$$
\begin{array}{ccc}
M_i & \xrightarrow{\ m_{\varphi(i),i}\ } & M_{\varphi(i)} \\
\downarrow & \nearrow & \searrow \\
& Q_i \xrightarrow{\ q_{\varphi(i),i}\ } & Q_{\varphi(i)}
\end{array}
$$