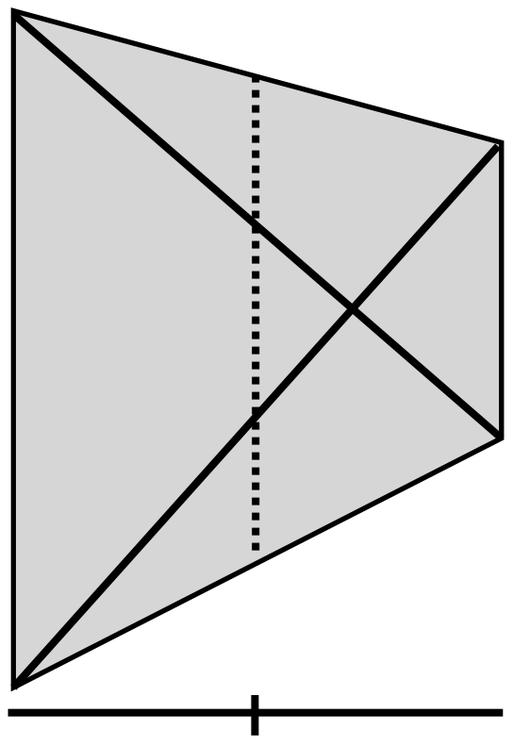
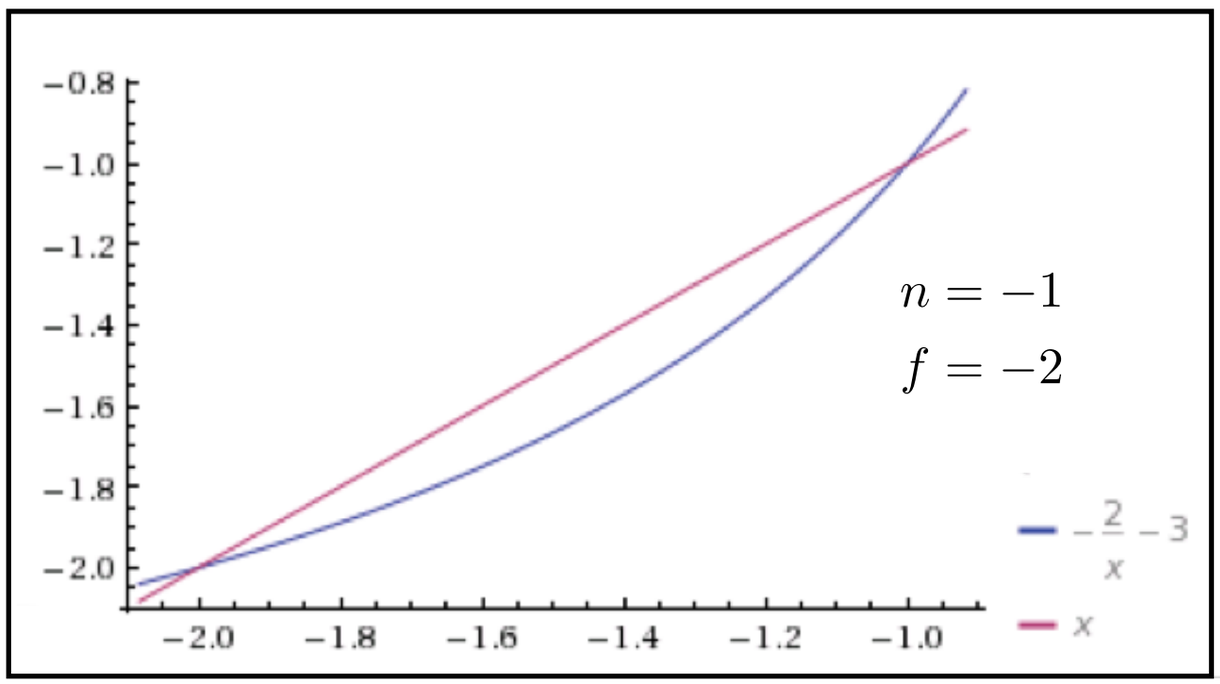
