$$\frac{\partial r}{\partial w}dw = h_w dw \hat{w}$$

$$dS_u = h_v h_w dv dw$$

$$\frac{\partial r}{\partial v}dv = h_v dv \hat{v}$$

$$\frac{\partial r}{\partial u}du = h_u du \hat{u}$$

$$dV = h_u h_v h_w du dv dw$$

$\hat{w}$

$\hat{u}$

$\hat{v}$