

$$\mathbb{P} = \begin{array}{c} \begin{array}{c} \textcolor{blue}{n_1} \\ \textcolor{blue}{\updownarrow} \end{array} \\ \begin{array}{c} \textcolor{blue}{n_p} \\ \textcolor{blue}{\updownarrow} \end{array} \end{array} \left(\begin{array}{c|c|c} \textcolor{blue}{s_1} & & \textcolor{blue}{s_r} \\ \hline \mathbb{P}_{1,1} & \cdots & \mathbb{P}_{1,r} \\ \hline \vdots & & \vdots \\ \hline \mathbb{P}_{p,1} & \cdots & \mathbb{P}_{p,r} \end{array} \right)$$