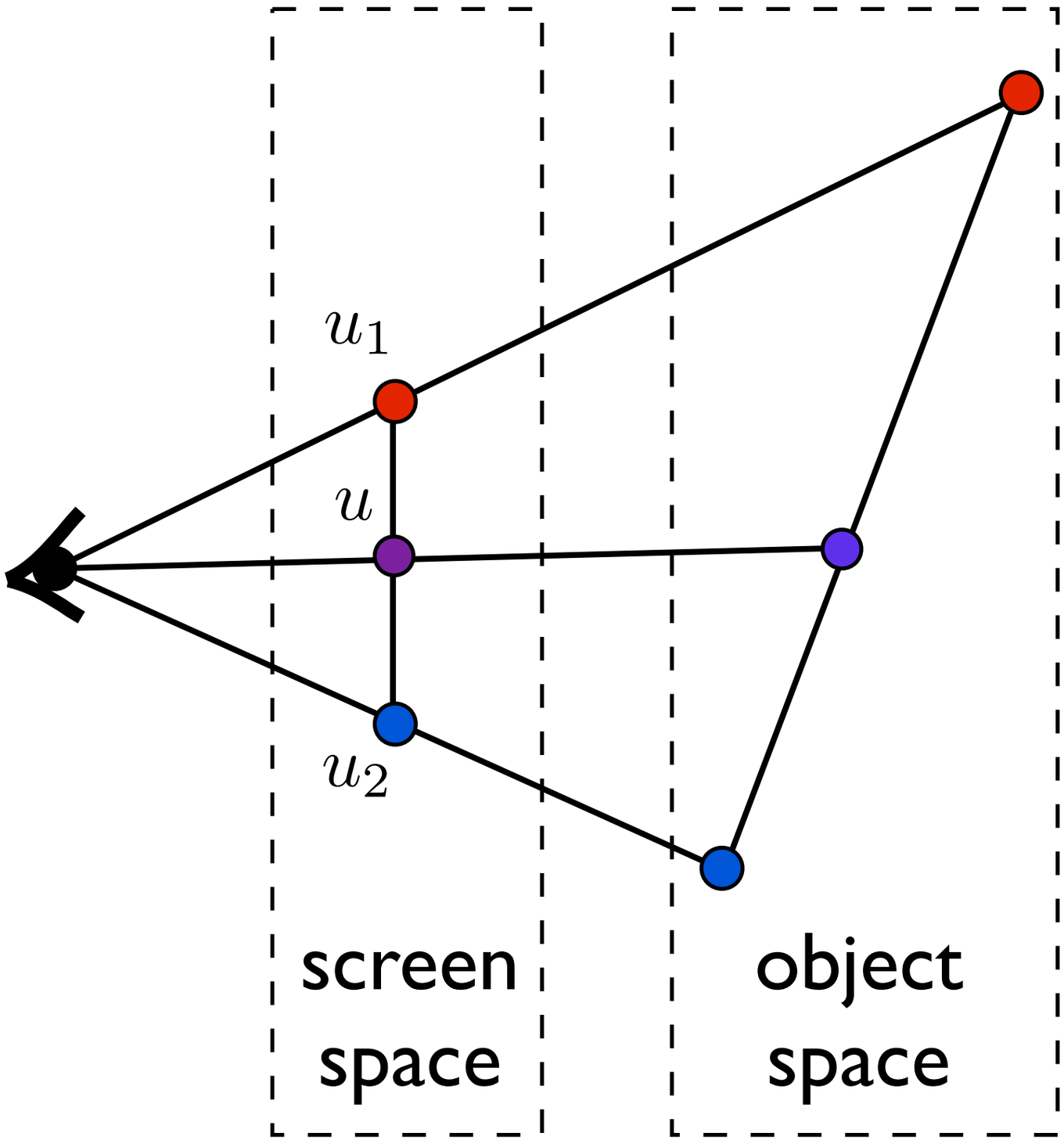
Perspective correct interpolation

