$$P \xrightarrow{a} \xrightarrow{A} \mathcal{HOM}(Y, A)$$

$$\downarrow \Phi(f,g)$$

$$Q \xrightarrow{b} \mathcal{HOM}(X, A) \times_{\mathcal{HOM}(X, B)} \mathcal{HOM}(Y, B)$$

$$(Y \times P) \sqcup_{(X \times P)} (X \times Q) \xrightarrow{(a^*, (\operatorname{pr}_1 \circ b)^*)} A$$

$$\downarrow g$$

$$Y \times Q \xrightarrow{(\operatorname{pr}_2 \circ b)^*} B$$