

$$\begin{array}{ccc}
 (A, B) & \xrightarrow{\eta_{(A, B)}} & (F(A, B), F(A, B)) \\
 & \searrow f & \downarrow (g', g') \\
 & & (C, D)
 \end{array}$$

$$\begin{array}{ccc}
 (A, B) & \xrightarrow{(i, j)} & (A \amalg B, A \amalg B) \\
 & \searrow f & \downarrow (f', f') \\
 & & (C, D)
 \end{array}$$