Perspective correct interpolation

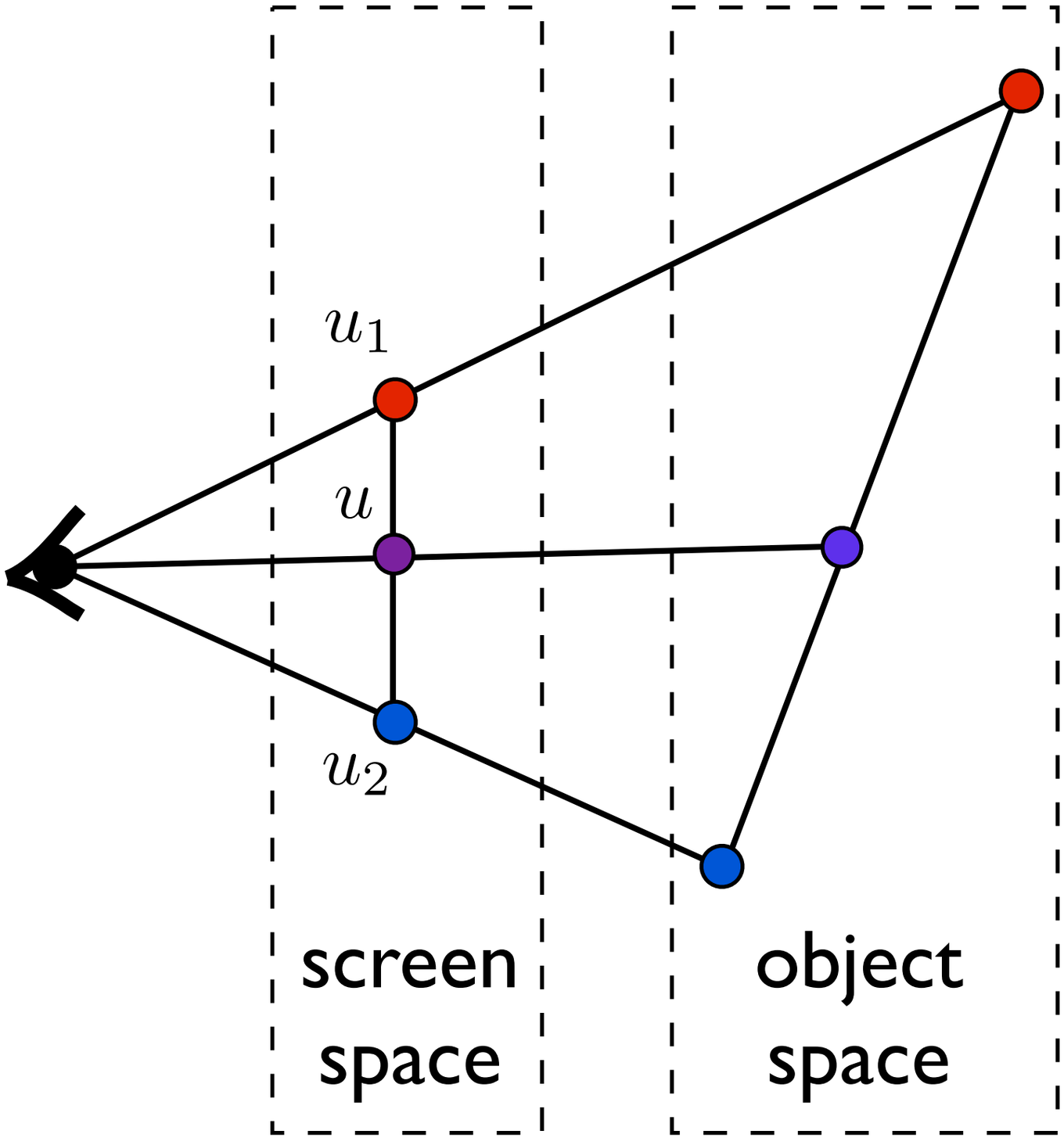
- In pipeline, we find barycentric coordinates in 2D screen space
  - but not the correct object space barycentric coords
  - these coordinates are okay for z-buffer test



