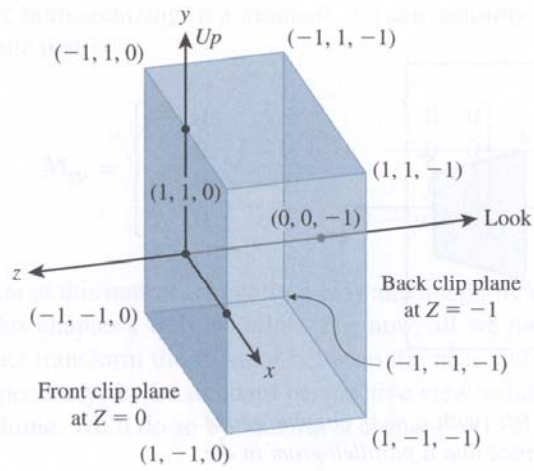
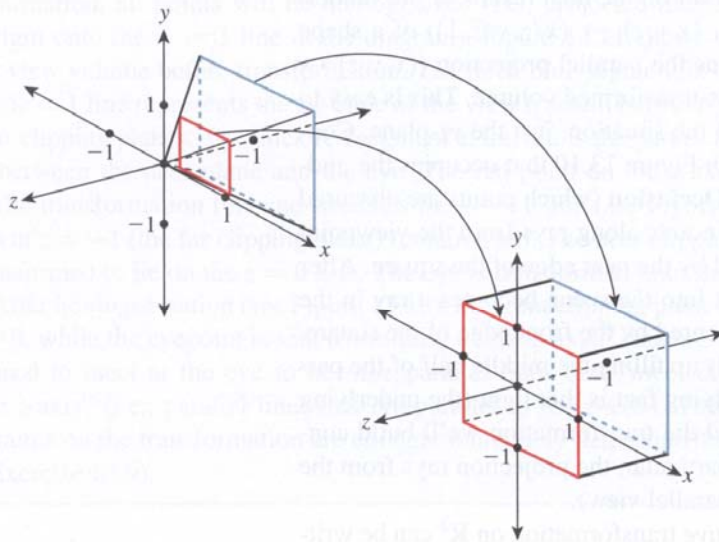Figure 13.8: The standard parallel view volume.
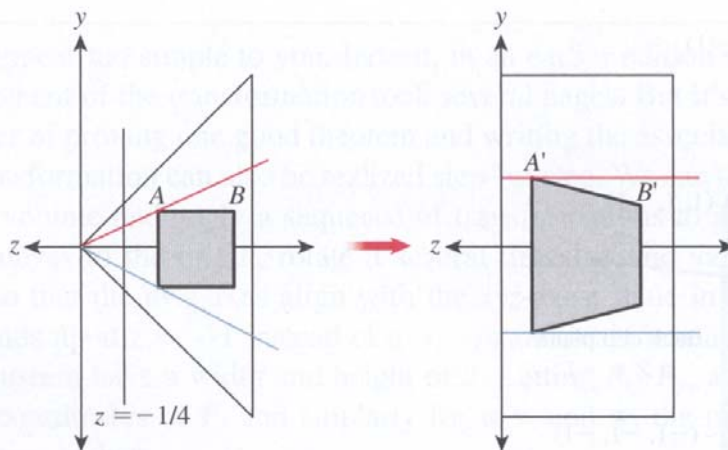

Figure 13.9: The unhinging transformation.

Figure 13.10: The standard perspective view volume at left (with a near clipping plane at $z = -1/4$) contains a small square, which is transformed into a parallelogram in the parallel view volume at right.
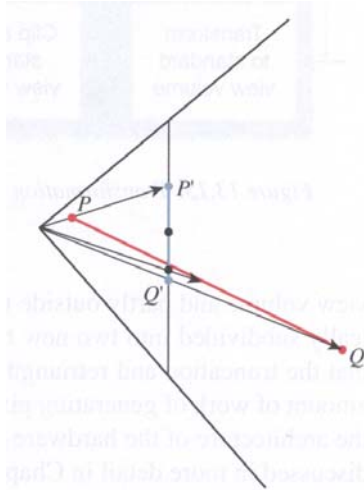
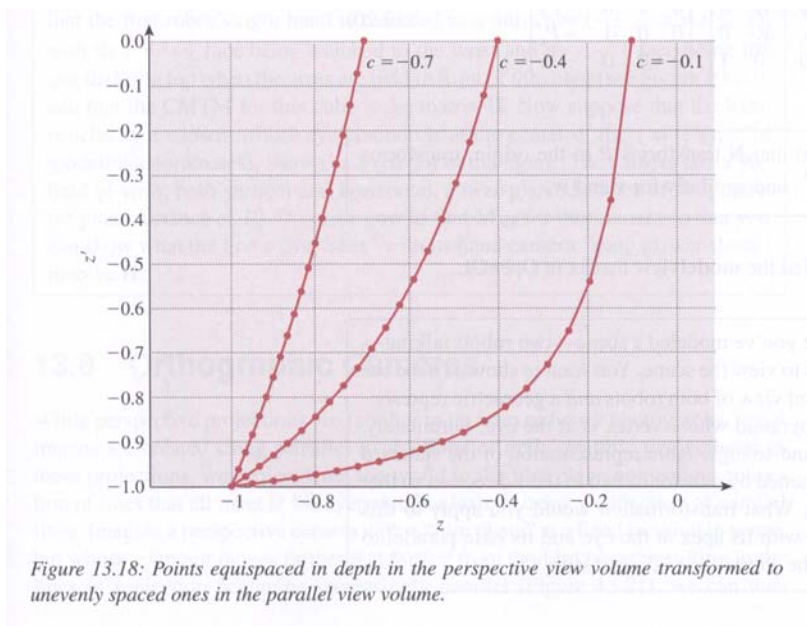*Figure 13.17: The projection of the midpoint of PQ is not the same as the midpoint of the segment P'Q'.*

Figure 13.18: Points equispaced in depth in the perspective view volume transformed to unevenly spaced ones in the parallel view volume.