

$$\begin{array}{c}
(\textcolor{red}{1}, \textcolor{red}{2}, \dots, \textcolor{red}{a_1}, \dots, \textcolor{blue}{1'}, \textcolor{blue}{2'}, \dots, \textcolor{blue}{a_n}) \\
\downarrow (\rho_1, \dots, \rho_n) \\
(\rho_1^{-1}(1), \rho_1^{-1}(2), \dots, \rho_1^{-1}(a_1), \dots, \rho_n^{-1}(1), \rho_n^{-1}(2), \dots, \rho_n^{-1}(a_n)) \\
\downarrow \tau \circ_{a_1, \dots, a_n} (\sigma_1, \dots, \sigma_n) \\
\overbrace{(\sigma_{\tau^{-1}(1)}(\rho_{\tau^{-1}(1)}(1)), \sigma_{\tau^{-1}(1)}(\rho_{\tau^{-1}(1)}(2)), \dots, \sigma_{\tau^{-1}(1)}(\rho_{\tau^{-1}(1)}(a_{\tau^{-1}(1)}))), \dots}^{\text{1st block}} \\
\overbrace{\dots, \sigma_{\tau^{-1}(n)}(\rho_{\tau^{-1}(n)}(1)), \sigma_{\tau^{-1}(n)}(\rho_{\tau^{-1}(n)}(2)), \dots, \sigma_{\tau^{-1}(n)}(\rho_{\tau^{-1}(n)}(a_{\tau^{-1}(n)})))}^{n\text{-th block}}
\end{array}$$