

$$\begin{array}{ccc}
 h_B(X) & \xrightarrow{h_{\text{ct}}(\phi)(x)} & h_{B'}(X) \\
 \downarrow h_B(\psi) & \swarrow \epsilon \quad f : X \rightarrow B & \searrow \epsilon \quad \phi \circ f : X \rightarrow B' \\
 & & \\
 & f \circ \psi : Y \rightarrow B & \phi \circ f \circ \psi : Y \rightarrow B' \\
 & \swarrow \epsilon & \searrow \epsilon \\
 h_B(Y) & \xrightarrow{h_{\text{ct}}(\phi)(y)} & h_{B'}(Y) \\
 & \downarrow h_{B'}(\psi) &
 \end{array}$$