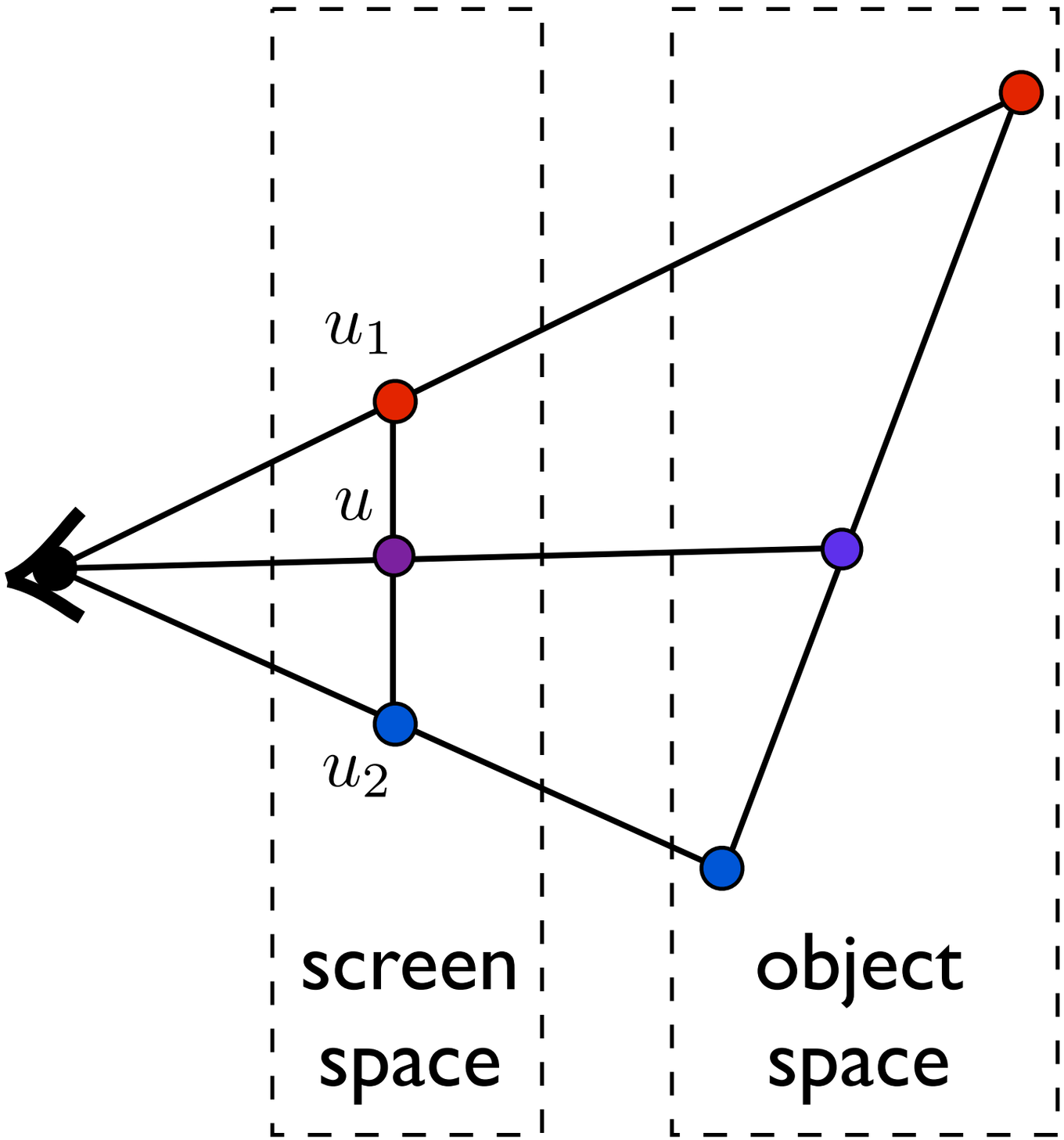




$$u = \frac{1}{2}u_1 + \frac{1}{2}u_2$$

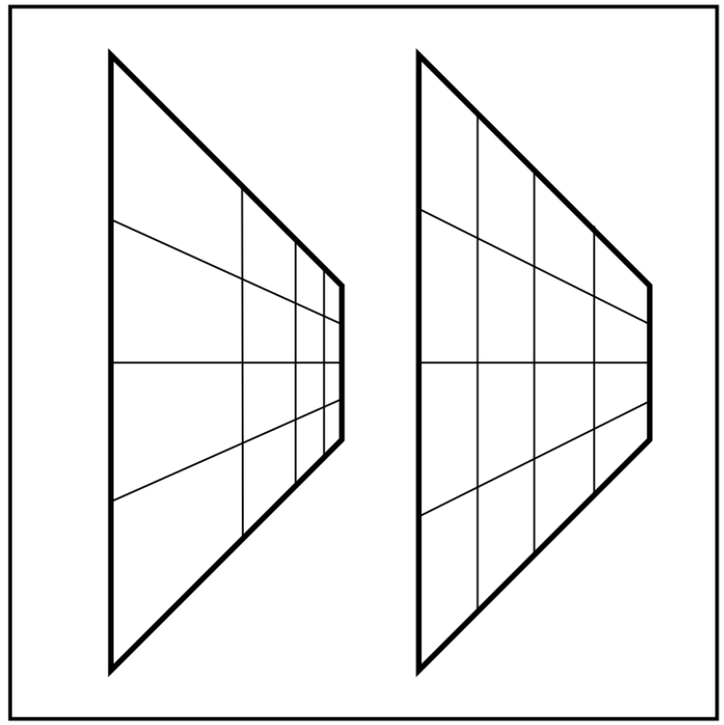


$$u = \frac{1}{2}u_1 + \frac{1}{2}u_2$$



