

$$\begin{array}{ccc}
 A & \xrightarrow{\eta_A} & U(F(A)) \\
 & \searrow f & \downarrow U(\varphi) \\
 & & U(M)
 \end{array}
 \qquad
 \begin{array}{ccc}
 & & F(A) \\
 & & \downarrow \varphi \\
 & & M
 \end{array}$$