Interpolation with screen space weights is incorrect

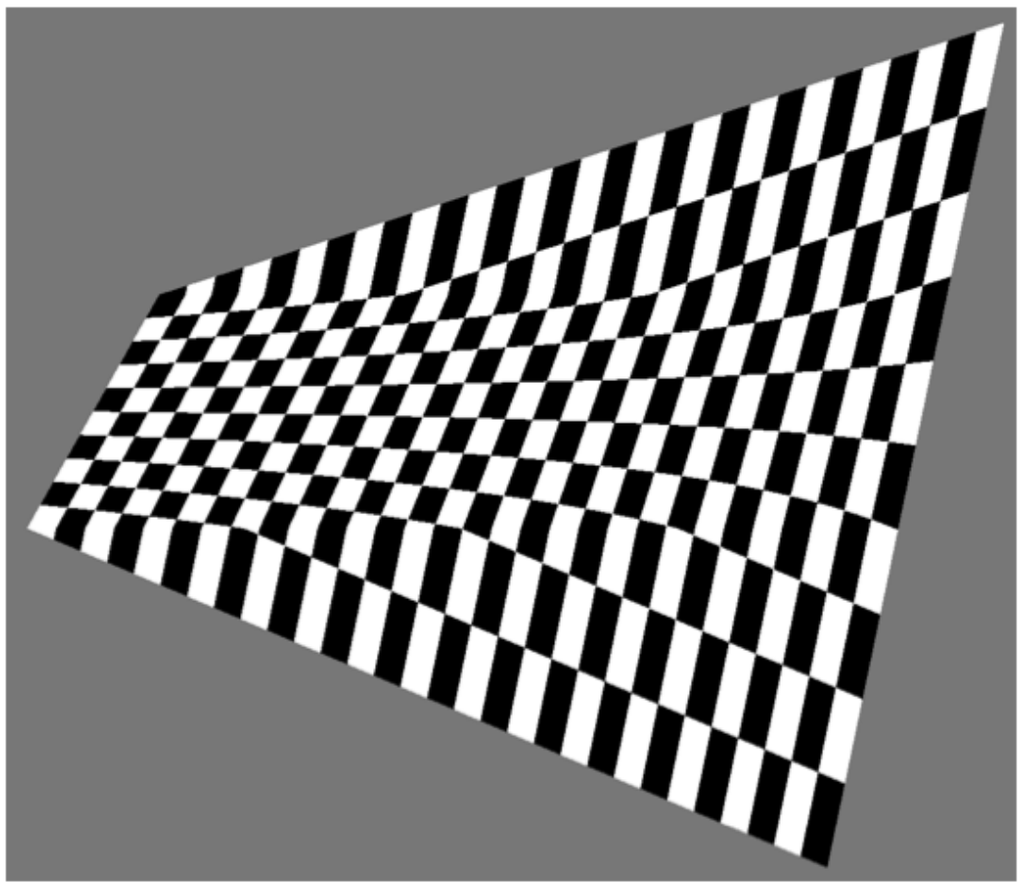
$$u = \frac{1}{2}u_1 + \frac{1}{2}u_2$$

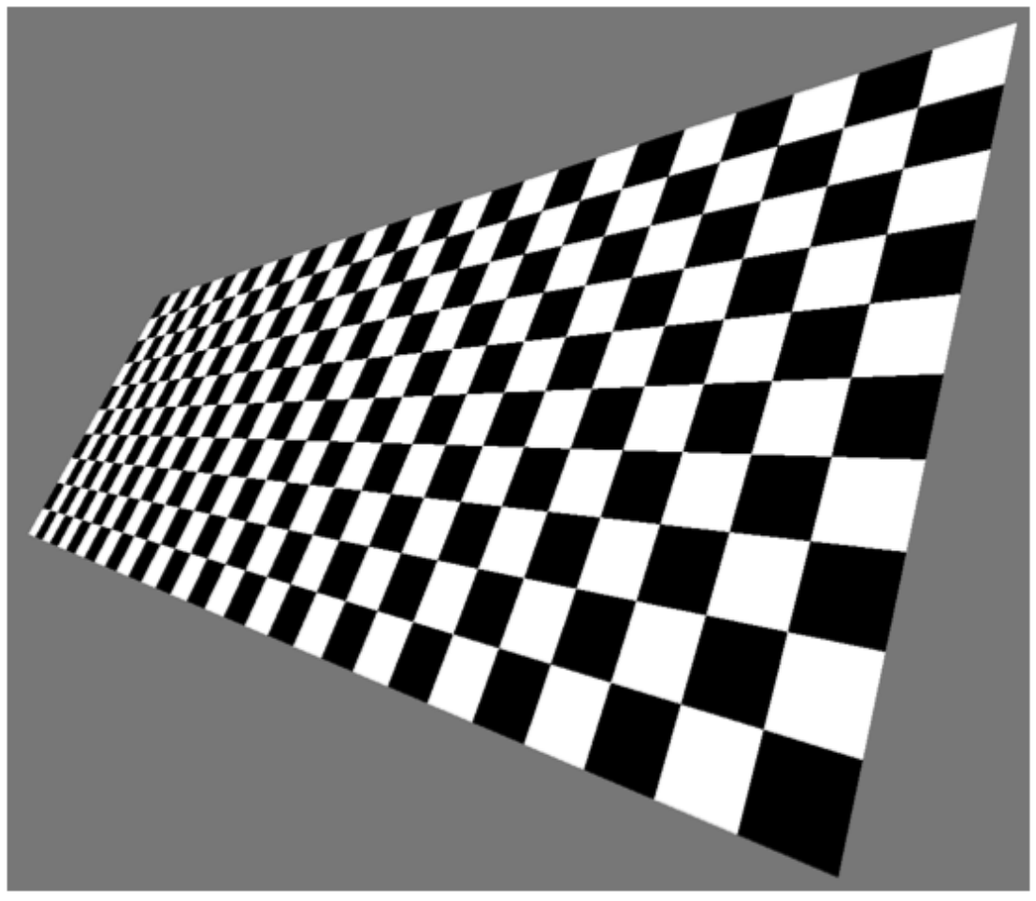


correct distorted

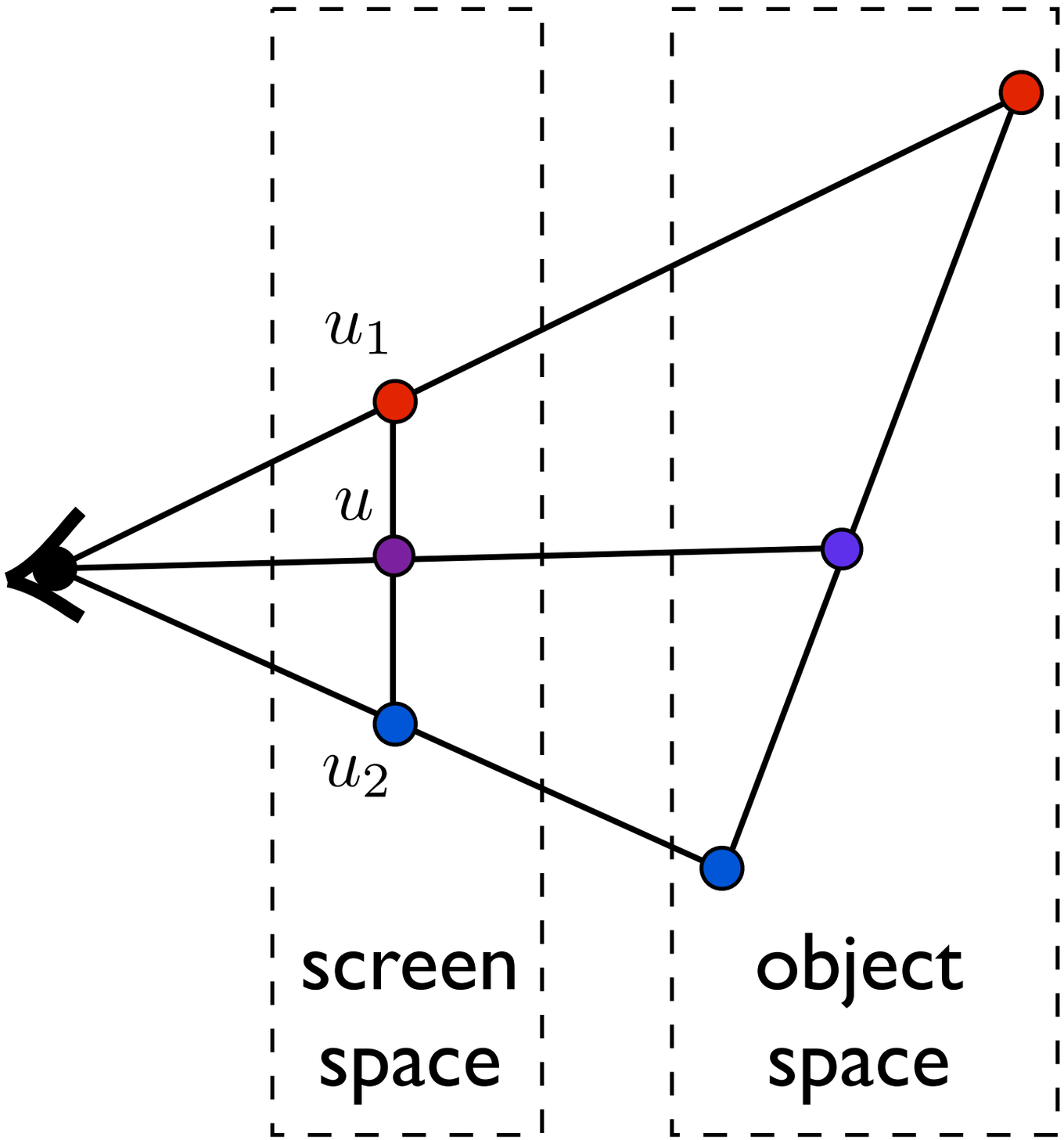
Perspective correct interpolation

Using screen space weights looks wrong for textures





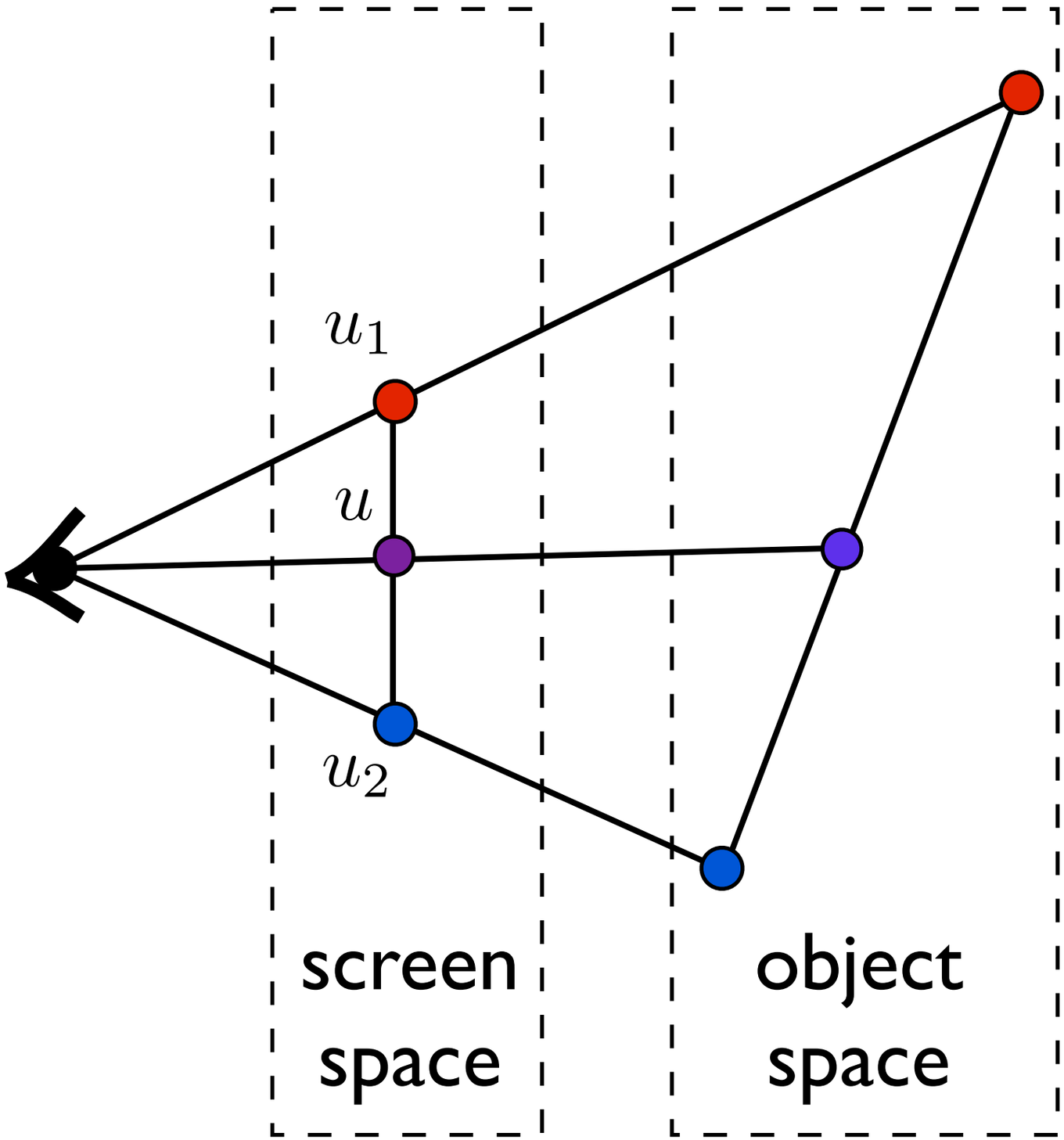
[Heckbert and Morton, 1990]



$$u = \frac{1}{2}u_1 + \frac{1}{2}u_2$$

Do we need to transform back to object space?

$$\mathbf{v}_{\mathrm{sc}} = M_{\mathrm{vp}} M_{\mathrm{pers}} M_{\mathrm{cam}} \mathbf{v}$$



$$u = \frac{1}{2}u_1 + \frac{1}{2}u_2$$

Do we need to transform back to object space?

NO!

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